Creativity's
Global Correspondents--2002

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**Foreword**

Man first left his thought for another, as far as we know, drawn on a cave wall in France some thirty thousand years ago and in doing this, he showed one of his unique abilities to communicate. The different ways he continued throughout the ages started this millenium, not only with global communication, but with a speed unknown till now. A speed that is transcending the universe, leading us to uncharted waters on a daily basis--and leaving our very soul in jeopardy.

For so much in the last part of the twentieth century happened with such alacrity that humankind is almost at a loss in its ability to absorb the changes, much less integrate them thoughtfully into our daily lives. Indeed we are like passengers on Apollo's chariot, blinded by our own technological brilliance, deafened by the roar of our rushing speed.

It is difficult for us adults to cope, then what about the children born into this world looking to us for answers to questions we have just begun to ask of ourselves? More importantly perhaps is, who is doing what to address this issue of effectively balancing the new wave of technology in our lives, much less theirs?

Enter the Global Correspondents on Creativity. With your free exchange on creativity, you scholars, from all over the world, are addressing this need which strikes at the core of our being--to develop our own creative thought process. And when was it needed to be addressed more?

Accolades then, to you the scholars whose work we find within and to Morris I. Stein, Professor Emeritus, New York University, who started this free exchange. Godspeed your progress in helping us better understand our humanness so we can use our creativity to preserve our dignity--helping, not hindering one another.

Diane F. Kessenich
Founder
The Foundation for Concepts in Education, Inc.  April, 2002
Introduction

Welcome! In this year 2002 this is our sixth publication. This report contains 32 works of 35 investigators of 19 different countries from around the world--some of who have never contributed before to this journal. It is with great pleasure that I present summaries of all of these works here. Fuller publications appear later.

Eduardo Kastika, Mgr., assisted by Lic. Juan Llanos, provide us with a most interesting paper titled, "Creativity in Argentina: Business and Organizations." The following are some of the areas covered here: "1. How we measure creativity in Argentinian and LatinAmerican companies." "2. The Conference on Management Innovation." And, "3. Creativity in graduate and undergraduate university programs." This is a very thorough report that should be of interest to all involved in this field.

Miraca U. M. Gross, Ph.D., of Australia, presents a paper titled "Conceptions of Friendship in Intellectually Gifted Students" in which she starts with the basic sentence, "The word for friendship is a driving force in both children and adults." She then reviews various studies of gifted and other children and concludes with her own study of "children of average intellectual, moderately gifted children, and highly gifted children." This paper contains the author's valuable "five stages of friendship." The paper is concluded with the major findings of her study which everyone should read, and of which we cite only one: "Gifted children were beginning to look for friends with whom they could develop close and trusting friendships, at ages when their age peers of average ability were looking for play partners." A most valuable paper.

Eunice M.L.Soriano de Alencar, Ph.D., of Brazil presents us with a means of "Identifying Obstacles to Personal Creativity: The Development of an Inventory." Only portions of this valuable inventory and results obtained with it in various Latin American countries are presented. The Inventory consists of 66 items responded to on a five point scale all of which focus on four factors that might be the expression of personal creativity. "These factors were labeled Inhibition/Shyness, Lack of Time/Opportunity, Social Repression and Lack of Motivation." Illustrative items are provided for each of these factors and results of studies conducted in different countries are presented.

Denise de Souza Fleith, Ph.D., also of Brazil, writes a most critical paper titled "Effects of Creativity Training Programs in the School Context: A Review of Brazilian Research." In this paper she reviews "the research developed in Brazil regarding the effects of creativity training programs in the educational context." (Environments that "promote creativity in Brazilian schools" are discussed by Alencar in her paper.) Training programs have supported the idea that it is possible to teach
people creativity but "no significant changes related to affective variables have been reported."

Katya Stoycheva, Ph.D., of Bulgaria, presents an interesting study, "Abiguity Tolerance and Creativity in Adolescents." She introduces her paper with some very important statements of "ambiguity tolerance". For example, she says, "Ambiguity tolerance refers to the way people perceive, interpret and react to ambiguous situations. People who are intolerant of ambiguity perceive and interpret ambiguous events and ideas as a source of discomfort or threat." The reader is encouraged to read the remainder of this orientation. The author also discusses ambiguity tolerance in adolescents and then proceeds to a discussion of the "motivational role of ambiguity tolerance in creativity"—which is a "must read."

Garnet W. Millar, Ph.D., of Canada provides us with a most important summary of his new book, "The Torrance Kids at Mid-Life--Selective Case Studies of Creative Behavior." His future plan is "to continue to follow the individuals in Torrance's longitudinal study as they enter the various phases of creativity." We all should read the present paper and follow the future reports from this study.

Norman Socha, MA,Eng.,CET, FIE, FRGS, of Canada, provides us with a very interesting paper in which he brings us up-to-date from a previous article he wrote for us titled "Canada Creativity: Backward, Forward, or Standing Still." In the current article he "follows up what has transpired, changed and possibly disappeared in the program considered previously. He reviews several important creative developments in different companies and then concludes with the statement that "Canada now needs to focus on action that will allow more Canadians to contribute their creativity and problem-solving abilities to the wealth of Canada." And, the same can be said of other countries as well.

Yuan Zhangdu of China who is President of the Shanghai Creative Studies Institute presents a most interesting paper titled "On Creative Philosophy." He introduces this with a paragraph reviewing the uses of the word "create" in ancient China. While this may be unknown, it is better known that "In medieval ages there are four great inventions in China, namely: compass, gunpowder, papermaking and printing." And, since then, there have been many more valuable discoveries and inventions. The bulk of this valuable paper is then devoted to eight major points that are involved in the study of creativity in China since 1979.

Olwen H. Wolfe, Ph.D., provides us with a fascinating paper entitled "History and Current Status of Applied Creativity in France." In this, the first article we have published on creativity in France, the author does two things. She discusses (1) She discusses the origins of creativity in France. (2) She then looks "at the current offer of creative expertise and what the types of players are." There is no organized system for gathering practitioners of creativity in France as exists in other countries. But, we are told, that "now and then someone manages to bring together a group of people who are interested in creativity, with good food and wine part of the appeal of the
meeting in a typically French approach to creativity." Obviously where there is a will, there is a way.

Roberta M. Milgram, Professor Emeritus of Tel Aviv University in Israel, presents a most interesting addition to a previous paper she submitted which contained a theoretical model of giftedness. This paper focusses on "learning style" and is presented in her paper, "In-School and Out-of-School Learning Style of Gifted and Talented Learners in Israel." Here we learn that "gifted students do not derive full benefit from the regular school program. The major message intended in the current report is that if gifted students are to realize their potential, there must be adjustments of both in-school and out-of-school learning programs. If this is not done their abilities and talents may be lost." This is something we all need to take to heart and consider seriously.

Ananda Kumar Palaniappan, Ph.D., writes a most exciting paper on "Malaysian Initiatives in Creativity". He begins his paper by reviewing some of the interesting work that has been done—covering the work of Kanan, Subramaniam, Palaniappan and Torrance. He then reports on the approach to creativity that has been successful in Malaysia. It is based on the use of four dimensions--Process, Person, Product and Press. He concludes his paper with a discussion of various creativity programs in schools and puts particular stress on the Theory of Constraints--a new thinking and problem solving program that should be of interest to all.

Ramon Ferreiro Graire of Mexico writes a paper entitled "Red Latinoamericana Talento" in which he tells us a number of valuable things. He then reminds us of the sixth congress of the Red Latinoamericana Talento which will be held in Mexico City in 2002. This paper also includes some valuable comments on Dr. Luis Alberto Machado and on the Education for Talent.

Linda Kasuga, M.B.A., also of Mexico, is Director of Super Brain Net. Her paper is titled "Creative Solutions Education in Mexico." This paper contains a most important discussion of several organizations in Mexico that are doing some important work in the area of creativity--Continuous Learning Group for work with Frito-Lay, "A Macro Plan", a Project of formal investigation, "International Learning Congress" and lastly a report on the author's own Super Brain Net. To learn about these this is a "must read" paper.

Gilda Waisburd, is the third and last person to respond from Mexico. Her paper is entitled, "Creativity in Mexico". She is Founder and Director of ICRET (Institute for Creativity, Therapy and Integral Development). Her interest in creativity began over 22 years ago and she is one of the leading figures in creativity in Mexico. Eleven years ago she started her organization, ICRET. For her Creativity, among other things, "is an attitude towards life." A good deal of her interesting paper is devoted to a description of the activities of her organization, ICRET.
Han van der Meer, MBA, presents a report of the news from The Netherlands where Krenet has been established. It should be noted that the EACI conference will take place on September 4-8, 2003 in Germany. It is to deal with "Cross Cultural Creativity." Included with this report is a statement by Jan Buijs, Chairman of the European Association of Creative Innovation (EACI) that should be noted by all.

Alexsandra Tokarz, Ph.D., and Aleksandra Gruska-Siabosz, Ph.D., have written a superb paper on "Archives in Poland in the Year 2002." This paper covers everything that goes on in Creativity in Poland and is a "must read" piece because Creativity has begun to play a very important role in education there. This summary cannot do justice to the volume of work covered in the report sent us. We did not have the space to cover all of the material. Therefore it is recommended that readers who desire further information from Poland should write the authors for the work that cannot be covered here.

Maria de Fátima Morais da Silva, Ph.D., provides us with a most stimulating question in her paper on "Creative and Non-Creative People: What kinds of Metaphors do They Prefer?" She cites the literature to say, "that the better metaphors were perceived as those that bring together two criteria: Remoticity between semantic domains in the metaphor and Equivalence between words used within each domain." These kinds of metaphors have been called "creative analogies". She then proceeds to tell us of an interesting study and problems she anticipates as she gets involved in the importance of metaphorical thinking in performance.

Fernando C. Sousa, Ph.D., also of Portugal, also presents us with a most thoughtful paper, "Creativity and the Paradoxes of Contemporary Democracy." He starts with the notion that "the right to freedom of expression is perhaps the most emblematic contrast to authoritarian political system, especially fascism." He then proceeds to discuss the various complexities that exist in democratic environments and says that "true happiness does not depend on external effects, but rather on the way in which the individual interprets them..." He then concludes with a thought provoking statement from Nietzsche in which he says, "He who has a why to live can bear almost any how."

Margareta Dinca, Ph.D., of Romania, presents us with a fascinating paper titled "Creative Personality in Adolescence" in which she presents research data to "discover the relations established between the personality structure and the social context" and creativity. Data are presented on "the relationships established between the potential, the performance and interpersonal and cognitive features" and creativity. It should be noted that the author says, "The creative teenager has a style of her own and behaves differently, as compared to others."

Gregore Nicola, Ph.D., also of Romania, presents an excellent paper titled, "Mentorship Patterns in Romanian Culture and Science" in which he presents an excellent series of considerations on mentoring-learning and mentoring society. Early in this paper he quotes E. Paul Torrance's important statement that "the presence or
absence of a mentor makes a difference that cannot be explained by chance." A very important study of 266 subjects is then presented.

Yuichiro Kubo, MA and lecturer at the Temasek Language Centre in Singapore, presents an interesting paper titled "Re-organizing Disciplines in Terms of a Synergetic Cognitive Model and Problem-Based (PBL): Toward a Holistic Education." The best way to summarize this paper is to quote from the abstract that the author presents at the beginning of his paper. He says, "This paper proposes that cognitive science can play a major role in education by applying a 3-D cognitive model to re-organizing academic disciplines with the assistance of Problem-Based Learning. This will enable us to make a paradigm shift from the current educational system to a more integrated and interdisciplinary education while reducing teaching contents and sparing more time for independent and collaborative learning on the basis of a learner's initiatives and research interests."

Ai-Girl Tan, Ph.D., begins her paper on "Creativity in Singapore: Beyond Academic Achievements" with a marvelous condensed history of creativity in Singapore so that readers of this report will have adequate background for what she has to say. She raises and provides a thorough discussion of three questions: "(1) What is the societal status of creativity in Singapore? (2) How is creativity related to Singapore's education? (3) What is the status of the study of creativity in Singapore's education?" These, of course, are questions we all ask about creativity in our own countries. So, it is important to have presented here what occurred in Singapore.

Kobus Neethling, EDD, Post Ph.D. and Lisl Schoonwinkel, BA (Hons), present a fascinating paper titled "Creative Education for a Better South African Future." Everyone who has problems developing creativity programs in their own country should read this paper. The authors are keenly aware of the difficulties in their country and they have made remarkable progress. Nevertheless, they are still very concerned about the future. At the end of the paper, the authors say, "we will not have time to do it over, we will have to do it right." And our hopes are with them that they "do it right."

Joan Freeman, Ph.D., of the United Kingdom, a professor at Middlesex University in London, England, presents a fascinating summary of her newest book--"Gifted Children Grown Up" published in August 2001 by David Fulton, London, England, and also available by writing the author, or buying it from Amazon or any bookseller. It is important to read the whole book but for our purposes here let two quotes suffice. The author says,"Firstly, it has been deep. All participants were interviewed in a counseling style (though with a basic set of questions) in their homes all over the country. I really got to know most of them. The parents and the teachers were interviewed too...." And, later the author adds, "Secondly, the study compared the recognized gifted and the unrecognized gifted with their randomly taken classmates. They were very carefully matched... ". A very valuable work.
Caroline Fryer, BA (Hons), of the United Kingdom, provides us with important information in her paper on "The Creativity Centre Educational Trust." She informs us that meetings will be held at the University of Sussex in Brighton, UK, on September 15-18, 2002. You can write her for more information about the meetings. She concludes her paper with a fascinating description of two community projects.

Marilyn Fryer, Ph.D., also of the United Kingdom, presents a most intriguing paper titled "Making Mistakes". Readers will enjoy this very humorous piece-- that also contains much wisdom. I shall say no more but I do hope you will read it.

Christopher M. Barlow, Ph.D., of the United States, has insightful discussion of the company, Enron, in his paper "Ethics, Values and Creativity: Some Lessons from Enron." He "raises some interesting issues for those involved in the promotion of deliberate approaches to creativity." It is especially important because "These issues can effect the reputation of our field and the way we practice it (we must) get teams to pay attention to more constraints and values" and thus avoid making "Enron mistakes." This is a current topic that requires much consideration and thought.

Robert Alan Black, Ph.D., of the United States describes for us his fascinating experiences he had while "Wandering the World in Search of Creativity." This past fall he wandered "For 73 days...completely around the world in search of creative thinking, creativity and creative people, while challenging myself to be creative everyday." His contribution here describes the various exciting experiences he had.

Kenneth J. Lauer, M.S. and Glen Wilson M.S of the United States present a fascinating paper on Charles F. Kettering. Their paper was originally published in Communique (2001) Vol. 12. It is presented with permission of CPS-B and the author. This paper is a "must read" for those interested in Creativity and especially in Kettering as a creative man. Readers may also be able to answer the question posed by the authors: "Have you ever asked yourself how different types of creative behavior and style can lead to highly productive outputs?" Read the authors' paper and find out what they have to say on this question.

Anthony J. LeStorti, MA, of the United States, provides us with a fascinating paper titled "Creativity in Negotiation and Conflict Resolution." In his introduction he sets forth the basic premise that there is an "area in which creative thinking helps greatly and may in fact represent the only avenue to success. This is the area of conflict resolution." This paper is a "must read" especially for those involved in focusing on creativity in business.

Judith Morgan de Zanger and Andre de Zanger respectively a sculptor and an international Consultant on Creativity in the United States, provide us with a most illuminating picture of the creative process in their paper "Creativity and the Tao." Various Taos are presented and the authors have many ideas that are relevant to creativity. This is a "must read" for all involved in the field.
Phan Dung, D.Ph. and D.Sci., writes a most interesting paper from Vietnam which is titled "Are Methodologies of Creativity Really Useful for You as a Teacher of Creativity." In this paper he presents some interesting questions that his students have asked during his lectures or breaks, or when they come to visit him. These questions are: "Do you really apply what you have taught when you work on a problem and have to make decisions? What problems have you asked?" The answers vary with available time. In limited time the answer is a brief "Yes". If time is not so limited the response is "from a comparative perspective, that is, the answer will clarify the differences between a present situation and its past counterpart, so that the questioner can figure for himself the problem to be solved to achieve present results." It is most important to read this valuable paper for it points out questions that are exceedingly valuable to all concerned.

Conclusion

With this we have concluded the summary of the papers submitted for the year 2002. By looking through the papers presented here, we trust you will find one or more details that are of interest to you.

It is important to indicate that with this issue we are undertaking a new method of distributing the papers we have obtained. Starting with this issue we are distributing them via E-Mail. Thus, every contributor will receive a copy of the papers received for the year 2002 via their computer. They then will have the opportunity to print out as many complete copies as they wish—they then will be able to keep some for themselves or distribute copies to others. They also have the opportunity to select from the listing of authors and from the summary that is in this “Introduction” those they want to keep for themselves or those they wish to discard. Printing them out will enable participants to communicate with authors whose work they want to know more about or with whom they want to share their ideas. By using this method contributors will be able to communicate with as many people as they wish. If there are people who do not receive copies and want them, they should write to us.

This seems to be the most economical way of distributing copies. Sending people the printed copies has been enormously expensive for this which is a free publication. We trust that each of you will find this a worthwhile solution to the growing popularity of this journal.

In closing we owe a deep sense of gratitude and appreciation to Mrs. Robin and Ms. Sarah Farshadfar who have given so much time and energy in preparing this journal for publication. Many, many thanks to them.

And now, as each reader turns to their work, we trust that they will find something of value and help to themselves, their colleagues and their students.

Best wishes for a year full of CREATIVITY.
Argentina

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Publications
1994. Disorganization creativa - Organización innovadora (Creative Disorganization Innovative Organization), Ediciones Macchi, Argentina
1996. La creatividad cotidiana en las organizaciones (Everyday Creativity in Organizations, MICAT, Santiago de Compostela, Spain.
2000. Innovación y Creatividad en los Negocios (Innovation and Creativity in Business), Ediciones Mercado, Argentina
Creativity in Argentina: Business and Organizations  
(With the assistance of Lic. Juan Llanos)

The aim of this paper is to report on some of the creativity-related activities that have been conducted in the past years in Argentina, specifically in the work field of business and organizations.

1. How we measure creativity in Argentinean and Latin-American companies.

There are many signals that can be telling us what’s the level of Creativity in a Latin-American organization. Even if it's not complete, the following list shows us some of the elements, which existence mark that the organization is focused on the way of creativity.

- Quantity of people with original talents.

Referring to creative systems for controlling quality, it can be a good design department, some especially innovative managers, and an uneasy chief of plant...

In general these differential talents are much more effective when they answer to mixtures of professions or knowledge. For example a marketing manager with a strong experience in finance or a sales team composed by a mixture of technicians and “born sellers”.

- Fixed or ad hoc teams to solve problems or to face opportunities.

It’s the capacity of the people of the company to gather in teams to solve punctual problems or special situations.

Although many times it constitutes a pride, it’s a bad symptom for the creativity what’s detected in some Latin-American companies where “nobody has time to do nothing but their work under the idea –wrong and too lineal- “if we had any spare time, we’d be being inefficient”.

- Ways to face meetings.

In companies with large and monotone meetings, creativity is blocked, dried and diluted.

These kinds of meetings generally get confused with the idea of “many meetings” synonym of "much agreement".

It’s often like this. The culture of long meetings is also the culture of the permanent game of power, when invariably people end up judging the one who says the idea, more than the idea itself.
• **Types of training plans.**

One company can be innovative because it trains in distinctive abilities. Or because it trains more and different than its competitors. Or because it trains smarter. It’s the inevitable complementation to companies that know how to learn: companies that know how to teach.

• **Quantity of ideas that formally circulate.**

Ideas that circulate in the way of projects with own entity and the possibility of being implemented.

• **Quantity of ideas effectively applied and implemented projects**

It’s not only what the company does, but in which ways it can be traced as a punctual project in known start.

• **Impacts on the market with respect to competitors**

Those are “the successes that can be told”. Those achievements for which the company is proud, especially because it could what others couldn’t.

It’s important that those impacts exist but also that the people of the organization know them. It can be a product that marked the “before and after”, an idea of production that permitted to differentiate to other companies with respect. A program of recruiting personnel for which the company can boast.

It’s important that these impacts exist to be valued and incorporated to the culture of the organization. When the culture incorporates these kinds of impacts, they are generally transferred to new people in the company.

• **Ideas that the company has copied.**

Why not? We know that part of the company ability is its capability to copy or adapt from other places.

• **Ideas that had been copied from the company.**

It’s the counterpart of the previous one. Even if it hurts, it’s also a signal of our degree of creativity (worth creativity) the quantity of times that we had been copied.

• **Originality of the suppliers.**
A little is talked about this but it’s basic. The company will be innovative, if its suppliers are innovative too.

Not only because their innovation shall benefit the company. But also because if it can continue interacting with an innovative supplier, it means that it is not behind either. It’s too old that vision for which” the worst are our suppliers, the most we are making profit”. The first signal of the waste of the innovative capacity (and also of competitiveness) of a company it’s when it starts by not being able of having the suppliers it would need.

- **Demand of originality, and originality of the clients.**

The company is what its clients are. They can be the most precious motivators, engines of company creative capability.

It’s really good for the company to have innovative, original, creative clients. Even if it's difficult to manage them, and sometimes they have the tendency to be less loyal than traditional and stuck clients.

The clients can teach the organization much. Organization must be alert to these teachings, as, sometimes they may have the form of demand or complaint. And these are signals that the companies don’t always see.

- **Quantity of intangible in names, brands, logotypes, etc.**

Even if they aren’t usually driven professionally, all the intellectual capital that the company has in terms of brands, names, sub-brands, logotypes, licenses, etc., it’s all a creative capacity depicted in concrete ideas.

- **Ways in which the company’s mission is stated.**

What does the company’s mission say? Same things than other missions? Something super-generic or not applicable? A group of good wills? Or, it is a clear, incisive, simple, strong mission?

Does this mission have any relation with the innovation? Is it an original mission? Does it impact? Does it say anything?

2. **The Jornadas de Innovación Empresaria (Conference on Management Innovation).**
This three-day conference, which includes a variety of workshops and other activities, has been held continuously since 1991 in different locations around the country. The following are some of its major features:

1. Its participants are young people from all over the country, and every year it is held at a different Argentine city (Argentina has a 1,079,000-sq.-ml. territory and approximately 36 million inhabitants).

2. As opposed to many events where knowledge is “transmitted,” in this conference-workshop, the knowledge of creativity and innovation is “applied” to management.

3. The conference stands out among other similar events thanks to its unique characteristics. During the three days, participants actively work on the concrete application of innovative ideas to organizations by solving cases, doing creativity development exercises, listening to talks, and participating in workshops and varied activities such as the talent show.

4. The number of participants has grown steadily from 200 in the 1991 conference to 500. Considering the fact that it practically goes unpromoted, we can consider it a remarkable success.

5. Three are the main objectives of this conference:
   - Updating,
   - Training, and
   - Motivating.

Because it is sometimes difficult for the people in the provinces to have access to new books, trends and ideas on Management and creativity-related issues, continuous updating of theory and concepts on creativity and innovation is one of its key objectives.

Training is the other face of the coin. It is the possibility of applying what is being learned. And it is through training that we intend to “learn how to unlearn” the old and deep-set ways of addressing problems that prevent us from using new approaches to solving new problems.

Motivation is the fuel of this process. Creativity cannot be set in motion without seductive aims, goals, and opportunities or at least without the concrete need to change part of the environment in which we operate. Our minds may conceive many ideas, but if we do not create spaces for them to develop, they will not be translated into useful and operational applications.

6. Eleven years after the first conference, the Jornadas de Innovación is already a classic event. Many young enthusiasts from all over the country look forward to the time when they will “meet again” with people who are eager to gain experience, get trained, and work hard for three full-days in the many activities conducted during the
conference. It is really hard to describe the wonderful atmosphere of the group discussions, presentations, workshops and games...

7. The Jornadas de Innovación Empresarial was created by Eduardo Kastika and Fernando Moser (his first student organizer). Eduardo Kastika is currently the conference’s academic director.

The organization is in fact a co-organization. Every year, a group of young people is selected in the host province to coordinate operations.

3. Creativity in graduate and undergraduate university programs.

Since 1987, the course Creativity is an integral part of various graduate and undergraduate business-related programs.

The following is a sample outline of the topics touched upon in different university programs:

**Unit 1. Training in creative approaches as applied to businesses and organizations**

- Developing fluidity: Spaces for fluidity development within organizations. Fluidity results as value within organizations. Fluidity-centered attitude.
- Developing Flexibility: Flexibility as a mode of thinking within organizations. How to think flexibly. Flexible thought and its relationship with organizational structure.
- Developing originality: Originality and its risks. The “new” in context. How to apply originality every day in organizations.
- The Goal orientation: the “hidden” goal of creativity. The importance of defining a goal creatively. When creativity “clicks in our mind”.

**Unit 2. The mindmapping technique as used in organizations**

- Group training in mindmapping and perceptual maps.
- How to flexibilize perception through mindmapping. How to use the technique in groups.
- How to use mindmapping to increase the number of approaches used to explore issues in organizations.
- How to generate new ideas with perceptual maps.
- Operational aspects of mindmapping: When to use it. Why use it. Results you can obtain. How to apply them. Example applications. Recommendations for optimum results. Use in conjunction with other techniques.
Unit 3. Using analogies and metaphors in organizations

- The application of the logic of discovery in organizations.
- The use of metaphors and analogies as a simplified way of applying synective methods.
- Types of analogies and their application.
- Lateral thinking and analogies.
- Operational aspects of analogies: When to use it. Why use it. Results you can obtain. How to apply them. Example applications. Recommendations for optimum results. Use in conjunction with other techniques.

Unit 4. Creativity from the point of view of thinking profiles

- Definition of thinking profile
- Ned Herrmann’s work.
- Thinking profiles as applied to creative problem-solving.
- The evolution of species. Brain evolution.
- The right-left hemisphere model.
- The notion of dominance in relation to thinking profiles.
- Applying each profile to creative problem-solving.
- The organization as a space for cross-disciplinary problem-solving.

Unit 5. Creativity, groups and team work

- People, groups and teams in creative work.
- The ‘all ideas are welcome’ attitude.
- Pro-active recommendations for creativity.
- Different types of criticism.
- Cross-fertilization as applied to creativity.
- Quantity goal setting.
- The bottom line of creativity.

Unit 6. Integrating the creative problem-solving process into organizations

- New brainstorming developments. Combining divergence and convergence in different stages.
- Using checklists to analyze problem defining and opportunity seeking.
- Creativity as applied to goal setting. Framing the context. Redefining problems. Searching for ideas. Laying out action plans.

The importance of convergence in creativity and project development. Selecting and using criteria. Incorporating convergence as a complement to divergence.

Unit 7. Lateral thinking and its techniques

- Conceptualizing the dominant idea.
- Acknowledging chance as a productive stage.
- The mind as a self-organizing system.
- Concepts and features of vertical and lateral thinking.
- The PMI technique.
- The word “PO” as a technique.
- The Seven Hats for Thinking and its effects on creative work.
- The Six Hats for Action and its effects on creative work.
- Inversion-based techniques.
- Random stimuli as lateral thinking.

Unit 8. Combinatory techniques

- Developing the notion of bissociation.
- The stimuli combinatory matrix
- Defining bissociation and inventiveness.
- Generating ideas by combining ideas.
- Combinatory matrices.
- The forced relationship of concepts technique
- The morphological analysis method.

Unit 9. From ideas to results

- Generating ideas and turning them into new business.
- Starting new businesses through creatitivity techniques.
- “Selling” ideas and their results.
- Differences between creative process and creative product. Its impact on organizations and on the development of new businesses and products.
- The creative attitude and its relationship with risk, goal orientation, entrepreneurship, originality and organization.

Unit 10. Creativity and organizational structure

- Creativity and the organization as a space for cross-disciplinary problem-solving.
Heterogenous teams to generate ideas.
Exchanging ideas among areas.
Organizational structure models to detect opportunities and sources of applicable ideas.
Creativity-prone organizational forms for creativity development in organizations. From R&D to every day activities.

Unit 11. Creativity and organizational culture

- Characteristics of creativity-centered cultures
- Kingdom cultures and structures. Network cultures and structures.
- Blocks at the strategic and top management level.
- Management blocks to creativity. Leaders vs. traditional managers.
- Cultural blocks in the rest of the organization. Cultures and subcultures.

Unit 12. Management and creativity

- The fundamentals of management and strategy for creativity in the organization as a whole operating in a turbulent context.
- Searching and exploring new opportunities and ideas based on the strategic positioning of the organization as a whole.
- The business strategy taking into account the organization-context dynamics, cooperative and competitive advantages, and the changes in the industrial and service sectors.
- Creativity and dynamic positioning.
- Creativity and innovation as applied to portfolio development.

Unit 13. Adopting a prospective attitude and building scenarios through creativity

- Prospective techniques and their close link with creativity. Inspiration. Intuition. Applying creativity to envisage future contexts and desirable scenarios.
- Learning to think the future as scenario to be designed and as opportunities to be created, and not as the inevitable continuation of past events.
- How to formulate innovative strategies, programs, action plans knowing that the organization is to be prepared to “created market rules” rather than follow them.
- High-quality response techniques for future scenarios increasingly different from past and present ones.
- Training to work towards accomplishing the imagined scenarios, and not just towards foreseeing that they will occur.

Unit 14. Technological innovation, creative intent and business re-definition
Creative intent and innovative management
Creativity and innovation in the notions of vision and mission.
Value migration and new businesses.
Innovative actions.
Creativity and innovation-related values and beliefs.

**Unit 15. Creativity and organizational efficiency: an seeming paradox to be explored.**

- How to plan creativity and innovation. Incorporating the businessperson’s and the organization’s thinking. The premises of applied creative thinking.
- How to be profitable through creativity. Organizing innovatively for best results.
- The globalization and internationalization of business and its effects on innovative possibilities in Argentina.
- Quality and creativity: two basic aspects of an organization’s culture.
Australia

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Publications
2001 All gifts are equal but some gifts are more equal than others: Variations on an Australian theme. Keynote address. Proceedings of the 13th National Conference of the Australian Society of Music Educators (pp. 7-29). Adelaide: Australian Society of Music Educators.
2001 Gross, M.U.M., MacLeod, B., Drummond, D. and Merrick C. Gifted students in primary schools: Differentiating the curriculum. Sydney: GERRIC
CONCEPTIONS OF FRIENDSHIP IN INTELLECTUALLY GIFTED CHILDREN.

“When gifted children are asked what they most desire, the answer is often ‘a friend’. The children's experience of school is completely colored by the presence or absence of relationships with peers.”

(Silverman, 1993, p. 72)

The need for friendship is a driving force in both children and adults. This report of recent Australian research explores the nature of friendship as it is conceived by elementary and middle school students and how perceptions and expectations of friendship differ among children at different age levels, at different levels of intellectual ability, and between boys and girls.

Research studies over the last 75 years have revealed that when intellectually gifted children look for friends, they tend to gravitate towards other gifted children of approximately their own age, or older children who may not be as bright as they are, but who are still of above average ability (Hollingworth, 1926; O'Shea, 1960; Gross, 1993). This fits comfortably with what we know about friendship choices in children generally; children tend to choose friends on the basis of similarities in mental age, rather than chronological age.

Research into the psychosocial development of intellectually gifted children and adolescents takes, in general, a highly positive view of these students' personalogical and social adjustment. For example, comprehensive overviews conducted by Janos and Robinson (1985), Schneider (1987) and Robinson and Noble (1992) have concluded that, in general, intellectually gifted children are superior to age-peers of average ability in social cognition, are more popular with age-peers, are more pro-social, act more cooperatively, and exhibit more "sharing" behavior in their play.

It should be noted, however, that despite the generally positive findings on socio-affective development, the authors of each of these research reviews caution that the considerable majority of the findings they have reported originate from studies of moderately gifted children, and that the picture may be very different for children of very superior intelligence. Schneider, for example, reports that his own study of peer acceptance of gifted students found significant negative correlations between IQ and peer nomination, and cautions: "There is considerable reason to believe that the social status of the very highly gifted is not as consistently elevated as that of the moderately gifted" (p. 33).

The great psychologist Leta Hollingworth (1926, 1942) was the first to undertake a systematic study of peer relationships of children scoring at different levels of intellectual giftedness. She defined the IQ range 125-155 as "socially optimal intelligence" (Hollingworth, 1926). She found that children scoring within this range were well-balanced, self-confident and outgoing individuals who were able to win the confidence and friendship of age-peers. She claimed, however, that above the level
of IQ 160 the difference between the exceptionally gifted child and his or her age-mates is so great that it leads to special problems of development which are correlated with social isolation, and that these difficulties appear particularly acute between the ages of four and nine. Hollingworth made clear her conviction that the difficulties in peer relationships experienced by highly gifted children did not arise from deficiencies within the children themselves but through the unlikelihood of their easily finding others who share their abilities and interests.

**Peer relationships of moderately and highly gifted children.**

Several subsequent studies have compared the social relationships and friendship patterns noted in moderately gifted children with those noted in highly or extremely gifted age-peers.

In the United States, Gallagher (1958), comparing the friendship patterns of gifted children scoring below and above IQ 165, noted that the exceptionally gifted tended to have greater problems of social acceptance than did children scoring between IQ 150 and 164. DeHaan and Havighurst (1961) examined the differences between what they termed "second-order" (IQ 125-160) and "first-order" (IQ 160+) gifted children. They believed that the second-order gifted child achieves good social adjustment because he has sufficient intelligence to overcome minor social difficulties, but is not "different" enough to induce the severe problems of salience encountered by the exceptionally gifted student.

In England, Freeman (1979) compared a “target” (sic) group of primary school students of mean IQ 147 with a gifted comparison group of IQ 134 and a second comparison group of children of mean IQ 119. Children scoring 147 on the Stanford-Binet L-M appear in the population at a ratio of approximately 1 in 1000 while children of IQ 134 appear at a ratio of approximately 1 in 50 and children of IQ 119 at a ratio of around 1 in 10. The target group, centering on IQ 147, is substantially more able than the moderately gifted comparison group: the mean scores of the two groups differ by 13 points - fully 0.8 of a standard deviation. Indeed, the moderately gifted group is actually more similar in terms of prevalence to the group centering on IQ 119 than they are to the target group. The target group, which included no fewer than 18 students of IQ 160 or higher - children scoring well outside Hollingworth’s (1926) range of “socially optimal intelligence” - would be much less likely than the other two groups to encounter children of similar abilities.

Not surprisingly, children in the target group said they felt "different" from other children 17 times more often than children in the moderately gifted group. This is a rational and accurate assessment. The target group children also reported having very many fewer friends than did the moderately gifted group; 83 per cent reported having few friends compared to 30 per cent in the comparison groups while 7 per cent said they had no friends at all, compared to 1 per cent in the comparison groups. The friends that the target group did have were described, more often than the friends of the comparison children, as being older, rather than the same age or younger.

A significant contribution to the research on extremely gifted students was made in the early 1980's by Janos, who compared the psychosocial development of 32 children
aged 6-9 with IQs in excess of 164, with that of 49 age-peers of moderately superior intellectual ability (Janos, 1983). Although the exceptionally gifted were generally rated higher in terms of their academic performance, they were more isolated than their age peers, had greater problems of social development, and, in the case of a substantial minority, seemed to lack the motivation to develop their intellectual talents. Janos emphasized, however, that the social isolation experienced by these children was not the clinical isolation of emotional disturbance, but was caused by the absence of a suitable peer group with whom to relate. There are virtually no points of common experience and common interest between a 6-year-old with a mental age of 6 and a 6-year-old with a mental age of 10.

A further study by Janos, Marwood and Robinson (1985) compared two groups of children centering on age 8, an exceptionally gifted group of IQ 163+ (mean IQ 167.9) and a group of age-peers of IQ 125-140 (mean IQ 131.2). Exceptionally gifted children were significantly more likely to report that most of their friends were older, that they had too few friends, and that being smart made making friends harder. Parents of the exceptionally gifted children were more likely to report that their child had only one close friend, or no close friends at all.

My own longitudinal study of 60 Australian children of IQ 160+, commenced in 1983, has found that those children who were retained in the inclusion classroom with age-peers, or permitted a "token" grade advancement of a single year, experienced significant and ongoing difficulties with peer relationships. Many reported that they had few friends, or no friends at all, despite deliberate and prolonged academic underachievement in efforts to gain acceptance, or at least tolerance, from age-peers. By contrast, the 16 students who were radically accelerated, and who graduated from high school three or more years earlier than is customary, enjoyed warm and fulfilling friendships with the older students with whom they learned and socialized through their childhood and adolescence (Gross, 1993, 1994, 1998, 2000).

Janos’ findings in the 1980s, and my own over the last 19 years, would have come as no surprise to Hollingworth: she herself emphasized that when exceptionally gifted children who have been rejected by age-peers are removed from the inappropriate grade-placement, and are permitted to work and play with intellectual peers, the loneliness and social isolation disappear and the child is accepted as a valued classmate and friend (Hollingworth, 1942).

**Gifted children’s conceptions of friendship**

Previous international studies have found, not surprisingly, that children's conceptions of friendship develop in stages and are hierarchical and age-related (see, for example, Selman, 1981). Children in the early years of school tend to view friendship in a strongly egocentric or subjective light; the capacity to step outside one’s own needs and perceptions, and see one’s friend as an individual with her own needs and values, does not develop till around the age of nine. The perception of friendship as an intimate and mutually rewarding relationship which allows friends to draw strength from each other and contribute to each other’s emotional growth does not, in general, develop until around age 12.
However, these studies were conducted with unselected populations, comprising children of average intellectual ability. Until recently, no research has been undertaken to investigate whether intellectually gifted children pass through the stages of friendship conception at the same ages, or at the same speed, as children of average ability.

Similarly, research has established that boys and girls in the pre-adolescent years tend to have different expectations of friendship, with girls being more likely than boys to distinguish between "best friends" and "regular friends", and with girls reporting higher levels of intimacy, trust and loyalty than do boys in same-sex best-friendships (Sharabany, Gershoni and Hoffman (1981). However, these friendship studies focussed on students’ chronological age or grade placement; the children’s level of intellectual capacity or mental age were not taken into consideration.

However, through a recent empirical study undertaken with 700 children aged 5-12, I was able to investigate whether children's conceptions of, and expectations of, friendship are determined by chronological age or by mental age. I was interested to explore whether intellectually gifted children have conceptions of friendship which are more developmentally mature than those held by their age-peers. I was also interested to investigate whether the gender differences observed in the general population translated into the gifted population.

The study surveyed, through a standardized questionnaire in Likert scale format, conceptions of friendship held by three groups; children of average intellectual ability, moderately gifted children, and highly gifted children.

Factor analysis confirmed that children's conceptions of friendship do indeed form a developmental hierarchy of age-related stages, with expectations of friendship, and beliefs about friendship, becoming more sophisticated and complex with age. The five stages appear in order as follows, from the lowest to the highest level in terms of age and conceptual complexity:

Stage 1: "Play Partner": In the earliest stage of friendship, the relationship is based on "play-partnership". A friend is seen primarily as someone who engages the child in play and permits the child to use or borrow her playthings.

Stage 2: "People to chat to": The sharing of interests now becomes an important element in friendship choice. Conversations between "friends" are no longer related simply to the game or activity in which the children are directly engaged.

Stage 3: "Help and encouragement": At this stage the friend is seen as someone who will offer help, support or encouragement. However, the advantages of friendship flow in one direction only; the child does not yet see himself as having the obligation to provide help or support in return.

Stage 4: "Intimacy/empathy": The child now realizes that in friendship the need and obligation to give comfort and support flows both ways and, indeed, the giving of affection, as well as receiving it, becomes an important element in the relationship. This stage sees a deepening of intimacy; an emotional sharing and bonding.
Stage 5: "The sure shelter"  The title comes from a passage in one of the apocryphal books of the Old Testament. "A faithful friend is a sure shelter: whoever finds one has found a rare treasure" (Ecclesiasticus, 6:14). At this stage friendship is perceived as a deep and lasting relationship of trust, fidelity and unconditional acceptance. As a highly gifted 12 year old described it: "A friend is a place you go when you need to take off the masks. You can say what you want to your friend because you know that your friend will really listen and even if he doesn't like what you say, he will still like you. You can take off your camouflage with a real friend and still feel safe."

The study found, however, that what children look for in friends is dictated not so much by chronological age but by mental age. A strong relationship was indeed found between children's levels of intellectual ability and their conceptions of friendship. In general, intellectually gifted children were found to be substantially further along the developmental hierarchy of stages of friendship than were their age-peers of average ability. Gifted children were beginning to look for friends with whom they could develop close and trusting friendships, at ages when their age-peers of average ability were looking for play partners.

As mentioned earlier, many years of research (as well as the observations of parents of gifted children, and perceptive teachers!) suggest that intellectually gifted children look for friends among other gifted children of approximately their own age, or older children of above average ability. The findings of this study suggest that they may not only be seeking the intellectual compatibility of mental age peers; they may also be looking for children whose conceptions and expectations of friendship are similar to their own.

As noted earlier, Hollingworth (1926) found that the social isolation experienced by many highly gifted children was most acute between the ages of 4 and 9. The present study supports Hollingworth's findings. The differences between gifted children and their average ability age-peers were much larger in early years of elementary school than in the later years. In grades 3 and 4, even moderately gifted children have the conceptions of friendship which characterize average ability children at least two years older, while exceptionally gifted children of IQ 160+ tend to begin the search for "the sure shelter" - friendships of complete trust and honesty - four or five years before their age-peers even enter this stage. In this study exceptionally gifted girls aged 6 and 7 already displayed conceptions of friendship, which do not develop in children of average ability until age 11 or 12.

Substantial gender differences were noticed. At all levels of ability, and at all ages, girls presented as significantly higher on the developmental scale of friendship conceptions than boys. Because of this discrepancy, exceptionally gifted boys who begin the search for intimacy at unusually early ages may be at even greater risk of social isolation than girls of similar ability.

Such are the differences in the friendship conceptions held by average and gifted students in the earlier years of primary school that it is at this level that gifted children are most likely to have difficulty in finding other children who have similar expectations of friendship.
The results of this study raise, once again, the question as to why schools which offer programs of ability grouping so often reserve these programs for students in the upper years of elementary school, and why teachers are so reluctant to allow young gifted children to accelerate. This study suggests that it is in the lower, rather than the upper, grades that placement with chronological peers, without regard to intellectual ability or emotional maturity, is more likely to result in the gifted child experiencing loneliness or social isolation.

Ability grouping and grade advancement can be of invaluable assistance in the early years of school to young gifted children whose accelerated conceptions of friendship are urging them to seek the sure shelter of a relationship of trust, fidelity and authenticity, at ages when their age-peers are seeking play partners or casual conversation.

References


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IDENTIFYING OBSTACLES TO PERSONAL CREATIVITY: 
THE DEVELOPMENT OF AN INVENTORY

There is a growing recognition of creativity as an important aspect of human functioning. Several scholars from different fields have pointed out that creativity is of foremost value and the most precious resource to face the challenges which characterize present times. It has also been stressed the need to make elementary, secondary and higher education more creative. Torrance (1993) justifies this need, pointing to the demands of a high-change world which requires abilities, skills, attitudes and values to cope creatively with new problems.

In spite of the awareness of the need of good conditions for creative accomplishments, there are many barriers which inhibit the individual to take profit of their creative potential. Some of the barriers exist within the individual, such as some psychological barriers, including those of emotional, perceptual and intellectual nature. Other obstacles are external to the individual, such as those related to values and norms cultivated in the society, which push the individual to conform to standardized thoughts and behavior patterns.

The powerful influence of the adverse forces to creativity common in the occidental world was widely discussed by different authors, such as Arieti (1976), Schwartz (1992) and Montuori and Purser (1995). These scholars highlighted the sociodynamic factors that influence creativity. According to them, creativity is strongly influenced by environmental factors. It is not the result of fortuitous forces. These authors consider the moments of creation as a result of complex social circumstances that cannot be ignored by those interested in knowing more about the factors that foster and hinder creativity. Also Cropley (1997) described the role of the social factors, such as norms and conformity pressure that inhibit creativity. This author illustrated these factors with the "stop rules" that children learn early in life, preventing them certain lines of actions as, for example, to question teachers about what they tell them to do.

The literature about obstacles to creativity is extensive. Several authors, such as Parnes (1967), Adams (1986), Shallcross (1981), Von Oech (1988) and Alencar (1995, 1998) refer to different factors which inhibit creativity, presenting different categories of obstacles. Parnes (1967), for instance, discriminated between internal and external factors that stifle creative thinking. Adams (1986) identified a list of blocks which includes perceptual, emotional, cultural, environmental, intellectual, and expressive blocks. Shallcross (1981) categorized the barriers to utilizing creative potential into historical, biological, physiological, social, and psychological barriers. Von Oech (1988) described ten mental blocks that hinder the creative thinking, which include, among others, the emphasis on the right answer, the idea that ambiguity must be avoided, and that it is necessary to always be practical. On the other hand, Alencar (1995, 1998) focused on different kinds of perceptual, cultural, and emotional
obstacles, common in our society. There are still other scholars, such as Rickards and Jones (1991), who referred to strategic values, perceptual blockages, and self-image factors, which restrict the range of ideas presented by the person.

In spite of the increasing recognition of the several obstacles which block the individual to express their creative potential, the empirical literature on obstacles to personal creativity has been somewhat spotty. The majority of the empirical research literature deals exclusively with obstacles to creativity in the work environment. The obstacles to creativity in the work environment were, for example, investigated by Amabile and Gryskiewicz (1989), Rickards and Jones (1991), and by Bruno-Faria and Alencar (1998). Both Amabile and Gryskiewicz and Bruno-Faria and Alencar designed and validated inventories to assess factors in the work environment which would be stimulants to creativity and those which would be obstacles to creativity. Amabile and Griskiewicz's inventory includes four scales on environment obstacles to creativity: time pressure, evaluation, status quo, and political problems. On the other hand, Bruno-Faria and Alencar's inventory identifies factors, such as excess of work and lack of time, resistance to new ideas, and organizational problems as obstacles to the expression and development of creative ideas in the work environment.

The literature concerned with personal obstacles to creativity is largely non-empirical. No inventory is, for example, available in Brazil with the purpose of identifying personal obstacles to creativity. This was the main reason for conducting a study with the purpose of constructing and validating an inventory, which could be used in creativity programs, as well as for diagnostic purpose and future research on the topic.

**Characteristics of the Obstacles to Personal Creativity Inventory**

This inventory includes 66 items, which are answered on a five point scale (1 = totally disagree to 5 = totally agree; 3 = unsure). The instrument focuses on four factors that may be most likely to block the expression of personal creativity. These factors were labeled *Inhibition/Shyness, Lack of Time/Opportunity, Social Repression,* and *Lack of Motivation*. Examples of the items from each factors are:

**Inhibition/Shyness**

*I would be more creative if...*

- I were less shy to express my ideas.
- I were not afraid to express what I think.

**Lack of Time/Opportunity**

*I would be more creative if...*

- I had more opportunities to put in practice my ideas.
- I had more time to elaborate on my ideas.

**Social Repression**

*I would be more creative if...*

- I had not received a rigid education.
- I had more opportunities to make mistakes without being labelled as an idot.
Lack of Motivation

_I would be more creative if...
_I were more enthusiastic.
_I concentrate more in the tasks I am doing.

This inventory was constructed on the basis of our previous studies on obstacles to creativity, as well as on a review of theory and research on obstacles to creativity. In one of our previous study (Alencar, Oliveira, Ribeiro & Brandao, 1996), a sample of 184 educators were requested to complete the following sentence _I would be more creative if..._ A content analysis of the responses indicated four main categories: emotional obstacles; sociocultural obstacles; motivational/personality obstacles; and intellectual obstacles.

Some frequent responses obtained in this previous study were:

_I would be more creative if...
_I had had more opportunities during my childhood.
_I had more knowledge.
_The society and the school where I studied did not block my creativity.
_I had more incentive, motivation, and freedom.
_I were not afraid of being criticized.
_I relied on my creative ability.
_I were not insecure and afraid to face the new.

Another study, using the same technique was developed with a sample of 290 educators from three countries - Brazil, Cuba, and Portugal (Alencar & Martínez, 1998). An analysis of the responses indicated differences among educators from these countries. Sociocultural obstacles were more frequently pointed by the Cuban educators, while the Brazilian and Portuguese educators referred more frequently to personal obstacles, including specially those of emotional nature. Among the emotional obstacles, the most frequently reported were the fear of making a mistake, failing, and risk taking.

The development of this instrument included the previous construction of 84 items related to different obstacles to personal creativity. These items were submitted to a semantic evaluation in order to guarantee that students could understand them and to avoid ambiguity and lack of clarity. In order to do this, 15 students listened individually to the items and were requested to repeat in their own words the content of each item. Fourteen items were then eliminated for being their content very similar to another items of the instrument or due to the respondents' difficulty in understanding completely their content.

The 70-item instrument was, then, administered to 389 university students. A factor analysis (principal components, oblique rotation) was carried out to analyze the instrument content. This analysis yield the four factors previously presented. The criteria for the retention of a factor were: (a) Eigenvalue equal to or higher than 2.00, (b) factorial loading equal to or higher than .30, and (c) being the factor semantically interpretable. The four factors, with their number of items, eigenvalues and reliabilities (alphas) are presented in Table 1.
Table 1. Obstacles to Personal Creativity Inventory Factors, Number of Items, Eigenvalues and Reliabilities

<table>
<thead>
<tr>
<th>Factors</th>
<th>Number of items</th>
<th>Eigenvalue</th>
<th>Reliability (Alpha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhibition/Shyness</td>
<td>23</td>
<td>15.71</td>
<td>.91</td>
</tr>
<tr>
<td>Lack of Time/Opportunity</td>
<td>14</td>
<td>4.42</td>
<td>.85</td>
</tr>
<tr>
<td>Social Repression</td>
<td>14</td>
<td>3.58</td>
<td>.85</td>
</tr>
<tr>
<td>Lack of Motivation</td>
<td>20</td>
<td>2.13</td>
<td>.88</td>
</tr>
</tbody>
</table>

The instrument number of items was reduced to 66 through the statistical analysis. However, a few items were included in more than one factor. These were variables which correlated with more than one factor and are called complex variables (Tabachnick & Fidell, 1996).

Studies Conducted with the Obstacles to Personal Creativity Inventory

Several studies were conducted on personal obstacles to creativity using this inventory. In one of our studies (Alencar, 2001), 385 Brazilian students from two universities, one public and another private, filled out this inventory. The results indicated significant differences among male and female students in two sets of obstacles: Social Repression and Lack of Motivation. The first set of obstacles was more common among female students and the second among male students. Significant differences were also observed among public and private university students in two sets of obstacles: Inhibition/Shyness and Lack of Time/Opportunity. The mean for the private university students was significantly higher in these two clusters of obstacles, comparing with the public university students.

A comparative study among 540 Brazilian and Mexican university students (Alencar, Martinez, Gravié & Fleith, 2001) in their personal obstacles to creativity was also conducted. Mexican university students obtained higher scores compared to Brazilian students in the cluster of obstacles called Lack of Motivation.

A third study (Alencar & Fleith, 2001) was conducted with a sample of 544 educators from elementary to higher education. Our data indicated that female educators more significantly than male teachers referred to the set of obstacles called Social Repression. Differences were also observed among educators from elementary, secondary and higher education in two clusters of obstacles: Inhibition/Shyness and Social Repression, more frequently reported by elementary education teachers.

In the three studies, Lack of Time/Opportunity was the most frequently cluster of obstacles referred by the participants. The lowest mean was observed in the factor labeled Social Repression. Lack of time was also noted as an inhibitor of creativity in the organizational context. Talbot (1993), for example, reported little time for thinking...
and experimenting as a characteristic of organization systems that might be a source of external creativity inhibitor. Likewise, Amabile and Gryskiewicz (1989) and Hill and Amabile (1993) refer to time pressure as an environmental obstacle to creativity in the organizations. Similarly, Bruno-Faria and Alencar (1998) observed in a study with Brazilian workers that lack of time was also indicated as a barrier to creativity in the organizational environment.

The lack of opportunities to express and put in practice new ideas is also a common complain among university students in Brazil. Students complain that school emphasize knowledge acquisition, with a lack of opportunities for them to engage in learning experiences that stimulate their creative thinking.

**A Final Word**

The instrument described in this paper helps in the identification of factors that inhibit the expression of creativity. Understanding how to overcome these obstacles may reduce the loss of creative potential and help the individual to present more creative productivity.

Personal creativity obstacles is also a topic highly neglected by researchers of the creativity field. We hope, with this study, to draw attention to the internal and external forces that affect the expression of creativity, besides offering an instrument with several possibilities of use and application.

**References**


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Effects of Creativity Training Programs in the School Context: A Review of Brazilian Research

Since research has demonstrated that creative behavior is learned, and therefore can be enhanced, programs and courses in creativity have been multiplying (Parnes, 1970). Their common premise is that training, practice, and encouragement in using creative abilities can foster individuals’ creativity (Fleith, Renzulli, & Westberg, in press). In this regard, educators and psychologists called attention to the need of reviewing the strategies implemented in the classroom. According to them, it was essential to adopt educational practices that could stimulate the students’ creative potential (De Bono, 1984; Timberlake, 1982; Torrance, 1974, 1979). This concern could be noticed in different cultures, including Brazil (Alencar, 1975; Novaes, 1979; Torrance, 1973).

The interest in studying the effects of creativity training programs in Brazilian schools dates from 1970. The majority of the studies were conducted from 1985 to 1995. Since then, a decline in the research about the effects of creativity training program in Brazil has been noticed. In addition, the focus of creativity studies has switched from enhancing individual’s creativity to identifying factors that stimulate or inhibit creative behaviors in the school environment. It is important to mention the influence of American studies on Brazilian creativity research, since many Brazilian researchers got their doctorate in the United States. This chapter will review the research developed in Brazil regarding the effects of creativity training program in the educational context. Characteristics of an environment that either promote or inhibit creativity in Brazilian schools will be discussed in the chapter by Alencar.

Effects of Creativity Training Programs: Description of Brazilian Studies

Studies conducted in Brazil investigated the effects of creativity training programs on teachers and students from elementary school, secondary school, and university level. They examined the impact of creativity programs on non-gifted, gifted and learning disabled students. It can be noticed that the participants of the majority of studies were teachers and students from elementary grade levels (Alencar, 1986; Alencar & Fleith, 1987; Alencar, Fleith, & Rodrigues, 1987; Alencar, Araújo, Fleith, & Rodrigues, 1988; Alencar, Fleith, Shimabukuro, & Nobre, 1987; Guerreiro, 1987). Moreover, the studies investigated the effects of creativity training program on cognitive and academic variables such as divergent thinking abilities and school achievement, as well as affective variables such as self-concept, perception with respect to one’s level of creativity, and interests and personality characteristics associated with creativity.

It is important to mention that most creativity training programs implemented in Brazilian studies were designed based on the literature in creativity. Training programs conducted with adolescents and teachers included a theoretical introduction (myths about creativity, cognitive and affective characteristics associated with creativity, creative process, and stimulating and inhibiting factors to creativity), creativity techniques and activities. On the other hand, programs designed for
children implemented only practical activities. Furthermore, only a few of the studies adopted creativity training program packages such as the Purdue Creative Thinking Program (Feldhusen, Treffinger, & Bahlke, 1970) and New Directions in Creativity (Renzulli, 1986). The most used instrument was the Torrance Tests of Creative Thinking (TTCT) (Torrance, 1974). The vast majority of studies used a quasi-experimental design (Gall, Borg, & Gall, 1996).

**Studies Conducted in the 1970s**

Alencar (1975) conducted a study to investigate the effects of the Purdue Creative Thinking Program on 791 fourth and fifth grade students’ divergent thinking abilities. The program was implemented once a week for one semester period. The results indicated that students who received training obtained significant higher scores on figural and verbal fluency, flexibility, and figural originality than students who were not trained.

Marin (1976) examined the effects of a creative artistic activity program on 37 high school students’ figural creativity. The findings pointed out that the students who participated in the program improved their performance on fluency, flexibility, and originality, as measured by TTCT, when compared to the performance of students who were not trained. Also, Rodrigues (1979) investigated the effects of a creativity training on low and middle class girls and boys’ creativity. The author noticed a significant interaction effect. While poor girls outperformed poor boys on creative measures, middle class boys had better scores on creativity than girls.

**Studies conducted in the 1980s**

Wechsler (1987) examined the effects of a creativity training program on creative thinking abilities and school achievement of gifted and non-gifted students. The training was implemented over 23 sessions. Three to four creativity activities, such as analogies, problem solving, and problem definition, were developed in each session. The results indicated that gifted and non-gifted children who were trained improved their creativity level and academic performance. Interestingly, non-gifted children had much more gains in creativity than gifted students.

Alencar (1986) investigated the effects of a creativity training program on teachers and students’ creative thinking abilities. The sample included 53 teachers and 265 students from grades 3 and 4. Twenty-six teachers participated in 15 training sessions. The results pointed out that teachers who were trained obtained higher scores in figural fluency and flexibility, and verbal originality than teachers from the control group. On the other hand, there were no significant differences between students whose teachers were trained and students whose teachers were not trained. Furthermore, Alencar, Fleith, and Rodrigues (1987) implemented a follow-up study which examined the effects of the creativity training program on teachers’ creative thinking abilities five months later. The findings indicated that treatment group teachers outperformed control group teachers in most of creativity measures, suggesting some evidence of the effectiveness of the program.
Likewise, Alencar, Fleith, Shimabukuro, and Nobre (1987) conducted a study to investigate the effects of a creativity training program on elementary grade students’ creative thinking abilities. Forty-two teachers participated in the study. Twenty-three were trained on creativity techniques and activities and the others constituted the control group. The results indicated no significant differences between students of trained teachers and students of non-trained teachers. Similarly, no differences were observed between those students with respect to interests related to creativity. However, independently of the group, there were significant differences between male and female students on creativity. Girls outperformed boys on most of the creativity measures. In addition, Alencar and Fleith (1987) administered a questionnaire to the teachers who were trained. They were asked to evaluate the creativity training program. Teachers said that the training was an opportunity to have information about creativity misconceptions, to change ideas and experiences with their colleagues about creativity. They also emphasized the short period of training and the necessity of having more practical activities. Moreover, the teachers highlighted the importance of implementing creativity strategies in the classroom, valuing students’ ideas, and enhancing their self-concept.

Guerreiro (1987) examined the influence of a creative techniques and cognitive styles curriculum adaptation training program on school achievement and creativity of elementary school students who failed. The training was implemented with teachers and students from public schools. The findings indicated that students who participated in the creative techniques training improved their school performance and obtained higher scores on creativity tests when compared to students who were not trained. Similarly, teachers who were trained outperformed control group teachers in creativity measures.

Alencar, Araujo, Fleith, and Rodrigues (1988) conducted a study to evaluate the effects of a creativity training program on teachers’ performance in the classroom, as well as on their level of creativity. Forty-one elementary school teachers participated in the study. Seventeen participated in the creativity training program and the others constituted the control group. Four teachers from each group were observed in the classroom before and after the training. It was noticed that the treatment group improved their ability of enhancing students’ participation, imagination, and curiosity, and had a decline in providing feedback to students. On the other hand, teachers from the control group had gains in providing positive feedback, enhancing students’ participation and imagination.

Studies conducted in the 1990s

In a study conducted by Fleith (1990), the effects of a creativity training program on teacher trainees’ creativity was investigated. Those who participated in the training obtained higher scores on creativity measures than trainees who did not participate in the program. In addition, the trainees who were trained perceived themselves as more creative than the others and elaborated activities that enhance students’ creativity.
more often than trainees who did not participate in the training. Also, Alencar and Virgolim (1990) studied the influence of a creativity training program on creative thinking abilities of university students. Twelve students participated in ten sessions of creativity training which included techniques of creative problem solving, sensory images, and interpersonal activities. Students who were trained perceived themselves as more creative than the others who were not trained. They evaluated the program positively and highlighted its importance to their personal and academic life.

Likewise, Alencar (1992) implemented a creativity training program with secondary school students. She investigated the impact of the program on students’ creative thinking abilities. Thirty-six students were trained over 14 weeks. Barriers to creativity were discussed, and creative problem solving techniques were carried out in the program. Treatment group students scored higher on creativity measures and perceived themselves as more creative than control group students. In an interesting study, Neves-Pereira (1996) examined the effects of a creativity training program on the academic performance and creative thinking abilities of 29 learning disabled children. Those children were assisted by psychoeducational service. Fifteen students participated in the training program and 14 were the control group. In relation to the academic performance, both groups had gains along the academic year. However, the treatment group had significant by higher academic performance in the second semester when compared to the first semester. It was also noticed that the treatment group outperformed the control group students with respect to creative thinking abilities. The results indicated a positive effect of the creativity training program helping learning disabled children in their reeducation process.

In a recent study, Fleith (1999) investigated the effects of a creativity training program on creative abilities and self-concept in elementary monolingual (American students) and bilingual (Brazilian immigrants students) classrooms. The creativity training program, *New Directions in Creativity*, slightly improved the creative abilities of students in the treatment group. However, placement in monolingual or bilingual classrooms was not found to affect students’ creative abilities. Moreover, the qualitative analysis suggested that a supportive and encouraging classroom climate in which the creativity training program was implemented was an essential factor in the success of the program and that the creativity training program had a positive impact on the self-concept of less academically able students. The results also indicated that creativity training program did not enhance the self-concept of students in the treatment group.

It is interesting to notice that most studies conducted in the 1980s focused on training teachers’ creativity. Conversely, the research carried out in the 1970 and 1990s centered on enhancing students’ creativity. Furthermore, the studies conducted in the last decade focused on adolescents and young adults’ creativity in contrast to previous studies which were more attentive to children’s creativity.
Conclusions

Reviews of training programs have supported the idea that it is possible to teach people to think creatively (Cohn, 1984; Parnes & Brunelle, 1967; Pyryt, 1997; Rose & Lin, 1984; Torrance, 1972). However, while the results of many studies have suggested a positive impact of creativity programs on creative thinking abilities, no significant changes related to affective variables have been reported. Based on the research findings described earlier, some recommendations of how to successfully implement a creativity training program in the classrooms are: a) A creativity training program should be implemented regularly throughout the academic year, rather than in a shorter period of time, and incorporated into the regular curriculum; b) students should be allowed to share ideas, engage in their favorite activities, express themselves, and become aware of their potential; c) teachers should be responsive to students’ different working styles; d) students should be offered opportunities to work with a wide variety of materials under many different conditions to foster different expression styles; e) warm-up activities should be developed at the beginning of a creativity session to engage the students in the creativity activities; f) debriefing strategies should be conducted at the end of each creativity lesson; g) long-term effects of a creativity training program in the classroom should be investigated (to verify to what extent teachers are still following procedures and recommendations for enhancing students’ creativity after the training program implementation has finished); and h) teachers and administrators working with culturally and linguistically diverse students should be made aware of potential differences among culturally and linguistically diverse students, as well as their socio-emotional characteristics. These differences should be considered when creativity strategies are developed and implemented.

Recent trends in creativity research state that “creativity is a systemic rather than an individual phenomenon” (Csikszentmihalyi, 1996, p. 23). Therefore, creativity cannot be enhanced by isolating individuals from their context. According to Amabile (1995):

- It is trivially obvious that there would be no creativity whatsoever without the person and his or her cognitive abilities, personality dispositions, and other personal resources; neither would there be any creativity whatsoever without a context in which to create – a context of resources, education, exposure, encouragement, stimulation, and appreciation. (p. 425)

A nourishing classroom climate seems to play an important role in the process of developing students’ creativity. In this regard, it is important to consider students’ cognitive, social, and emotional characteristics, as well as aspects of the school environment.
References


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AMBIGUITY TOLERANCE AND CREATIVITY IN ADOLESCENTS

Ambiguity tolerance refers to the way people perceive, interpret and react to ambiguous situations, i.e. situations containing a great deal of novelty, complexity, contradiction and/or lack of structure. People who are intolerant of ambiguity perceive and interpret ambiguous events and ideas as a source of psychological discomfort or threat. They tend to defend themselves, to retreat and avoid encounters with ambiguity. Ambiguity tolerant individuals would rather attempt to understand or cope, withstanding the uncertainty. They can tolerate the discomfort of an ambiguous situation long enough to find out a more appropriate and adequate solution.

A large scale research project examined the development of ambiguity tolerance in adolescents and young adults (Stoycheva, 1998). In the first study a questionnaire for measuring ambiguity tolerance (MAT-50 of Robert Norton), adapted for use with Bulgarian population, was administered to 392 high school children, 472 university students, and 116 18 - 25 year old working adolescents. The second study contrasted two groups of high-school students, identified as low (n = 51) and high (n = 55) ambiguity tolerant on the basis of their test scores in the first study. They were compared with respect to their intelligence, creative thinking abilities, temperament, anxiety, need for achievement and self-concept. The third study involved 303 high school students, their teachers (n = 52) and parents (n= 236). An original psychological instrument has been designed to assess the attitudes of adolescents and adults towards different ambiguity tolerant and ambiguity intolerant behaviors. The scale was used to measure the importance adolescents assign to these behaviors and to evaluate adults' encouragement of ambiguity tolerance - intolerance in adolescents (Stoycheva, 1998).

The sample of a fourth study consisted of 31 boys and 75 girls, aged 14 to 19. They were enrolled in grades 9th to 12th of a high school specialized in applied arts. Subjects filled in questionnaires for measuring ambiguity tolerance, creative motivation and need for achievement (Stoycheva, 2000).

Ambiguity tolerance in adolescents

By the age of 15, ambiguity tolerance is already a rather stable personality characteristic and does not change with the age in the next ten years of life. Boys and girls don’t differ in their reactions to novel, complex, contradictory or incongruent information. Ambiguity tolerance as a personality disposition goes in line with the adoption of corresponding values and beliefs. While Bulgarian adolescents value tolerance of ambiguity more than intolerance, certainty seeking behavior is appreciated as well. Although preferring situations with clear chances for success, they accept to test themselves by taking risks, experimenting in different situations and participating in new endeavors. Unexpected situations and surprises are enjoyable,
but it is also important to be on the safe side and to build up a definite opinion about things in life.

Adolescents think that for their parents and teachers intolerance of ambiguity is more important than tolerance is. Students also perceive adults, in particular teachers, as more intolerant of ambiguity than they are themselves. Evaluative standards at home seem influence the tolerance of ambiguity in adolescents: students’ ambiguity tolerance, both as a value and as a personality disposition, is related to their parents’ encouragement of ambiguity tolerant - intolerant behaviors. This is not the case however when teachers’ reward strategies are concerned: the value that adolescents assign to ambiguity tolerance - intolerance is not related to the way their teachers evaluate it. On the other side, teachers’ encouragement for tolerance of ambiguity is the highest one reported in our study.

The UN Convention on the Rights of the Child states that education should be directed to full and harmonious development of child's personality and abilities, to preparation of the child for an individual and responsible life in a free society. The secondary school, more than any other educational setting, may contribute to the realization of these goals and help children grow in this complex and rapidly changing world. Enhancing tolerance of ambiguity through education is but a way in this direction. Our findings suggest that the potential teachers have as promoters of adolescent development could be undermined by the way the role of the teacher is perceived or introduced to students. Today’s Bulgarian school owes both teachers and students a more cooperative, integrated and supportive learning environment.

**Ambiguity tolerance and adolescent personality**

In our study the high ambiguity tolerance group scored higher on intelligence and creativity, lower on anxiety, and showed a more positive self-image than the low ambiguity tolerance group. Temperament was not a significantly differentiating factor among high and low ambiguity tolerance (Stoycheva, 1998). *Ambiguity tolerant adolescents* appear more self-confident. It seems easier for them to undergo the challenge of an uncertain social situation and to achieve a satisfactory level of adaptation to the ambiguous context of the interpersonal relationships. Lower anxiety further contribute to their positive adjustment to the world and strengthen their feelings of mastery and well-functioning: subjects who were low in anxiety and high in ambiguity tolerance had the best of all self-evaluation.

*Ambiguity intolerant adolescents*, being more anxious and insecure, experience more difficulties in their psychological self-regulation. Low ambiguity tolerance and low anxiety subjects showed poorest self-evaluation with respect to idealism and humanistic orientation. Though they don’t get easily disturbed in their self-confidence, these adolescents lack the capacity to tolerate the uncertainty and the discomfort of an
ambiguous situation what seems to prevent them from embracing the more vague universal and abstract values (Stoycheva & Silguidjian, 2001).

Uncertainty is inherent to almost any one situation we are confronted with, and dealing with uncertainty is an important individual resource. Ambiguity tolerance allows the adolescent to better handle cognitive and emotional complexity, facilitate his/her personality growth and social integration.

**Ambiguity tolerance and creativity**

Theories of creativity emphasize the importance of ambiguity tolerance for creativity. Stoycheva and Lubart (2001), in particular, have demonstrated the importance of ambiguity tolerance for decision making in creativity. Our empirical findings suggest it could also be that tolerance of ambiguity builds upon individual’s creative capacities. Thus ambiguity tolerance and creativity are interrelated and mutually enhance themselves.

*Creative thinking skills and creative motivation may contribute to the tolerance of ambiguity in adolescents.* Ambiguity tolerant adolescents outperformed those who were intolerant of ambiguity on both verbal and non-verbal creativity tests (Stoycheva, 1998). Ambiguity tolerant students were able to generate more original and unusual ideas and solutions to open-ended verbal tasks. They also provided more inventive, imaginative and abstract titles to their pictures - titles that go beyond what can be seen. Further, ambiguity tolerance and creative motivation were positively correlated: the development of an inquiring, persistent and courageous creative attitude is related to the capacity to resist stereotypical reactions or premature solutions in complex, unusual or novel situations (Stoycheva, 2000).

Motivation is an important element of individual’s creativity. Motivation regulates the investment of time and efforts in problem solving, puts into action cognitive and personality resources, contributes to the development of domain-relevant creative skills and supports life-long creative performance. My research allows to specify the *motivational role of ambiguity tolerance in creativity.* It has been found that 1) creative motivation and need for achievement are positively correlated; 2) ambiguity tolerance correlates positively with creative motivation, and 3) ambiguity tolerance doesn’t correlate with need for achievement ((Stoycheva, 1998; 2000). Tolerance of ambiguity may empower the intrinsically motivated exploration of novel, unusual or complex stimuli and situations. In this way ambiguity tolerance contributes to the creative process. However, ambiguity tolerance is not related to the search for high standards of achievement in the results of the creative work.

*Ambiguity tolerance may also impact creativity through its relation to creative vocations.* We have found that young adults studying arts outscored students from the medical and technical universities (Stoycheva, 1998). What is the cause and where is the effect is difficult to say. Do high ambiguity tolerant students prefer this field of study or the educational setting channels students’ personality in that particular way?
Ambiguity tolerance seems related to a cluster of traits and abilities that are desirable in creative professions: some of these are openness to new ideas, exploratory orientation, cognitive complexity, capacity for abstraction, and imagination. On the other hand, personalized and flexible learning process that uses ambiguity as a creative challenge may favor ambiguity tolerance more than the group adherence to structured anonymous knowledge in the traditional educational context.

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The Torrance Kids at Mid-Life

The annual E. Paul Torrance Lecture at the University of Georgia in November 2001 was the launch site of my book, The Torrance Kids at Mid-Life: Selected Case Studies of Creative Behavior. The book launch was the culmination of five years of research and writing based on the longitudinal study of creativity initiated by E. Paul Torrance in 1958. It is my intention in this article to provide some background to Paul Torrance's forty-year longitudinal study of creativity, and highlight the findings and themes that emerged from my study with selected individuals from the original sample.

Background

In 1958 Paul Torrance became Director of the Bureau of Educational Research in the College of Education at the University of Minnesota. The climate was right for the emergence of the study of creativity. In the post-Sputnik era, America focused its efforts on maximizing the talents and potential of its citizens, especially those in schools. Paul's initial mandate was to initiate a 25-year pioneering research program on giftedness in children. He had wanted to study various kinds of giftedness, much like the work on multiple intelligences by Howard Gardner of Harvard University today. However, he started with creativity and never left it!

Paul Torrance's ideas about creativity had emerged from his survival research during the early 1950s when he was a psychologist with the USAF. In the survival schools, the goal was to train men to behave effectively in emergencies and extreme conditions. He held that whenever one is faced with a problem for which he has no practical or learned solution, some degree of creativity is required.

From 1958 to 1965 Dr. Torrance and his graduate students developed a battery of tests that measured important aspects of creativity. These tests became the components of his creativity tests, now called The Torrance Tests of Creative Thinking – TTCT (1974, 1993). It has been translated into approximately 35 languages.

The 391 student in grades one to six tested with the TTCT at various times during the 1958-1964 period were enrolled in two elementary schools in Minneapolis. Both schools were considered to be "creative places" for children to grow and were very progressive at the time. Many of the teachers in those two schools were working on advanced degrees and wanting to try out progressive teaching methods.
At this point in time, Paul Torrance envisaged a longitudinal study to establish the predictive validity of his creativity tests and to determine other factors that may promote or sustain creative achievements in adulthood. Several questions stirred in the mind of Paul Torrance:

- Does high creative potential as measured by the TTCT as a child predict high creative achievement of that same individual as an adult?
- What influences do mentors have on creative achievement?
- How will the effect of time relate to the prediction of creative achievement?
- What struggles will the children experience to maintain their creativity?
- What is the influence of early life experiences on creative achievements?
- Do elementary teachers influence the creative achievements of their students?

How children see themselves and their environment over time is "the stuff" of the longitudinal study. Some answers to these questions resulted from the 40-year study and from the analysis of case studies.

**Procedures**

The individuals for case study were selected from the original sample of 391 students and from those who responded to the 1998 follow-up questionnaire (101 students). Efforts were made to randomly select individuals who lived in the same geographical region and those who "had a spark of something interesting" and were distinguished in some way. An equal number of females and males were chosen, for a total of 18 persons. Interviews were arranged with the 18 individuals and the interview questions covered five main areas:

- early influences on creativity
- career paths and transitions
- creative accomplishments
- questions related to the "Manifesto for Children"
- general questions on creativity.
The interviews were all analyzed for commonalities in the above five categories, and themes were derived. The current occupations of the case studies are listed in Table 1.

<table>
<thead>
<tr>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Librarian (f = 2)</td>
<td>Lawyer (f = 2)</td>
</tr>
<tr>
<td>Actress/Writer/Singer</td>
<td>Medical Researcher</td>
</tr>
<tr>
<td>Lawyer</td>
<td>Professional Actor/Teacher</td>
</tr>
<tr>
<td>Cable-splicer/Telecommunications</td>
<td>Neurologist/Professor</td>
</tr>
<tr>
<td>Purchaser – Printing</td>
<td>Architect/Builder</td>
</tr>
<tr>
<td>Psychologist</td>
<td>Neuropsychologist</td>
</tr>
<tr>
<td>Homemaker</td>
<td>C.E.O./Medical Equipment</td>
</tr>
<tr>
<td>Certified Public Accountant</td>
<td>Foreign Service Officer</td>
</tr>
</tbody>
</table>

Of the 18 individuals identified for in-depth follow-up, ten were selected to illustrate the predictive validity of the *Torrance Tests of Creative Thinking* and to validate the "Manifesto for Children". The individual lives present very different careers that have been shaped by a variety of influences. Indeed, Torrance's battery of tests, the *Torrance Tests of Creative Thinking*, administered to elementary school children during the 1958-1964 period, predicted their creative achievement as adults in 1998. However, Dr. Torrance found at the 22-year follow-up in 1980 that there were other factors that supported and sustained the creative behavior in his subjects. These important factors are illustrated in Figure 1 as principles in the "Manifesto for Children" (Torrance, Henderson and Presbury, 1983).

**MANIFESTO FOR CHILDREN**

1. Don't be afraid to fall in love with something and pursue it with intensity.
2. Know, understand, take pride in, practice, develop, exploit, & enjoy your greatest strength
3. Learn to free yourself from the expectations of others and to walk away from the games they impose on you. Free yourself to play your own game.
4. Find a great teacher or mentor who will help you.
5. Don't waste energy trying to be well rounded.
6. Do what you love and can do well.
7. Learn the skills of interdependence.

Each of the ten in-depth case studies deal with the school years, first follow-up (1980), mid-career follow-up (1998), interview and a summary. Table 2 below displays the case studies, a significant quote and specific validation of the "Manifesto for Children".
<table>
<thead>
<tr>
<th>Individual</th>
<th>Significant Quote</th>
<th>Validation of &quot;Manifesto for Children&quot;</th>
</tr>
</thead>
</table>
| H.B. Actress, singer, artist | "My most creative achievement is myself."                                          | - Don't waste energy trying to be well rounded.  
- Learned the skills of interdependence and is sharing her infinite creativity. |
| L.M. Neurosurgeon   | "I had a conflict within myself because I was not able to meet the expectations of my father." | - Doing what he loves and can do well.  
- Learned to free himself from the expectations of others and "sings in his own key". |
| G.D. Lawyer         | "The most important relationship in my life has been all the support from my parents who cared so much about me and wanted only the best for me." | - Knows, understands, takes pride in, practices, develops her greatest strengths.                         |
| S.V Entrepreneur    | "You might be someone different from who the heck your folks are or want you to be." | - Freed himself to play his own game.                                                                 |
| G.R. Lawyer         | "I am not necessarily in love with my work but have moments of affection."           | - Found a great teacher/mentor who has helped him.                                                      |
| B.C. Medical Researcher | "My job is to ask questions and design studies to answer medical problems."        | - Fell in love with something and pursues it with intensity.                                             |
| K.F. Actor, Teacher | "Don't ever lose your creativity!" Whispered to David by his Grade 4 teacher, Rod Myers. | - Fell in love with something and pursues it with intensity.  
- Found a mentor who helped him.                                                     |
| P.R. Architect, Contractor | "I like to blaze new trails. I'm simply a broad-based problem solver."       | - Fell in love with something and pursued it with intensity.                                              |
| R.P. Psychologist    | "I want to figure out how to balance a family, marriage and profession."           | - Doing what she loves and can do well.                                                                 |
| M.O. Political Advisor, Author | "Too creative!" - Jim's elementary school teacher.   | - Found a teacher/mentor who helped him.                                                                |
Some General Findings

An important aspect of the book *Torrance Kids at Mid-Life* is the summary of the case studies and implications for the development and support for creativity in the home, school and community. Some general selected findings are as follows:

- Fifty percent of the case studies recognized their creativity before entering school or during the elementary years. The home environment and community provided activities that enabled creativity to develop.

- More individuals reported influences that constrain creativity than guide it. Maintaining one's creativity was a struggle.

- Creative public achievements of females diminished over time.

- Seventy-five percent of the case studies had "fallen in love" with their jobs/hobbies.

- The majority of individuals felt that their creativity was affected by the "expectations of others".

- Most individuals indicated that having a mentor was helpful to the advancement of their career.

- The majority of individuals demonstrated the skills of interdependence and gladly shared them with others.

- A large number of suggestions were offered by the case studies to sustain/encourage/ enhance creativity from the perspective of parents, teachers and mentors.

The findings of the study are summarized in the book into five areas entitled "Key Messages for Creative Living". They are:

1. Early influences on creativity
2. Career paths and transitions
3. Creative accomplishments
4. Validating the "Manifesto for Children"
5. Reflections on creativity.

Future

Cohen (2000) has identified four developmental phases of creativity. They are as follows:

1. **Re-evaluation Phase (Age 50+)** Our creative expression is intensified by a sense of crisis or quest. Most adults at this age are engaged in a quest for ways to make their lives and work gratifying.

2. **Liberation Phase (Age 60-70)** Creative endeavors are charged with added energy of a new degree of personal freedom that comes psychologically from within us and situationally from retirement.

3. **Summing-Up Phase (Age 70+)** Adults at this age feel a need to find a larger meaning for their lives through a process of looking back, summing up and giving back.
4. **Encore Phase (Age 80+)** This phase reflects the energy of advancing age: to affirm life, to take care of unfinished business and to celebrate one's place in the family, community and one's spiritual realm.

It is my plan to continue to follow the individuals in Torrance's longitudinal study as they enter the various phases of creativity. The "Liberation Phase" is next! We have much to learn from the lives of individuals who struggle to manifest and maintain their creativity. I would like to close with a significant quote about the importance of creativity that E. Paul Torrance wrote forty-three years ago:

"In almost every field of human achievement, creativity is usually the distinguishing characteristic of the truly eminent. The possession of high intelligence, special talent and high technical skills is not enough to produce outstanding achievement." (1959)

**References**


Canada

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Canada Creativity: Tempus Fugit

My previous article, 'Canada Creativity: Backward, Forward, or Standing Still', indicated a number of established programmes as well as some future plans for implementing creativity, innovation, and thinking-skill developments. This article follows up what has transpired, changed, and possibly disappeared in those programmes. Questions, such as what new plans have been created or what new ideas are emerging and how has the New York City tragedy affected planned programmes given the changes caused by the unexpected event on 11 September 2001, will be answered along with comments from various Canadian authorities.

At an Edmonton Symposium, Dr. Tom Brzutowski wrote "Play is the learning by making risky attempts in a set of circumstances where failure is likely, but the consequences are nil". In addition, Dr. Peter Hackett at the same symposium commented "Our schools are taking far too many bright young children, avid learners and naturally creative, and making them dull-eyed, alienated, bullied or bullying, and boring...So, much of the time, does another of our cherished institutions: peer review. And for much the same reason. Chopping off the right-hand part of creativity's bell curve-those rarefied regions of excellence-is seen as the price to pay for the left-hand, underachieving part." There are comments that governments, schools, and granting councils must recognise the importance of a creatively risk-free environment and the vital role which such an environment plays in fostering arenas and contexts wherein learning, creativity, and innovation may flourish. Small research grants need to be allocated to those projects that are high risk, likely to fail, but are low risk in terms of money and are potentially high gain in terms of creativity and innovation.

Universities are facing significant challenges caused by demands for increasing enrolment. In Ontario, the pending elimination of the fifth year of secondary schools, will result in the need to handle almost double the number of students seeking entry and yet planning and necessary funding to allow the success of these changes has been lacking. Reallocation of funds to other priorities resulting from the September tragedy has put additional strain within the educational systems. Rising above these issues, the University of Waterloo has continued to move forward with new initiatives and ideas such as the programme of integrating business-oriented courses into many programmes, thus allowing students in mathematics, engineering, and computing to have the option of specialising in business. The courses show the students how to prepare a business plan, how to attract venture capital and how to make presentations. The university's approach to education and its successful co-op program suggest it may help foster the entrepreneurial spirit. This university, from its early days, was unusual because it was founded by business people. "They don't do things in the conventional way", says University of Waterloo Economics Professor Larry Smith.

A pre-incubation initiative, Innovate Inc., has been set up on campus at University of Waterloo Carl Pollock Hall, one of the engineering buildings. Students, staff, faculty and alumni can bring their business ideas to be considered for transformation into
possible new enterprises. Innovate Inc. will help entrepreneurs develop their concept, create a business plan, and sometimes develop prototypes. The university has a policy on intellectual property right (policy 73) that gives creators of intellectual property, such as inventions, ownership of their creations, subject to only a few exceptions.

Shad International, operates a special programme for senior high school students from across the country as chosen by officials of Shad International and their corporate partners for high academic achievement, creativity, initiative, and interpersonal and communication skills. Universities and corporate partners make it possible for the students to spend a month working in each facility. The concept is so successful that the Federal Government has given Shad International a six million dollar grant, making it one of the top innovative companies in the area. Dr. Jack Pal, President of Shad International, has launched a special teacher professional development project directed by John Wilson, one that will start in 2002. As John Wilson says, “In it’s continuing mission to develop innovative leaders, Shad International has created the Shad Institute for Teachers (SIFT), a national teacher network and professional development program. Research on teacher effectiveness and student learning continually shows a high positive correlation between knowledgeable, creative teachers and student learning outcomes. SIFT’s objective is to equip teachers to prepare young Canadians to embrace the knowledge-based economy. The goal is to develop a cadre of teachers who will work with colleagues and students in sharing ICT knowledge and skills in order to better prepare students for the rapidly growing and changing knowledge-economy. High potential corporate representatives are committed to participate”. The Ontario Ministry of Energy Science and Technology Minister is funding this project for a three-year period.

Moreover, a special programme is being planned by Dr. Brian Hunter which partners Shad International with Queen's University of Kingston Ontario, to be held in the United Kingdom at Herstmonceux Castle which is owned by the university. This programme will host a Shad International experience in Europe, and indicates future progress for Shad International into other countries. Success of innovative solutions comes from those projects which include partnerships with government, industry, education, and other organisations working towards common objectives that benefit all participants.

Renée St-Jacques, Director General of the Micro-Economic Policy Analysis for the Ministry of Industry, has stated that the Canadian Federal Government recognises that promoting innovation is crucial to improving Canada’s overall standard of living, and has therefore taken important steps to stimulate innovation and technology development through the Canada Foundation for Innovation and Technology Partnerships Canada (TPC). The Conference Board of Canada's Third Annual Innovation Report pointed out that Canada's record on innovation lags behind that of many other major industrialised countries. The private sector does not appear as a leader on many indicators of commitment to innovation, including innovation culture, training and development expenditure and investment in research and development. Peter Harder, of the Ministry of Industry, was quoted saying similar comments in an
article in February 2001. To address these issues, the Canadian Government established the 21st Century Canada Research Chairs program to attract the world's best research minds to Canada. In addition, the Government will at least double the current federal investment in research and development by 2010. To add weight to this commitment, the Canadian Minister of Finance, the Honourable Paul Martin stated "Innovation doesn't just happen. It requires investment. It requires basic research. It requires infrastructure. It requires imagination and creative management. It requires a sea of change in much of our approach to the economy. Today, the strength of a nation is measured not by the weapons it wields, but by the patents it produces; not by the territory it controls, but by the ideas it advances; not only by the wealth of its resources, but by the resourcefulness of its people."

Further support at the most senior levels of Canadian Government in moving towards a Culture of Innovation is shown when Her Excellency The Right Honourable Adrienne Clarkson, Governor General of Canada, states," In the areas where creativity scientific and artistic collaborate, there are myriad examples of a synergy which leads to invention and benefit. And benefit, I may add as a footnote, is only a reasonable, practical out-come in a society of fruitful collaboration……For discovery is really what creativity in both the arts and sciences is all about."

Dr. Arthur Carty, President of the National Research Council (NRC) of Canada in his message for the NRC annual 2000-2001 report, outlined the major advances that had been achieved at NRC. He wrote that 2001 was the final year of a five-year strategy targeted to put NRC at the centre of the nation's Research and Development and innovation agendas, and to help Canada develop an innovative knowledge-based economy and a higher quality of life for all Canadians. Over the past 18 months, NRC has undertaken the most extensive consultations in its history, engaging hundreds of stakeholders inside NRC, as well as from government, industry, academia and key interest groups. This new strategy sharpens the NRC focus on the needs and opportunities of Canada and all Canadians. It builds on the exceptional dedication, creativity and contributions of its people. He goes on to say that, in essence, they do what needs to be done: putting science, technology, and innovation to work for Canada.

A major steel company, Dofasco, in conjunction with a local college, has utilised programmes on creative problem-solving. Dofasco, one of Canada's leading steel manufacturers, was experiencing serious reduction in sales. John Mayberry became president of the organisation with the task of solving a multitude of problems. He organised radical changes, got people working together and communicating and stated that they needed to do more than just talk, that they had to make changes. Three weeks after the September tragedy in New York, orders for steel dropped a further 35% yet the company was able to overcome the obstacles without laying off any full-time employees. Dofasco is unusual because it is a non-union company and, as such, the questions being asked were not union versus non-union, rather what makes for the best working relationship. Mayberry says “the workers ask a lot of questions about how we spend our money. They aren’t shy about challenging decisions because the
employees have a direct stake in the outcomes. “The employees have kept the company out of deep doo-do this year…they deserve a celebration” said Mr. Mayberry. Clearly, Dofasco is an organisation that has the environment whereby creative ideas and employee input is working well.

Joe Keating, President of Keating & Associates, stated that many people in industry and academia do not accept the concept that thinking is a skill that can be developed. Often, suggestion of innovation or a change in what they are doing may be frowned upon because it will upset the boat. Truly innovative companies try to find a strategy which doesn’t stifle the creativity and ideas from their employees.

Paul Boulanger, President of Supplierpipeline Inc, has commented about the innovative projects being implemented in his medium-sized organization. Boulanger wants to partner his company with an organisation like Shad International where creativity and innovation can be nurtured in both the educational and industrial experiences. As his organisation is expanding, Mr. Boulanger sees the need for future employees to have experience and knowledge of creativity and innovation, as well as meaningful application of those ideas to a completed product or process. His organisation has worked in partnership with government innovative programmes and now looks to this new direction for future growth and expansion. In the past it was believed that only large organisations were financially capable to handle the obligations for innovation. Now, there are many small and medium corporations looking toward implementing thinking-skill programmes.

Stan Shantz, co-founder of Global Benchmarking Organisation (GBO1), is developing Key Performance Indicators (KPIs) to measure creativity of organisations. This information will help determine how to improve creativity within all areas of a corporation, and can be benchmarked to sister facilities and companies both within and outside its own sector. Global Benchmarking Organisation is an example of future planning for a newly formed corporation. Realising their focus is for a global market, the company is incorporating creativity, problem solving, and innovation as key elements in their structure as well as their products and services being offered to their clients. Other Canadian industries might want to look at this organisation as a model for structure and problem solving.

Research in Motion (RIM), one of Canada's unique hi-tech industries, continues to be successful in the face of adversity. The corporation is involved in many areas of community, education, international markets, research, arts, and continues to encourage new ideas while expanding their facilities and human resources. The Perimeter Institute for Theoretical Physics, founded in 2000 by Lazaridis with personal funds, along with additional funding from Balsillie and Fregin, has already begun operation. As Lazaridis stated, "New discoveries will allow us to make further innovations. And making things work faster and more efficiently always bears fruit.

Professional organisations of Canada will need to determine how they might be able to assist their members by offering professional development that centres on creative
thinking, innovation, and other thinking-skill programmes. A successful example can be seen in the United Kingdom, where the Engineering Council, a former national professional organisation, has changed to become the Engineering Technology Board. The focus of the new organisation is to bring under one roof all organisations that participate in engineering and technology, to involve more senior corporate industrial people in the new organisation, and to attract more people who are creative. As such there are ongoing conferences dealing with various issues that include innovation and creativity. The overall objective of the change is to foster maximum utilisation of the human resources to contribute to the wealth of the nation. Canadian professional organisations might be advised to explore and implement similar ideas.

It is clear that in Canada, there are many successful ventures being accomplished in the area of innovation, creativity, and problem solving in industry, education, and government. This is mostly applicable for those areas in hi-tech, scientific, research and similar high profile areas of implementation. These programmes and initiatives are commendable and need to continue. It is necessary to maintain support for the programmes. However, there is a vast area of human resources that need to be more fully utilized. Creativity, innovation, and other aspects of thinking skills are not the private domain of scientists, researchers, engineers, or senior executives, albeit one needs to start in the high profile areas to create the overall environment of encouragement. Technicians, technologists, entrepreneurs of small and medium sized businesses, apprentices, office and line workers, represent a vast human resource yet to be effectively and fully utilised. Those who do application work also have a capacity to resolve problems and are equally capable in developing their own creative ideas. People working in technology possess both theory as well as application knowledge and thus have the ability to blend both areas when innovation is needed. Canada needs to access this large resource.

Previously, I have stated there needs to be a congress on thinking skills, creativity, innovation and how best to access the resources of Canadians. Furthermore, I suggested we need to develop ways to quickly harness the yet untapped abilities of Canadians and to focus the contributions to the wealth of the nation. Wealth in terms of money is only one aspect, for there is also wealth in our quality of life, peace of mind, the interaction within our cultural environment, and all those things that make Canada a country where one can be freely creative.

The article, ‘Canada Creativity: Backward, Forward, or Standing Still,’ outlined examples of what was happening in Canada in the area of creativity. Canada is not backward nor will it be. Canada continues to move ahead with creative and innovative ideas. Yet, we still need to do more, as other nations are continuing to move ahead with their own initiatives. Canada is standing still when it comes to effectively and efficiently accessing all of the human resources that are available and there is still a sense of fragmentation of creative and innovative programmes. However, there has been an increase in discussions on the importance of creative thinking and innovation.
by a number of federal and provincial government ministries, in some cases with successful implementation of projects.

Canadians are some of the most innovative and creative people in the world. You will find Canadians using their creative abilities to solve national as well as world issue problems in many other countries. Canada possesses a unique multi-cultural environment that is respected by many other nations. Canada needs to create a focus that will continually expand the thinking abilities of Canadians. It will be of paramount importance that guidance, support and encouragement be forthcoming from senior government and corporate officials. Canada now needs to focus on action plans that will allow more Canadians to contribute their creativity and problem-solving abilities to the wealth of Canada.

Suggested Readings


Jalsevac, Phillip. ‘Shad Valley gets $6-Million Grant.’ Kitchener-Waterloo Record (13 December 2001), B7.


Suggested Websites

Canadian Technology Human Resources Board/Bureau canadien des ressources humaines en technologie: www.cthrb.ca
National Research Council, Ottawa Canada: www.NRC.ca
Queen’s University, Kingston Ontario Canada: www.queensu.ca
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ON CREATIVE PHILOSOPHY

The Chinese character "cliuang (create)", as cited in the chapter Xianwen of the book Lunyu, "Beizhan (name of a person) chuati these.", and in the second volume of Biographies of Hanshu (the history of the Ban dynasty), chuan in "Protocols are then chuan ", means "make out first". These are perhaps the word "create" first employed in human history. In the history of creation in Chinese, we can find that in remote antiquity, Youcaoshi built nest (living place on the tree); Suirenshi ignited wood by means of drilling wood; Shennongshi discovered medicine herbs and engaged in agriculture; and Fuxishi logged events with knots on ropes. In mediaeval ages, there are four great inventions in China, namely: compass, gunpowder, papermaking and printing. Numerous discoveries and inventions in modern times have brought to our country and human society a brilliant civilization of creation. Since the year 300 B. C., in foreign countries, there has also emerged creative miracles in large numbers of works such as: P 's, Descartes', Leibnitz's, L's, Bergersson's, B's, C's,, Dewey's. All these made outstanding contributions to the development and enrichment of creative studies.

Since the beginning of the 20" century, the historical materialism and dialectical materialism of Marx and Engels, the point of view of On Contradiction and On Practice by Mao Zedong, the philosophical point of view of social reform in socialism and opening of market economy, technique of creation of Osborn established also the basis of dialectical materialism for study and development of the theory of creative studies. The theoretical thinking is systemized theoretical cognition. Engels pointed out that: "A nationality, which is to stand on the summit of sciences should never be lack of theoretical thinking for even a minute." He stated also: "If theoretical natural scientists are willing to study carefully dialectical philosophy from the forms existing historically, then the process may be shortened considerably". Thus, we can recognize the importance of the theory and studies of creative philosophy.

The creative philosophy of Marx consists mainly in revelation of a series of laws of development in nature and in the society as well as the law of creative thinking and methods, creative education and environmental factors, etc.

Since 1979, creative philosophy has been the subject of theoretical study which we have paid much attention. Philosophy is the summary and conclusion of scientific knowledge in the nature, in the society and in thinking; is the theorized and systemized world outlook; is the methodology for observing, analyzing, and handling various problems; and a kind of study turning people wiser. So it can also be interpreted as "wisdom" and is a discipline studying basic laws of human creative activities. Therefore, we refer to the general laws of the subject and the created objects of human beings in creative activities and the related part of philosophy as creative philosophy. It consists of studies of creative philosophy itself and also the method of studying creative science.
Newly emerging things never seen before are continuously created, and, at the same time, old things are continuously sifted out and gradually eliminated during constant emergence of new born things. This is precisely the objective law of evolution of things. Any reformation, regardless of motion of celestial bodies or armed revolution, possesses a certain degree of creativity. In these human creative activities, these are overlapping and combining with each other in many creative thinking and creative methods, in the process of solving problems creatively, in creative study of natural sciences and social sciences, thus make the nature and contents of philosophy possessing more generality.

Comrade Mao Zedong concluded and summarized in high succinctness, "The human beings are always developing and the nature- is also always developing; they will never rest on a certain level. So, the human beings are to constantly summarize their experiences, to will discoveries, to win inventions, to win creations and to win progress. These four "win’s" reflect human creative thinking, method, and actions, as well as the regularity and philosophical nature, of the process leaping from the realm of necessity to the realm of freedom and acquisition of results, enriching the philosophy of Marxism-Leninism.

Speaking in more detail, then, which contents does creative philosophy include?

1. Creative philosophy, in human creative activities, cannot do without relationships between human beings and the nature, men and society, thinking and existence, cognition and practice, spirit and matters, etc.; sanity and peculiarity of people in aspects of psychology, spirit, conscience, will, inspiration, and virtue; induction, hypotheses, deduction, mutation, syntheses, analyses, dependence, commutation, etc. These are all based on studies and practice of creative thinking, education, environment, and techniques. Creative philosophy instructs people to acquire success in creative activities.

2. Philosophy of creative society present to us such a truth that all the creators of historical and social wealth are the people, "Creation is an idea very hard to eliminate from people's conscience." "Labor created human beings themselves." So, the masses are the creator of material wealth, the creator of spiritual creator, and also the decisive force of social transforms. Value of a man consists also in his creativity. Creativity and potential creative capability of human beings as well as the value after their development, including mode and variables, legal system and democracy, rights and obligations, are to be fully affirmed.

3. Philosophy of creative spirit encourages people to establish the creative spirit, conquer jealousy, mock, satire and strike. Marx and Lenin, in their works "The Capital", "A Great Creation", etc., pointed out that people's creative spirit comprises: critical spirit, initiative spirit, spirit of originality, dread-naught spirit, spirit of selflessness, and conquering various influences which impede development of the creative force with a great creative spirit. "Here, any cowardice is useless. March
along our own way not regarding anything others will speak." Thus, fatalism is rejected. Anyone must face the problems of world outlook. In any practical activity, especially in creative activities, people may encounter state not conscious, not objective, not systematic, not dialectical, not- stable," self-contradictory exposition mat occur; while philosophical theory can promote theorization, systemization, of people's thinking in their creative activities, renewal of spirit and scientization, On the materialistic basis of the matter being primary and the spirit being secondary, creation is to be implemented in respective practical works.

4. Philosophy of creative science requires people to observe the world with a scientific view of history and to reform the world with a creative scientific method. It studies problems of creativity of mutual combination, attraction and application in natural sciences and social sciences. It studies creatively science itself and its law of evaluation point of view related to which his been explain fully and deeply in Engels' Dialectic of Nature. Methodological characteristics of studies with creativity of scientific theories and scientific techniques may be summarized into the following three points. The first one is the integrity resenting itself in interconnection and infiltration among various disciplines. From which any marginal, cross-sectional and interlacing disciplines emerge. The second one, is the abstractness not perceptible nor verifiable by experience but only possible to be handled and deduced through high-precision, high- technical means. And, the third one is the explosiveness indicated by continually established new disciplines, constantly shortening interval between mutations and increasing quantity of information.

5. Philosophy of creative education, through education, makes people able to engage in practice creatively, to recognize reform, development and future and to oppose easy belief, arbitrariness, dogmatism and bureaucracy in the contest with the help of creative thinking and methods. Another function of creative philosophy is to establish the world outlook and the value outlook through creative value education. In creative activities, people obtain through creative basic theories and methods, the whole series of creative value, which will be further developed in affirmative and negative process of dialectical thinking. Thus, the creative thinking, skill and technique become the object of educational philosophy.

6. Philosophy of creative process originated from Aristotle and Descartes and is formed on the basis of epistemology in creative activities. The creativity and power of creation of people are embodied and discovered in the process of creation, their sustained creative activities must necessarily induce emergency of numerous fresh things. It has natural sciences and social culture as the background, and combines with aesthetics and ethics. Various world outlooks will present themselves in the process of creation. "Universal flow theory" suggested by modern science shows that the phenomenon of natural essence is eternal flow possessing an eternal feature and that it is the creative power of human beings to perfect it. Thus, Marxism philosophy, in many respects, is the creative knowledge system and the science of creativity summarized by people in practice, especially in creative -activities. The Marxism creative philosophy, is just the science of general laws -about the outside world and
the movement in which people obtain results of creation by means of creative thinking in practical activities.

7. Philosophy of creative environment is also one of the contents of creative philosophy. Whether people's creative power can be fully developed and displayed is related "both to the subject and the environment. In creative activities, there is a very important dialectical relation between people and the environment. Marx suggested points of view of misery of environment, favorable chance if environment, uniformity of change in environment and human activities, etc. He wrote, "Thus, this point of view (materialist conception of history) shows that people creates the environment and, at the same time, the environment creates people...6 Youths and teenagers are related to the environment of families, schools and the society, the potential of creative activities will be related to social systems, social functions (various relationships of cultural and materials qualities), social process, interpersonal relationships and public relationships. Right, reasonable, and energetic creative environment will necessarily provide fresher and stronger energies to development of creative power of people. Activities of creative practice in past 15 years his shown that in most of our enterprises and institutes good creative environments do exist. At the same time, to obtain results in people's creative activities can only be achieved the close combination between people and natural environments.

8. The philosophy of creative morality studies the philosophy of problems of morality and ethics. The philosophy of creative morality is of vital importance in creative activities. It requires that people not only should possess the concept of morality, ethic thinking and can differentiate thought and acts between virtue and evil, proper and improper, culture and anti-culture, moral behaviors and justice, etc., but also establish the outlook of life of benefiting the mankind, cultivate sense of morality, value of methods, emotion of methods, habit of methods, ability of methods, train talents of high quality, and only thus people can be made honest, brave, prudent, and possessing emotion -and acts of helping others. Infringement of intellectual properties and fabrication and sales of counterfeit or poor-quality goods are betrayal to the concept and acts of methods, and should be criticized and attacked. Bacon, Kant, Hegel, and Marx had all effected active studies on human lives and moral conducts, investigations in a new creative philosophy of methods, i. e. "methods of proletariat, which possesses no doubt the supreme factors able to be long kept". The philosophy of methods suggested by Marx and Engels is especially importance ill developing socialist market economy and creative activities. Creative philosophy of methods can let everyone to display their own potential in creation and make creation of civilization for human beings and creation of more treasure and contributions for the society and for the collective as a socialism code of conduct for resisting money worship. and egoism . For arts as literature, painting, sculpture, architecture, decoration, creative philosophy of methods is also indispensable. Creativity in fine arts should influence healthily people's methods and mind, reflect modern creative spirit and social life. Creative philosophy of methods should be the soul of creative activities in art. Like Professor in- philosophy of University of New Mexico told me: "Many principles of creative studies, originate from Marxism. You are those."
France

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History and Current Status of Applied Creativity in France

As this is the first article from France in Creativity's Global Correspondents, I thought it would be interesting to examine what is typical of applied creativity in this country. First, we will consider the origins of creativity here and point out what in the French culture promotes or hinders creativity. Second, we will look at the current offer of creative expertise and what the types of players are.

History of Applied Creativity in France

Of the many remarkable artistic movements with strong roots in France, one in particular is a source of inspiration for practitioners of applied creativity. This is the Surrealist Movement of the 1920's and 1930's, which gathered French and foreign artists in Paris. The Surrealists were devoted to producing imagery derived from the subconscious in all forms of art, including literature, painting and photography. Following are two examples of literary games invented by the Surrealists.

Hold a pen to a sheet of paper and let the pen write whatever comes to your mind. No editing of style or content. No stopping until you have filled out the number of pages you wanted to, or used the time you allotted to the exercise. You are doing what the Surrealists called "automatic writing".

Another literary game invented by the Surrealists is the "cadavres exquis", or "exquisite cadavers". In a group, fold a piece of paper accordion style. The first person writes a phrase or a full sentence on the top leaf, folds it over and passes the page along. The next person does the same, without seeing what was written before. The page goes around until it is full. Someone reads the whole text as if it were the creation of one individual. The result is often quite interesting, sometimes hilarious or poetic.

Both of these literary games fall under the category of "brainwriting", a staple in many a creativity facilitator's toolbox today. We consider them to be "divergent" techniques, because they call on the right brain's capacity to produce imagery, symbols and emotions.

Skipping forward a few decades to the 1960's, one finds a handful of adventurous French psychologists and sociologists working in qualitative research firms who crossed the Atlantic to attend the Creative Problem Solving Institute in Buffalo, New York. They adopted the Osborn-Parnes Creative Problem Solving Model, as well as ideas from other creativity sources such as Gordon (Synectics) and De Bono. In France in the 1970's, they used the methods not only in idea generating, but also in qualitative research, while the two areas remained separated in the States.

The consultants became successful gurus in the French marketing community. Their influence was quite extensive, notably in the area of qualitative research, shaping what
became known internationally in the 1980's as "French" or "New" qualitative research. The specificity of this new breed of research was to incorporate diverging techniques into interviewing and moderating, using them to help respondents express their emotional and irrational perceptions. This approach is now used all over the globe and is referred to as "creative and projective" or "enabling".

In the 1970's there was great enthusiasm in the corporate world for the fresh bursts of ideas that came out of creativity sessions. However, there was also a backlash, when executives who had not attended the sessions and were not personally involved found the ideas and the attitudes of the attendees outrageous. At that time, creativity focused mostly on diverging and finding large quantities of rough ideas. In this form it tended to provoke defensive reactions.

Since then, in France and elsewhere, more emphasis has been put on converging, turning seed ideas into realistic solutions and acquiring acceptance from the recipients. Professionals refer to "applied creativity" and stress its actionability.

An aspect of the French culture that influences local creativity is Cartesianism. This term refers to René Descartes (1596-1650), a philosopher, mathematician and physicist who used deduction as a method in physics and metaphysics, proclaiming the famous "I think, therefor I am". Today what the French call the "Cartesian spirit", the propensity to deductive, rational, left-brain thinking, is acclaimed as a national heritage and intellectual quality. When properly harnessed and used in converging phases of applied creativity, this leaning becomes an asset. However, it is every facilitator's nightmare when performing diverging exercises with an insufficiently trained and warmed up group.

**Current Status of Applied Creativity in France**

The original gurus of the 1970's, who had learned about creativity in the States, trained generations of practitioners in creativity and qualitative research before moving on to other pursuits and in some instances other countries.

Today, there are three main currents among independent consultants and employees of consulting firms. The first two are directly influenced by the fertilization of the 1970's, the last is predominantly home-grown.

1. English-speaking practitioners who attend conferences in the US (Creative Problem Solving Institute, Innovation Network, Qualitative Research Consultants Association). They adapt methods learnt in the US to the French culture and the cultures of other countries they work in; they tend to operate internationally.
2. Psychologists and sociologists who trained in France and develop a local flavor in creativity, inspired by concepts found in ethnology, linguistics, semiology.  
3. Creators (painters, writers, etc.) who call on their art as a means to help individuals and groups to express problems and solutions symbolically. Here creativity is very close to art therapy.
There is no institution in France where practitioners of creativity gather, as there is for example in the US, Turkey, South Africa and Holland. Individualism reigns. However, now and then someone manages to bring together a group of people who are interested in creativity, with good food and wine being part of the appeal of the meeting, in a typically French approach to creativity.
Israel

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Awards
Editorial Board, Creativity Research journal and Gifted and Talented International; currently serve on two national Advisory Committees: Israel Ministry of Education, Identification of Gifted and Ministry of transportation; National Authority for Road Safety; Honorary Alex E Osborn Visiting Professor, Center for Creative Studies, Buffalo State College State University of New York; Elected Academician by the International Informatization Academy, Department of Informational Culture, Moscow, Russia.

Interests
Giftedness, creativity, learning style, career development
In-School and Out-Of-School Learning Style of Gifted and Talented Learners in Israel

In the report from Israel in 2001 that was included in the report of Creativity's Global Correspondents, I focused on a theoretical model of giftedness developed in Israel. I cited the implications of the model for the identification of gifted youngsters. This year I will focus on learning style, one of the personality factors cited in that model as influencing the degree of realization of the abilities of gifted and talented students. Since their abilities differ from the norm, gifted students do not derive full benefit from the regular school program. The major message intended in the current report is that if gifted students are to realize their potential, there must be adjustments of both in-school and out-of-school learning programs. If this is not done, their abilities and talents may be lost.

In the 1980’s a new era was ushered in when expanded multifaceted views of giftedness symbolized by the widespread adoption of the terminology "gifted and talented" were introduced. Several edited volumes appeared summarizing the better known multidimensional conceptualizations of giftedness (Cohen & Ambrose, 1993; Horowitz & O'Brien, 1985; Runco & Albert, 1990; Stemberg & Davidson, 1986). As part of this accelerated theoretical development, Milgram postulated a comprehensive and integrative 4 X 4 Model of the Structure of Giftedness. The model was presented in the Creativity Global Correspondents 2001 volume and elsewhere (Milgram, 1989, 1991, 2001). Milgram's model is one effort to operationalize a broad formulation of giftedness and to explain giftedness as the result of the complex interaction of cognitive, personal-social, and socio-cultural influences. It is unique in that efforts have been made to define each concept presented in the model operationally in terms of assessment instruments. The model, therefore, provides the basis for the preparation of an individual profile of each gifted child that can provide direction for parents and teachers in developing ways of individualizing learning in and out of school.

A number of authoritative and integrative summaries of research on personality differences in gifted individuals have appeared in the literature (e.g., Bloom, 1985; Barron & Harrington, 1981; Dellas & Gaier, 1970; Janos & Robinson, 1985). In the 4X4 Model cited above, Milgram (1989,1991) emphasized personal-social variables, in general, and learning style, specifically, as major variables that affect the realization of cognitive abilities in the gifted at their respective levels. In collaboration with her colleague, Prof. Eunsook Hong, (Hong & Milgram, 2000), a theoretical distinction has been drawn between in-school and home learning styles, and it has been suggested that they be assessed using one measure of in-school learning style and another of motivation and preference for learning at home.
The pioneering research on learning style was conducted by Prof. Rita Dunn of St. John's University in New York. She focused on the profile of children's personal-social and situational preferences for learning in the formal school setting. Dunn and Dunn (1972) presented a theoretical model of learning style and Dunn, Dunn, and Price (1987) developed the Learning Style Inventory, an instrument that operationally defined and assessed the 23 conceptualized components of learning style. According to this approach, each person's learning style consists of a unique combination of strengths and weaknesses on elements that reflect various aspects of the environmental, emotional, sociological, and physical conditions under which a person acquires new knowledge and skills. Dunn (1989) summarized the findings of a large number of research studies that demonstrated that when children were allowed to learn in school under conditions that matched their learning style preferences, their academic achievement and their attitudes toward school improved. In the 1980's Dunn and her collaborators conducted a series of studies on learning styles of high IQ type gifted. They found that high IQ children had a pattern of learning style preferences that was different from that of the others (Griggs & Dunn, 1984) and that they, like their nongifted age peers, also benefit from instructional procedures that are congruent with their learning style characteristics.

Research on learning style of the gifted and talented went international with the translation of the Learning Style Inventory (Dunn, Dunn, & Price, 1987) into eight other languages and its administration to approximately 6000 gifted and nongifted adolescents in grades 7 to 12 in nine countries (Brazil, Canada, Egypt, Greece, Israel, Korea, Guatemala, Philippines, and the United States). Milgram, Dunn, and Price (1993) reported the complex findings on each country in this large-scale international study in detail in a recent volume. As part of the international study, Milgram and Price (1983) examined the learning styles of 985 Israeli adolescents, identified as gifted and nongifted in one or more of the 4 domains postulated by the 4 X 4 Model (Milgram, 1989, 1991). The domains were as follows: General intellectual ability as indicated by high IQ scores, specific intellectual ability as indicated by high grades in school subjects (Hebrew Literature, Hebrew Language, Mathematics, and English [a foreign language in Israel), high divergent thinking ability, and high creative attainments in specific domains (science, mathematics, computer, social leadership, dance, music, art, literature, foreign languages, drama, and sport). Adolescents were classified as either gifted or nongifted in the specific creative talent domains on the basis of the Tel-Aviv Activities and Accomplishments Inventory (Milgram, 1990). Distinct learning style components that were found to discriminate between the gifted and nongifted groups of Israeli adolescents in each of the 14 domains of talent.

There were two sets of important findings. First, that gifted differed in learning style from nongifted on many domains. Second, that gifted in one domain differed in learning style from gifted in another. For example, learners gifted in science reported a different profile of learning style preferences than those gifted in mathematics, dance, or sport. The most remarkable finding in the analyses of the 14 groups was that
no two patterns of learning style were the same, e.g., science-gifted versus art gifted versus sports gifted etc. The findings demonstrated that the learning style profiles of differently gifted learners are not only conceptually but also empirically distinguishable from one another.

Out-Of-School Learning Styles of Gifted and Talented Learners.

Until recently learning style theorists did not distinguish between learning at school and learning at home. They assumed that an individual's motivation and personal preferences for learning in school and for learning out-of-school are the same. It is remarkable that no one has seriously questioned this assumption. A major difference between home and school learning is the physical presence of the teacher at school, but not at home. The teacher has influence on learning even when it takes place at home in that he/she determines the amount of homework assigned and the specific demands of each assignment. On the other hand, learning at home is done outside of school hours (i.e., a different time of day or weekends), and is influenced by parents, siblings, and other children. Hong, Milgram, and Perkins (1995) and Perkins and Milgram (1996) distinguished theoretically and empirically between in-school learning style and out-of-school learning or homework style. They used different questionnaires of learning preferences in the two settings, in-school and out-of-school, and found that (1) learning style and homework style are correlated, but not empirically equivalent, and (2) different patterns of homework style are found in high versus low homework achievers and in children with positive versus negative attitudes toward homework.

In summary, individual students have both a characteristic school learning style, and a somewhat related, but not equivalent, characteristic style for doing their homework outside of school. These two kinds of preferences should be assessed separately because of their implications for optimal academic performance. When children are allowed to learn in school under conditions that match their learning style preferences, they have higher academic achievement and more positive attitudes toward school (Dunn, 1989; Dunn & Milgram, 1993). Therefore, it is reasonable to expect that if children do their homework under conditions that match their preferences, similar positive results will obtain. This expectation has yet to be examined empirically.

Hong and Milgram (2000) developed a theoretical model of home learning style and an instrument to assess it. The goal was to provide teachers, parents, and children with basic understanding of the homework process, in general, and individual home learning style, in particular. Such understanding has an important practical implication in that it can provide the basis for developing individualized practical strategies that can help learners meet homework requirements more successfully and more enjoyably.
Home Work Style: Definition

Although much learning occurs in school, a great deal of learning also occurs outside of school. Homework is a kind of out-of-school learning that has not yet received the serious attention that it merits in the research literature. Homework is assigned, often on a daily basis, to students of all ages all over the world. Planning and assigning homework are a major responsibility and challenge to teachers at all grade levels. Strong opinions on the topic of the efficacy of homework as a teaching strategy appear in the professional literature. The views range from strong criticism of the use of homework to claims that the proper use of homework is the best way to improve education and that it can yield a significant increase in the level of academic achievement. Surprisingly, there have been relatively few empirical studies on the effects of homework and these few were of the effect of homework on academic achievement and yielded inconsistent findings.

Homework by definition takes place without concomitant teacher direction. In school the learner is part of a class group and learns in a certain way usually determined by the teacher, occasionally by a group of students and only rarely by the individual student. By contrast, when it comes to homework, learners have choices. First of all, they can decide whether or not to do the homework at all and how much time and effort to invest in doing the assigned tasks. Once they have made these decisions, they can choose to do it in a variety of ways and presumably do it the way they like. There are a wide variety of individual differences in homework performance among learners both in the source and strength of motivation to do homework, and in preferences about what, when, where, how, and with whom they like to do it.

In earlier stages of our research we found that individual students have a characteristic school learning style, and a somewhat related, but not equivalent, characteristic style for doing their homework, that is, for learning outside of school. We suggested that these two kinds of preferences should be assessed separately. The next step was to develop a conceptual model of homework style and an instrument with which to assess it. We developed a conceptualization of the complex pattern of motivational, perceptual, and personal-social characteristics, that activate and direct homework behavior and an instrument to assess these characteristics. We used this theoretical formulation and instrument in research on homework that focused not on the homework itself but on the child doing the homework.

A Conceptual Model: Homework Performance: Motivation and Preference

To the best of my knowledge the conceptual model entitled Homework Performance: Motivation and Preference is the only theoretical model of the phenomenon that has yet appeared in the professional literature. We do not view this conceptual model of homework performance as a finished product, but rather one that will be modified according to experience with it in the field. The model, its complete theoretical background, and detailed report of the empirical studies, many of them international and cross-cultural that have been conducted to date are reported in a relatively new book (Hong & Milgram, 2000). The conceptual components of homework performance may be divided into two categories,
motivation and preference. The first category, motivation, postulates the source and strength of the motives that explain the initial activation of the process of doing the required homework assignments. This category offers possible answers to the most basic questions: Why do learners comply at all with the teacher's request that they do their homework and with the instructions about how to do them? What determines whether or not a learner will start and willingly perform homework? What determines whether the learner will continue homework efforts until finished? The second category, preference, postulates the intrapersonal and interpersonal preferences of the individual about how, where, when, and with whom to do homework? The match of the demand characteristics of the homework assignments themselves, as determined by the teacher, with the level of motivation and the pattern of interpersonal and intrapersonal preferences of the learner doing the homework determines whether the goals of homework will be accomplished.

We operationally defined the component concepts and developed the Homework Motivation and Preference Questionnaire- ENTQ (Hong & Milgrain, 1998), to assess these variables and validate them empirically. The instrument yields an individual Homework Motivation and Preference Profile (HNTP) that provides a visual and verbal representation of the profile.

Research on Homework Motivation and Preference in Gifted and Talented

We started out conducting a series of studies of homework motivation and preference in regular students (Hong, Milgram, & Perkins, 1995; Hong & Milgram, 1999). The effort to understand the homework motivation and preference of gifted and talented learners is at a very early stage. Only two studies have been conducted so far: 1. The Homework Motivation and Preference Questionnaire - HMPQ (Hong & Milgram, 1998) was administered to 126 fifth graders in Israel. The students' talent in science, leadership, and dance were assessed by the Tel-Aviv Activities and Accomplishments Inventory - TAAI (Milgrain, 1990). Examples of such accomplishments include receiving an award for a science project (science), being chosen for a leadership position in a youth group (social leadership), and giving a solo dance performance (dance). These domains were chosen because of our assumption that they would be associated with different learning preference patterns. Indeed, HMPQ differences were found among the 3 groups. The data are too complex to report here. 2. In the second study preferred versus actual homework preferences was investigated in high and low creative thinking children (Ohayon, 1999). As might be expected, students learning preferences are not always honored in the classroom and in the home. Recent findings with nongifted children indicate that for many learners there is a gap between how they prefer to do their homework and how they actually do it (Hong & Milgram, 1999). We found that the disparity between preferred and actual home learning style reported for nongifted learners obtained in high and low creative thinking children as well.

**Homework: A Valuable Tool or a Destructive Device**
Conclusions and Implications

It is important for parents and teachers to realize that accommodating to the homework preferences of their children is worthwhile. Both because it contributes to the academic quality of the homework assignments themselves and it improves their children's attitudes toward homework.

An important caveat is in order. As we attempt to generalize about the in-school and out-of-school learning preferences of groups of students including gifted students, we should always bear in mind that every individual has a unique personal learning style. The findings reported in this section on in-school and out-of-school learning styles of gifted learners, are valid for gifted learners as a group, but do not apply to any single gifted learner. Nevertheless, the findings have implications for parents and teachers. It is clear that teachers and parents working together can create homework assignments and the environment in which to do them that will be more productive in terms of the school's achievement goals, and a more satisfying and enjoyable experience for parents and children.

Homework is a powerful tool. If properly used, it can be the most effective and cost-efficient way to solve some of the most difficult educational problems. On the other hand, it can also do more damage than good. The difference between the two outcomes depends on the quality of the decisions as to how homework is implemented.

Homework is an ongoing enterprise in all academic settings, it is there for us to use and does not have to be discovered or invented. However, in its current form it is often part of the problem and not part of the solution. In order for homework to become a positive and powerful force in education, change will have to take place about how we understand homework, how it is used in schools, and how it is done at home. The conceptual model and the instrument described are a first step to help comprehend, explain, and improve the homework process for the benefit of gifted learners.

One of the major implications of the modem, widely accepted multidimensional views of giftedness is that schools must strive to customize the teaching-learning process for gifted and talented children. The best place to individualize instruction and differentiate curriculum from an early age is in the regular classroom (Milgram, 1989). This may seem to some readers to be an impossible mission, an impossible dream. However, in a volume edited by Milgram (1989), authorities in a wide variety of subject matter areas presented detailed descriptions of approaches and techniques that provide classroom teachers with the tools required to customize specific school subjects for gifted learners. These chapters were intended to serve as an example of what can be done. In the last ten years vast technological advances associated with the computer have affected the teaching-learning process in schools and have made it much more feasible to customize both in-school and out-of-school learning for all children, including the gifted and talented.
References


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Interests
Creativity, Creative Personality, Gifted Education, Creative Management, Creative Child Rearing Practices, Organizational Behavior and Invention

Publications


MALAYSIAN INITIATIVES IN CREATIVITY

Introduction

In my previous articles in the Global Correspondent series, I have given a brief overview of the goings-on in the area of creativity in Malaysia. In this article, I will discuss some findings of the research that was ongoing at that time and some ideas on creative teaching that I have been using for training Malaysian teachers and university lecturers. I will also be discussing the latest development in the area of creativity programs in Malaysia.

Creativity Research Findings

Quite a number of researches have been carried out in creativity in Malaysia last year. Among them were research in Creative Motivation (Kanan, 2001), creativity in administration (Subramaniam, 2000), creativity (Palaniappan, 2000) and creativity scoring procedures (Palaniappan & Torrance, 2001), and creativity among entrepreneurs.

Kanan’s (2001) investigation of the relationship between creative motivation and academic achievement among 151 students from three Tamil primary schools found that there was significant correlation between these two variables. Significant differences in Creative Motivation were found between high and low academic achievers. He also found no gender differences in creative motivation, academic achievement as well as in the relationship between creative motivation and academic achievement.

In a case study investigating teachers’ perception of their principal’s creativity, Subramaniam (2000) found that the teachers perceive their principal as average in her creativity. However, the principal viewed herself as creative but concedes that bureaucracy entrenched in the system governing her day to day duties and dealings have somewhat stifled her creativity.

Palaniappan (2000) investigated sex differences in creative perception among 101 boys and 69 girls. Creative Perception was measured using Khatena Torrance Creative Perception Inventory. The findings indicated that although there were no sex differences in the overall measures of the two subscales: Something About Myself and What Kind of Person Are You?, there were significant gender differences in the factor scores of Initiative. Boys obtained significantly higher scores on Initiative than girls.

Another study looked at the differences in the scoring procedures of the regular and streamlined versions of Torrance Tests of Creative Thinking (Palaniappan & Torrance, 2001). Findings showed that there were significant correlations between the two scoring procedures for Figural Originality, Figural Elaboration, Figural Creativity and Overall Creativity. It was concluded that the streamlined version was superior in that it assessed other creative strengths which the regular version did not.
Creative Teaching

Currently there has been a demand for more training sessions and workshops on Creative Teaching in Malaysia. This can be attributed to the increasing efforts in the infusion of creative and critical thinking skills in the Malaysian primary as well as the secondary school curricula. Many creative teaching workshops have been conducted in Teacher Training colleges to train Teacher Trainers on the various approaches that may be used in creative teaching. Many papers were presented in national seminars and conferences on creative teaching. The Ministry of Education has also advocated that more such programs and training sessions be conducted in future to equip teachers with the knowledge and the pedagogical skills necessary for teaching creatively and enhancing creativity among the students.

The literature published thus far will indicate that there are many approaches that have been advocated in the area of creative teaching. Many models have also been proposed. However, one approach that have been used successfully in Malaysia is based on the Rhodes (1961) classification of creativity definitions in four dimensions of Process, Person, Product and Press (or the 4 ‘P’s). Based on these four dimensions, a model for creative teaching was created. Previous writings have proposed that creative teaching would encompass only the methods and activities teachers’ use in the classroom. However looking at creative teaching as a system would indicate that it is more than just the teachers teaching that should be considered in creative teaching. The model of creative teaching proposed (Figure 1) and developed looks at not only the creative ways teachers teach and train students but also the infusion of creative thinking among the students by way of designing activities that stimulate and encourage students to think creatively. For ease of usage and understanding, only four divergent thinking skills were emphasized, namely originality, fluency, flexibility and elaboration.
The model is read from two perspectives: 1) TEACHER: teacher’s teaching and preparation and 2) STUDENT: activities designed by the teacher to enhance students’ creativity.

Figure 1: Creative Teaching Model (Palaniappan, 1999)

The Process dimension of Creative Teaching model focuses on 4 main divergent thinking abilities, namely, Originality, Fluency, Flexibility and Elaboration. In this dimension, teachers are trained to come up with original ideas to enhance the teaching and learning process. For example, teachers can do this by asking “In what ways is this lesson similar or different from a driving lesson?” Or “How can I incorporate musical lessons in my geography classes?”. Ideas may be totally unrelated but this approach of forced relationships helps teachers come up with original strategies for teaching a particular topic. Fluency relates to the ability to generate as many ideas as possible while flexibility requires that the teachers come up with different ideas when faced with a teaching problem. Elaboration looks at how the teacher is able to embellish on a teaching strategy he or she is intending to implement to make it more effective in enhancing student understanding.

From the aspect of the student, it looks at how teachers design teaching methods that help students to be more original, flexible, fluent and elaborative.

Similarly, the Product dimension of the Creative Teaching model focuses on the visual aids and the product of the teaching the teacher is able to come up with, perhaps to enhance students understanding or problem solving. Again, it emphasizes all four divergent thinking abilities. From the students’ aspect, it looks at areas where the teacher is able to help students come up with ideas or objects that have the four divergent thinking abilities.

As for the Person dimension, it looks at the creative personality characteristics of the teacher. To what extent is the teacher able to project creative behaviors like being inquisitive, trying new methods of making lessons interesting, taking reasonable
amount of risks and being adventurous. It also refers to the extent to which teachers are able to enhance the divergent thinking skills among students. Teachers who practise creative teaching tend to design activities and tailor the curriculum in such a way so as to give students opportunities and the freedom to be original, fluent, flexible and elaborative.

As for the Press dimension, it refers to the environment that is conducive to creative teaching, such as the encouragement of the principal, availability of materials and resources and the opportunity to be free to experiment new activities and new methods of teaching. From the students’ aspect, Press refers to the extent to which teachers create a climate of autonomy, empowerment, independent thinking and inquisitiveness among the students. It also refers to the availability of materials for students to experiment and solve everyday problems creatively. Press also refers to the encouragement and reward teachers give for original productions.

Creativity activities and programs in schools

In the educational scene, many programs have been introduced to enhance thinking skills among students. As I have mentioned in my previous articles, thinking skills has been introduced across the curriculum for both the primary and secondary schools since 1989. Subsequent to that several variations of thinking programs have also been introduced namely the Futures Studies and Theory of Constraints by the Curriculum Development Center of the Ministry of Education. The Futures Studies were introduced in 1996 as a pilot project for three years in five states. This thinking program was introduced across the curriculum from the pre-school to the secondary school level. Several workshops were held to design learning activities and modules and also to train key personnel for the teaching of the Futures Studies in all 16 subjects.

Another important development is the introduction of the theory of Constraints (TOC) a new and innovative thinking and problem solving program, in all subjects nationwide for all Year 1 Primary school students. TOC which began as a business problem solving strategy has now been adapted to the educational environment to enhance thinking and problem solving. More than 30,000 Malaysian school teachers were trained in November 2000 to incorporate TOC in the teaching of the new Transition Program which was designed to help ease the transition of the pre-school children to the Primary Year 1 level.

Based on these developments, it can be said that Malaysia is well on its way to catch up with the developed countries in the areas of research and education. However, there is a need to further look into the provisions by way of laws and regulations and its effective implementation to ensure that the education system is able to identify and cater for the gifted and talented and provide them with every opportunity to develop their potential and bring it fruition.
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Interest

Human Development, Cooperative Learning, Policy Development for Gifted Education, Gifted and Talented Education, Development of Creativity Potential
In 1979 Mr. Luis Herrera Camping became the president of the Republic of Venezuela for the period of 1979-1984.

The information mentioned above could be nonessential for educators, except for those of history. Mr. Camping appointed Dr. Luis Alberto Machado to be part of his cabinet and created the ministry for the development of the intelligence as part of the office of the president. Some years before Dr. Machado became the minister for the office of the development of the intelligence (1979) he had impacted the opinion of the Venezuelan and the rest of Latin American population, especially educators, with his book “The Revolution of the Intelligence”. The book was a best seller due to his relevant ideas, revolutionary thoughts, and creative educational proposals. The main topic was the development of the intelligence and creativity for all the members of the society without distinction of social class, gender, occupation or ethnicity. This ground-breaking book and the creation and actions of the cabinet of the development of the intelligence were the most significant answer of Latin American towards the international movement of the first world countries interested in the development of the human potential.

There is a double size context to the ideas expressed before: First of all, a social context; mediated by the reflections of the “occidental world” with the phenomenon of sputnik by the Soviet Union where Laika, a little dog, became the first living creature who visited the space. This scientific revolution provided the framework for the capitalist world to revise their curriculum and school programs to invest in educational projects to develop intelligence and creativity. At the same time, two important paradigms, the Humanist and the Cognoscitivist took into consideration and supported the creation of programs to promote the development of the human potentials.

Furthermore, there is a very important premise that distinguished the movement of the development of intelligence and creativity in Latin American. The starting point based on research is that we all have potentials and talents; the question is to create conditions to develop them to their optimum.

The educational project ARGOS for the development of the Intelligence and Creativity created in Cuba by Dr. Ramon Ferreiro Gravie and the Red Latino Americana Talento in Mexico, D.F. are genuine expressions of the continuity of the movement that started internationally with the sputnik by the Russian and generated in the Latin American scale with the creation of the cabinet for the development of intelligence in Venezuela.
Red Latinoamericana Talento, www.redtalento.com, unifies Scientifics, investigators, educators, students, parents and others who are concerned and more important, engaged, in the development of the human potentials.

Among others activities, Red Latino Americana Talento prepares and promotes with the support of state organizations and educational institutions the international congress Education for Talent. The purpose of the event is to facilitate the exchange of experiences that allow the personal and professional development of those who feel responsible with best resource of the society: the human being.

Education for Talent is by definition, education to improve the quality of the society to allow all its members to develop and make the most of all their potentials. Education to consent everyone to use the capacity of the human being to think, feel, create, discover, and transform as expression of humanism and respect for the people in the society.

Red Talento has been organizing its annual educational congress since 1995. The first four events, 1995, 1996, 1997, 1999 were organized in Baja California Sur, Mexico. The fifth international congress 2001 took placed in Mazatlan Beach, Sinaloa, Mexico, October 11, 12, 13. The state department of education in Sinaloa, Red Talento, and SENDAS institutes supported this event.

To the fifth convocation participated a diverse group of specialists from the States such as: Dr. Margarita Calderon Espino, Saul Lopez, M.S., Dr. Robert Slavin Crohn, from Johns Hopkins University and Elisabet Ferreiro, M.S., from the Miami-Dade Community College. From Spain, Dr. Lorenzo Tebar Belmonte, from the Spanish Federation of Religious Education, and Dr. Miguel Lopez Melero with a videoconference from the University of Malaga. From Cuba, Dr. Armando Florez Arco and Dr. Gladys Torres Estevez.

Mexico was represented by Dr. Marcela Chavarria Olarte from Pan-American University, Dr. Rita Ferrini Rios from University of Tepeyac, Laura Gonzalez Guerrero, M.S., from the Department of Public Education, Rosario Leon Medina, M.S., from CETYS of Tijuana, professor Ana Maria Zepeda from DEO group, and Aida Ayala Cordoves, B.S. and Dr. Ramon Ferreiro Gravie both form Red Latino Americana Talento.

The congress included eight magisterial conferences, two symposiums, and ten workshops and the presentation of eighteen proposals and projects prepared by participants in the event. A total of five hundred and fifty educators from seventeen states of the Republic of Mexico attended the congress. These participants coming from public and private institutions evaluated the congress as a very positive experience.

In scale of one to five, being five the maximum value, the congress was rated as follow: General organization, 4.36., quality of magisterial conferences, 4.64,
development of workshops, 4.77, significance and application of the different topics, 4.75, marketing and promotion of the event, 3.98, and a general evaluation of the event of 4.65 points.

Once again, the International Congress Education for Talent offered a significant and valuable experience for the participants to obtain, new ideas, concepts, techniques, strategies, and more important to make new colleagues and friends. The VI congress of Red Latinoamericana Talento will be next year 2002 in México City, D.F. See you there!
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Interests

Brain Research, Training, Education, Learning Creativity, Oriental Philosophy, Organizational Development and Link Education to Work Competitiveness.

Awards

Quality Permanency Award, Rio de Janeiro, Brazil.
1986-1995 Excellence Award, Mexico City.
Dean Award as Honorary Teacher, Graduate College, Mexico City.

Publications

Quality Control (1980)
CREATIVE SOLUTIONS FOR EDUCATION IN MEXICO

1. Creative methodology in education and training.

One of the constant worries of the developing countries is the vision of educators. The mindset that is created in the classroom strongly influences the way we understand life, the way problems are solved, the way we reach different life levels, encourage competition, and visualize the future. In a globalized world like the one we live in today, there is no time to overcome the lacks of education in a conventional way. Thus, it is urgent to come up with creative solutions that allow us to improve intelligence in studying groups.

We were wondering how we could obtain better results in the training systems; thus, since 1994 we started a research related to creativity and the potential use of the brain. As we were advancing with the purpose of developing new ideas to make a quantum leap in the didactic techniques for education and training in Mexico, a country with a lot of opportunities and big problems, Dr Jorge Muñoz, Dr Carolina Gutierrez, and I formed an organization named Grupo de Aprendizaje Continuo (Continuous Learning Group). We developed a model of Accelerated Creative Learning for teachers and for instructors. This model allowed them to give another motivational sense to education, beginning with themselves, feeling compromised with this new form to focus their valuable mission. Encouraging creativity in education as an emotional impulse motivates the integral use of the brain, awakens the will to learn, and it’s analogous to the Mexican idiosyncrasy, which in a natural way it’s creative.

For us it was important to investigate and learn through different modalities like books, seminars and attending congresses where great researchers and experts gather. Teachers like Ned Herrmann, Paul Scheele, Erick Jensen, Paul Torrance, M. Diamond, K Shichida, Mel Silberman, Robert Sapolsky, Don Campbell, Janette de Vos, Tony Buzman, Chirs Brewer and others, share their work and research. Through multiple ways of understanding human talent, we learned the art of combining all the resources that the body has, to make it a learning sensor. We have created innovative techniques that evolved from studying and adapting these theories, including concepts of Oriental philosophy. We designed a special program beginning with brain functioning basis, the recent findings about multiple learning styles, and the knowledge about valuable resources that facilitates intelligence development in an individual or collective way. For example, the use of music, drawings, metaphors and stories, games, brain
gymnastics, bases of the PNL, taking advantage of the theory of multiple intelligence of Howard Gardner (how to handle emotions, techniques to improve memory and establishing knowledge, development of creativity, and encourage the innovation capacity).

2. Proving the creativity of the knowledge.

The most important element of this program is to emphasize that learning should be taken into practice so that the results can be appreciated by making each person responsible to choose their learning preferences, according to their own abilities and talent.

The model has been used since 1997. It was used in house classes, in training areas, in corporations and even at schools with notorious results on what we wanted to achieve as an objective. In 1998 and 1999 we developed a special model for Frito-Lay, Mexico. Internal instructors were trained to be able to transform all the seminars done at the company as accelerated learning techniques. First, we made a group of experts (36) with seminars in learning, communication, creativity and evaluation systems. Afterwards 70 more experts were prepared. In feedback sessions, we could value the extraordinary creative ideas that were applied in their new teaching styles so employees and workers seemed to enjoy the learning process showing a marked interest in attending the seminars. The model that was achieved was promoted by the main office to be applied in Latin America.

3. A Macro Plan

Under the supervision of Dr Jose Cruz we worked on a very interesting program in the state of Tamaulipas (north of the country, with border with Texas). Forty experienced teachers were selected, experts in the Secretaria de Educacion Publica (Department of Education). The teachers came from different levels in schools, starting from basic through College. They were prepared previously with PNL courses and afterwards as facilitators in the following areas: the brain, brain gymnastics, mental maps, nuclear organigram, emotional intelligence, quantum learning, multiple intelligence, music and learning drawings, the learning Cells and the vision in education for the twenty first century, finishing with an application class for tangible practice. Afterwards in a state gymnasium, the workshops were taught among 500 teachers with the participation of the teachers facilitator group. The objective was to prove the applicability of these creative concepts in any type of educational setting, starting at the pre-school level going through College, including camp and specialized education. In the feedback meetings we could prove that in the majority of the cases there was a substantial improvement in the way classes are taught.

4. Project of formal investigation.
With the intention of proving and registering the advantages of this methodology, we generated a model that could be multiplied by the same teachers that were trained. The Escuela Superior de Comercio y Administracion del Instituto Politecnico Nacional in Mexico City (The Superior Commerce and Administration School from the National Polytechnic Institute in Mexico City) was chosen. We requested for the project to be registered as a research project. The Lic. Maribel Cervon (Main principal of the school) and the Lic. Concepcion Silva of the Secretaria Tecnica (Technical Secretary) participated in it. Also, 15 distinguished teacher investigators collaborated with us. We worked in this project for a year and a half. First, we did the training of the research theme, afterwards we implemented this methodology in direct classes with the students during a semester. We established the pre and post measure parameters to be able to evaluate the effect of this methodology. The direct effects in the students were measured by conventional instruments, such as, the evaluation of the scores received in the classes taught by the research teachers, the reduction of absences and desertion, among others. Class environment, the enthusiasm for learning, the development of their creative talent to build and apply their knowledge, creativity in their problem solving tasks were also improved, even though there were not measuring tools for it. The first stage of the project ended positively, and now an idea of generating a multiplying model is being developed.

5. International Learning Congress.

Since 1999, with the intention of promoting and presenting these creative concepts to a broad audience in education, a task was initiated to create a congress with the most prominent presenters and facilitators in the field of creativity and learning that we have in Mexico as well as some international experts like Bill Wilson, Dough Mcphee, Yoshimi Brent, Bob Pike, Jack Wolf, Joe Miguez, Chris Brewer, etc. We have organized the International Learning Congress on an annual basis every August. The intention of the Congress is to inform interested people in our country about the importance of changing the conventional educational paradigms to new creative resources using all the body as a learning sensor in any kind of education or training fields. These programs have been designed integrating the emotional, scientific, technical, spiritual learning, creating an harmonic sequence between workshops and conferences, interconnecting individual and team works, and mixing personal and collective talents.

- The main concept of the first congress was? "A Living Design" ? (we designed a practical class in the Pyramids in Teotihuacan), in which we combined history and creativity metaphorically in the way the brain works.
- The main idea of the second congress was?"Learning is Fun" ? and the closing consisted of a "Learning Circus" with 8 tracks in which each team of teachers taught a different fun technique.
- The main theme of the third congress was "Learning With Results". Three multi-disciplinary classes were created: the educational group worked with the theme: "The Earth, My Planet", many subjects used simultaneously to look for better answers to nowadays problems. Corporate people participated in the "Chocolate Factory" a problem solving game, looking for productivity, waste reduction and cost optimization, and Organizational people worked in "Managing the I in the Us" related to social problems and how to solve them in a creative way."


During the year 2000 society’s response towards the need to innovate the basis of education and training has been increasing constantly. This stresses the need to integrate new creative talents and experts in multiple disciplines in the new projects that are being demanded by our society. In 2001 the idea of the "net work" resulted as an alliance between consulting offices, training, presenters, and service companies regarding the development of human aspects in the organizations that were being developed.

For feasible reasons, famous experts were gathered mainly in Mexico, and also renowned presenters from countries like USA, Canada, South and Central America were contacted. We are now 28 main members, each and everyone with its own web of contacts according to each type of service. This network works on the basis of ethics and professionalism of its members with the clear objective of being creative and innovative regarding the potential development of the brain. Our motto is to learn, share, cooperate, support and promote knowledge, techniques, and systems related to Human Development so that we will be able to deliver to the society the highest quality of service and content.

7. In conclusion.

The fast changing atmosphere in which we live in, makes us encourage even more creativity as a response of the new problems that we share. No one can know everything or teach everything, which is why encouraging the creative talent in education is becoming more important every day. What we need in Mexico, as a developing country, is to make the education more objective, shortening the distance between learning and having real results. We believe that creativity in education may be one of the best answers for it.
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Interests  
Creativity facilitator, consulting for individuals, groups and corporations; writing and research in creative processes and barriers, emotional intelligence, leadership, education and human development.  

Awards  
Professor Honoris degree from the Universidad Continental, Peru, 2001  

Publications  
CREATIVITY IN MEXICO

Mexico has a population of 100 million people, with Mexico City being one of the most populated cities in the world (20 million people). Such a high population density makes everyday resources scarce. Moreover, Mexico is a country of sharp economic and cultural contrasts. This complex social scenario heightens the importance of supporting the development of creativity in order to maximize our native strengths and improve our weaknesses. We live in a fast-paced world with changes occurring many times in unexpected ways; thus, supporting education and training must become a societal priority in order to find adaptive solutions. This can be done with creativity, innovation, and transformation to be able to cope and live competitively in a challenging, global society.

I define creativity as "the capacity to love, to be able to come up with a solution for every day problems, to innovate, to take risks, to recreate, creativity is an act that transforms itself into a way of living and being in the world, creativity is an attitude towards life." Thus, for me creativity is more than a theoretical construct, is a philosophy of life. Each person has a creative potential that can emerge and develop when a balance is found between the cognitive/intellectual development and the socio/emotional development in education. However, this necessary condition has not been achieved. For generations, traditional education has mainly been concerned with emphasizing children's cognitive and intellectual development. Thus, education and society should commit to offer ways to develop individual's creative potential in a positive and constructive way. Following this, I proposed in my books and workshops a systematic implementation of spaces where creativity can be fostered following a defined methodology. This should be implemented in schools, starting at the preschool level and continuing all the way up to Universities, businesses, and society at large. My theoretical conceptualization is based on the work of leading educational and cognitive theorists like N. Herrmann, L.S. Vygotsky, D. Goleman, A. Osborne, S. Parnes, H. Gardner, E. De Bono, J.P. Guilford, P. Torrance, among others.

My interest in the field of creativity began over 22 years ago while I was one of the founders and directors of a progressive preschool in Mexico City. My experience working first with children and later with adults in different capacities; e.g. parents, teachers, therapists, people involved in personal growth, and business consulting, helped my theoretical conceptualizations and applications grow to include a broader audience of educators and business people. Ten years ago I began attending CPSI at the University of Buffalo. This experience helped me expand my exposure and possibilities of action in the world of creativity. As a result of this continuous endeavor, I've become one of the leading figures in the field of creativity in Mexico and eleven years ago I founded ICRET (Instituto de Creatividad, Terapia y Desarrollo Integral/ Institute for Creativity, Therapy, and Integral Development). ICRET's primary mission is fostering people's creative potential.
ICRET is a private institution that collaborates with other private institutions, schools, and government entities to provide the following services and training programs: (a) Training groups in creativity and innovation offered to the general public including, businessmen, therapists, teachers, graphic designers, etc. The following content areas are offered:

- Towards an "Intelligent Creativity" pedagogy
- Barriers, an enemy for creativity
- Sensibilization techniques and theories
- The development of integral, creative thinking skills
- Plastic expression, a resource for learning
- Music, a path to find you inner child
- Life and career plans
- Creative leadership
- The creative power of spoken language

(b) Training groups in education and intelligent creativity offered to teachers, educators, educational consultants, and educational trainers. The following content areas are offered:

- Towards an "Intelligent Creativity" pedagogy
- Plastic expression, a resource for learning
- Barriers, an enemy for creativity
- Music, a path to find you inner child
- Body expression with an educational purpose
- I am surprised to discover myself as a creative being
- Accelerate learning, mental mapping and brain gymnastics
- The development of integral, creative thinking skills
- Creative leadership
- Creativity, a philosophical concept in action

(c) Training groups for creativity facilitators offered to people who have completed a previous training group at ICRET or compatible training in education, psychology or business consultation. ICRET offers the only specialization program in creativity in Mexico City. Leading Mexican figures in the field; including Dr. Linda Kasuga, Dr. Ramon Ferreiro Gravie, Dr. Mauro Rodriguez E, Gilda Waisburd, among others, are part of the team that teaches this unique program. The following content areas are included:

- Accelerated learning
- Brain gymnastics
- The magic of metaphors
- Constructivism and learning
- The facilitator's search for a creative potential
- Intelligent creativity and group processes
- Creative atmospheres
- Cooperative learning and creativity
- Integration of creative work teams
- Creative concert
• Ethic and creativity
• Creative activators
• Planning, strategy, or …. doing it again
• The challenge of the third millennium
• Team presentations of creative projects

Also, during the current school year we are conducting a training program at a private school in Mexico City "Colegio Hebreo Tarbut". The school has 1500 students with a history of 60 years as a leading educational institution in Mexico City. Sixty teachers are part of the program. The objective of the program is to create a creative culture in the school starting at the preschool level going all the way up to high school. This will be done by including creativity as an integral part of the curriculum and instructional techniques. We are looking at changes in the teachers and children. For the teachers, we are investigating the changes in their attitudes and in their use of different creative education techniques in the classroom. For the children, we are looking at their responses to their teachers' new practices by studying their attitudes and levels of significant learning. This project began in August 2001, the first stage includes 120 training hours and will conclude in June 2001. There will be a follow-up phase and consultation with the principals and PTA.

Presently, ICRET is located in Mexico City and next year we will offer programs in different states throughout Mexico; including, Morelia, Morelos, Estado de Mexico, and Jalisco. As part of this endeavor, we conduct workshops and give presentations throughout Mexico and other Latin American countries.

In conclusion, my vision of an "intelligent creativity" is based on a formula that includes cognitive intelligence, emotional intelligence, spiritual intelligence, individual and collective experiences, and ethics and values to build and create a better world.

"A dream that began 22 years ago is now a creative reality."
The Netherlands

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Interests
Creativity, Innovation, Art Appreciation and Visionary Entrepreneurship
Creativity networks in Europe

Isn't it strange.

The Netherlands or Holland as some may call it is one of the smallest countries of Europe and yet the Dutch group attending CPSI is the biggest foreign group. And not just in 2001 but over the last decade.

No it is not strange.
The Dutch are well known for their consensus type of decision making processes. This consensus type is rather parallel to the CPS process. So the Dutch use CPS for building consensus and they use it a lot!

In the late eighties a group formed by Patrick Colemont started to organise European conferences on Creativity and Innovation. During the second conference (in 1989) the Dutch delegation started a national group called Kreanet. Kreanet nowadays is a very active society with their own journal and 4 professional seminars each year. Over 150 members assure a vivid network.

Out of the fifth conference (in 1993) came a new organisation: the EACI (European Association for Creativity and Innovation) www.eaci.net . The main task of EACI is organising a bi-annual conference and initiating national networks like Kreanet. Already such a network started in Germany (DAKIK) responsible for the 8th EACI conference: 4 - 8 September 2003, Darmstadt Germany, "Cross Cultural Creativity".

There are very good groups starting creativity networks like Kreanet in Poland, France and Denmark.

All networks are composed according to the ABCD principle where as:
A stands for Academics
B stands for Business (wo)men
C stands for Consultants
and
D stands for Diffusion

To give you an impression of the EACI network conference I give you the introduction on the 2001 proceedings (to be published in May 2002) by our chairman Jan Buijs.

Best regards,

Han van der Meer
Introduction to the Proceedings of Idea Safari (7th conference)

The seventh European Conference on Creativity and Innovation organised on the University Twente Campus from December 9 until December 12, 2001 marks 15 years of sharing work in the field of innovation and creativity by professionals and academics from all over the world.

The European Association for Creativity and Innovation (EACI) is an international not-for-profit organisation which wants to bridge the gap between professional in the field and their academic partners from universities and research institutes.

This seventh conference fits in a tradition of sixth earlier conferences:
1987 Network in Action, Noordwijk, the Netherlands
1989 Learning from Practice, Noordwijk, the Netherlands
1991 Quality breakthroughs, Noordwijk, the Netherlands
1993 Power of Synergy, Darmstadt, Germany
1996 Impact, Vaals, the Netherlands
1999 Fit for the Future, Lattrop, the Netherlands
and now
2001 Idea Safari, Enschede, the Netherlands.

And we know already that the Eighth conference will be organised in Germany in September 2003 with the title Cross-cultural Creativity.

All these conferences were very lively events, and the proceedings only covers a very small part of what is really happening on the conferences. This proceedings will be no exception. The organisers of the sixth conference in 1999 had decided to strengthen the quality of the academic part of the conference. We the organisers of the seventh conference took up this challenge and have decided that only the academic papers will be in the proceedings.

But we did more: we introduced two EACI-book awards. One for the best book on creativity and one for the best book on innovation. The academic review committee made two provisional lists and visitors of the EACI-site could vote for their favourites. They could also introduce new book titles to the list.

On the Sunday evening of the conference the two award winners were announced and both have delivered an acceptance speech. The winner for the best book on Innovation was:
“Managing Innovation, Integrating Technological, Market and Organisational Change” by Joe Tidd, John Bessant and Keith Pavitt. And Joe Tidd was there to receive the award and made an interesting acceptance speech.

The winner for the best book on creativity was:
“Creative Approaches for Problem Solving” by Scott Isaksen, Brian Dorval and Donald Treffinger. And Scott Isaksen was there to receive the award and to give a stimulating acceptance speech.

We hope these EACI-book awards will start a tradition in celebrating our heroes in the field of creativity and innovation. We are looking forward to the winners in Germany in 2003.
The Monday and Tuesday of the conference had the same format. In the morning parallel session were held of 20 minutes, both for practitioners as well as for academics. The afternoon consisted of a number of parallel sessions of one hour. These were intended to give organisations and academic research groups the opportunity to present themselves to the EACI-public.

The Wednesday was also open to non-participants of the conference, because we had three key-note speakers invited to speak about creativity and innovation. The key note speakers were Göran Carstedt from Sweden, who spoke about the role of leadership for stimulating creativity and innovation. Martin van Rijn, from the Netherlands spoke about the ambition of the Dutch government to use innovation and creativity to become an important player on the labour market. And John Videler, also from the Netherlands spoke about things we can learn from nature: bionics.

On the Wednesday afternoon the best sessions of the two previous day were repeated. We ended up with a grand finale offered to us by the COCD from Belgium.

Once again it was a marvellous conference, a good opportunity to hunt for ideas, to meet colleagues, to share ideas, to get inspired and to meet old and make new friends.

For the Farewell speech we had analysed all the previous proceedings. Although proceedings pretend to be the collective memory of a conference, they only give limited information. For instance there are always much more participants than presenters, and not all presenters submit their paper for the final book. But nevertheless we used the proceedings to get a flavour of 15 years of EACI-history.

Looking to the participants we see that the Netherlands is the country with the most participants, followed by the USA and the UK. Belgium, Denmark, Germany and Norway form a good group with double digit participants. Most countries had only a couple of participants, ranging from Sweden, Poland, France, Spain, Israel, Czech Republic, Finland, Mexico, Romania and Taiwan. Some countries, such as Australia, Austria, Brazil, Canada, Greece, Slovenia and Vietnam, were represented by only one participant over the last fifteen years.

We hope that this broad range of participants will be the norm for all the next EACI conferences.

Looking to the themes the participants are addressing over the last fifteen years we see quite large range of subjects. The ranking of these themes is as follows:
1. Structured innovation approaches (45 papers)
2. Education and training (37 papers)
3. Creative people (36 papers)
4. Problem solving and creativity techniques (34 papers)
5. Creative climate (27 papers)
6. Management (16 papers)
7. Vision building and imagery (13 papers)
8. Computers, simulation and games (10 papers)

Some 19 papers were difficult to categorise.
This same order is visible in the contributions of this seventh conference. Many on structured approaches, a couple on climate, people and management, few on techniques and training and no one vision building. It is difficult to say that this ranking is representative for our field, but it sure gives a good indication what is happening in the international field of creativity and innovation.

Jan Buijs
Chairman of the EACI
Global Correspondent: Aleksandra Tokarz, Ph.D.
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Awards
1998, Jagiellonian University Rector’s Award for Achievements in the field of education and scientific research.

Interests
Motivation and emotion in the creative process, Intrinsic and epistemic motivation; Emotional aspects of cognitive processes; Attitudes of teachers and pupils towards creativity.

Publications

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Poland

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Awards
1999, Jagiellonian University Rector’s Award for Outstanding Publication of the Year.

Interests
Creativity and its relationships to basic cognitive processes, Attention and Memory.

Publications
The present paper is the continuation of the last report; however, unlike all other previous reports, this one includes references to various research projects and publications developed in other Polish universities in the past. The present approach to the report contents results from the fact that creativity has been frequently an important issue at psychological conferences for many years, in particular, the matter ‘creativity’ has been appearing at the annual Conference of Polish Developmental Psychologists. The Conference as indicated is a real forum for psychologists to exchange information, and for new research to be stimulated.

In Poland, the number of research projects and publications on creativity regularly grows. 2001, as much as four books were edited, and almost forty papers, all of them devoted to the creativity. For the first time, an educational course majored in “Psychopedagogics of creativity” was carried out on the cyclical basis (Academy of Special Pedagogy in Warsaw). It was really a novelty in the area of didactics, as was the implementation of a specialization course in the psychology of creativity at the Jagiellonian University Cracow, and, simultaneously at the High School of Social Psychology Warsaw.

Creativity studies are carried out at many universities. In three centers: at the Jagiellonian University Cracow, at the Stefan Wyszynski University Warsaw, and at the Maria Curie – Sklodowska University Lublin, the courses appear to be most intensely and effectively conducted. With regard to actions promoting creativity in the domain of education, including the education of students and teachers, the Academy of Special Pedagogy in Warsaw and the Lodz University in Lodz are considered real leaders.

As pointed out in the former report, an important event was a reform to the education system in Poland, implemented in September 1999 since the reform really stimulated the progress in the studies, in all the practical actions, as well as in the teaching associated with creativity. Under this new education system, teachers are required to be creative, inventive, and to persistently improve their professional qualifications by making - among other things - postgraduate studies at universities. The Psychology of Creativity was incorporated into the canon of the postgraduate studies. Often, it is a facultative subject or a major specialization subject.

**RESEARCH PROJECTS**

**The Jagiellonian University of Krakow**
There are several researchers involved in the creativity studies: Edward Necka, Prof. Ph.D., Aleksandra Tokarz, Ph.D., Dorota Kubicka, Ph.D., Aleksandra Gruszka-Slabosz, Ph.D., and Jaroslaw Orzechowski, Ph.D.
A book by Professor E. Necka “Psychology of Creativity” is already the seventh significant monograph dealing with the creativity problems, owing to the wide scope of problems referred to, and regarding its impact (former monographs were published by Pietrasinski, 1968; Strzalecki, 1968; Solowiej, 1997; Stasiakiewicz 1999; and
Popek 2000). The other book “Creative Process and its limitations” by the same Professor Necka (issued twice, in 1987, and 1995), as well as a fragment in the most recent textbook of psychology for students (editor: Strelau, 2000) preceded the accomplishment of the Professor Necka’s book as mentioned above. “Psychology of Creativity” is considered a significant and outstanding attempt to make a profound synthesis in the area of creativity; it is certainly the canon for Polish creativity psychologists.

At present, Aleksandra Tokarz, Ph.D., is engaged in elaborating a monograph “Dynamics of a creative process”. Her major scientific interests turn around the motivational aspects of creativity, she has been continuing her studies on the topic. Aleksandra Tokarz and Aleksandra Slabosz jointly conducted investigations on what were individual characteristics of pupils (school students) who were favored by teachers, and what were characteristic qualities of those favoring teachers. Teachers were questioned what pupils characteristic qualities they considered to be typical for a creative and what for a non-creative pupil. On the basis of answers received from the polled teachers, it can be concluded that teachers comprehend creativity in a very “common”, incomplete, and incoherent way, and that they disregard the most essential, key attributes of a pupil’s creative approach; also, their answers indicate how much teachers are mixed-up and disoriented with respect to the problem of creativity. Agata Rzeczkowska, M.A., continued the investigations on this issue. Dorota Kubicka, Ph.D., completed her book “Organization of creative activities of a child during the play”. The objective of investigations as presented in the said book was to find principles of organizing creative activities of a child, to determine characteristic elements of this organization, and to describe the organization’s progress of a child between 3 and 8 years of age. The children investigated were encouraged to act creatively (i.e. their creative activities were experimentally incited), i.e. special inspiring situations were developed for them, and they wanted to transform a reachable material (standard sets of toys). Analyses and comparisons were made, both in the inter-individual and developmental aspect; on their grounds, it was possible to describe and explain the creative progress of those activities.

Investigations performed by Aleksandra Gruszka-Slabosz, Ph.D., refer to the relations between creativity, semantic activation mechanisms, and cognitive inhibition. Those mechanisms are responsible for activation and deactivation of cognitive representations; thus, they designate a range of the material under processing. The results obtained suggest that the easiness of associating ideas, which is typical for creative persons, could be attributed to the richness of links within the semantic network, as well as to the powers of mechanism of activating units within this network (Slabosz & Necka, 2001). Strong activation, appearing characteristic for persons who achieve high results in the range of divergent thinking, makes it possible to automatically detect patterns and relations existing under the processed material, it also enables the selection of data to proceed parallel within the sight field. In addition, a high efficiency of cognitive inhibition mechanisms supports the process of reducing incoherence within the processed material/matter.

A group of doctoral candidates, guided and supervised by Professor Necka, runs studies in the domain of cognitive conditions with respect to creativeness. Robert Balazs, M.A., conducts investigations on relations between the intuitive style of

In the Institute of Public Affairs, Jagiellonian University Cracow, Andrzej Mirski, Ph.D., runs lectures, classes, and trainings in the area of creative thinking.

The Stefan Wyszyński Catholic University in Warsaw
Andrzej Strzalecki, Prof., Ph.D., is a Head of the Institute of Psychology. Throughout the nineties, he and his team carried out a survey project, inspired by “The Model of the Style of Creative Behavior” (elaborated by him in 1989). The product of this survey is a new version of a “Creative Behavior Questionnaire” (CBQ). CBQ serves to measure 5 factors of the style of creative behavior: appreciation of life, strength of ego, self-realization, flexibility of cognitive processes, internal locus of evaluation. This Questionnaire has been completely psychometrically developed and shows an extensive theoretical background; it is an original method, the only one of its kind developed in Poland. With this method, it is possible to entirely identify (diagnose) features of creative personality. The work on the questionnaire’s version for the youngsters is highly advanced. Lots of investigations were made with the purpose of determining various factors conditioning creativeness, mainly personality’s and temperament’s factors (see Abstracts). Two chief attributes of the creative personality’s model as suggested by Strzalecki are worth underlining: a very good empirical explanation of it, and its universality. Originally (1989), this model was developed on the basis of the research results on creative scientists and designers; however, it turned out to be very useful in studies on effective and creative entrepreneurs and teachers. Yet, it seems that the Strzalecki’s model presents a great number of heuristic powers.

The Maria Curie – Skłodowska University in Lublin
Professor Stanislaw Popek, Ph.D., works in the Institute of Psychology; he is an author of the monograph “Human being as a creative person” (published 2001); in the monograph, he recapitulates his hitherto studies and concepts. In his previous (1998, 1988) and current works, he deals with artistic talents and aptitudes of highly gifted pupils/students, as well as with personality-related (individualistic) conditions of creativity. He is an author of an original “KANH” questionnaire-type method to measure creative abilities (Popek, 2000). Similar to the “CBQ” method by A. Strzalecki, “KANH” is also an original method that was completely accomplished from the psychometric point of view.

Dorota Turska, Ph.D. deals, among other things, with the support for the development of exceptionally gifted school-students/pupils. In her doctoral thesis, Renata Wiechnik, Ph.D., studies a problem how intellectual abilities (a measure of convergence abilities), creative skills (considered as convergence talents), and a
creative approach interactively impact the effectiveness of various learning forms. Barbara Gawda, Ph.D., is engaged in a research project on the graphism quality of creative people. Ryszarda Bernacka, Ph.D., studies relations between conformism/nonconformism and the individual approach to the forms of expressing human creativeness.

The Academy of Special Pedagogy in Warsaw
At the Academy of Special Pedagogy, the subject of creativity is studied and developed by the following persons: Andrzej T. Goralski, Prof., Witold Dobrołowicz, Prof., and Jan Laszczyk, Ph.D. Scientific activities are accompanied by other actions, such as popularizing knowledge, schooling psychologists, educationists, and teachers. On the curriculum of the Academy, there is one special course devoted specifically to the creativity; it is “Psycho-pedagogics of creativeness”. At the end of the present school year, for the first time, students of this course will graduate from the Academy.
Professor Andrzej T. Goralski, a philosopher and educationist in the creativity, is a Head of the Institute of Methodology and Pedagogics of Creativity, Academy of Special Pedagogy. Being a former student of George Polya, he presented achievements of modern heuristics to the Poles. According to him, the ontology of creativity should be derived from the interpretation of a category of necessity and possibility. He also recommends a method of problem solving called synthetic intuitionism. Professor A. T. Goralski established his own scientific team that was the first in Poland to develop its own creativity trainings (Goralski, 1977-1982; 1980/89; 1996, 1998). E. Necka continued his work (Necka, trainings and TROP) and created a new, different trend in the creative thinking techniques. The current research works by Professor A. T. Goralski focus on a problem of formulating ideas.
W. Dobrołowicz, Prof., published several papers dealing with factors that appear to disturb creativity. He was engaged in such issues as: engineering creativity, psychological conditions of inventiveness, intuition, and attention (concentration). The idea of establishing a study course “Psycho-pedagogics of creativeness” originates from him; he is also a head of this study course.

The Nicolaus Copernicus University of Torun
The study projects of and publications by W. Limont, Prof. deal also with creativity issues: concepts of and studies on psychological mechanisms of imagination (1996), a relationship between the prototype of a graphic sign and creativity, this relationship has an important impact on the creative abilities measurements, and characteristics of teachers teaching creative and talented children. This particular issue is developed in several doctoral dissertations and theses, prepared for a M.A. degree; they are reviewed and supervised by Professor W. Limont.
All the recent didactic activities carried out by Professor W. Limont (at the Nicolas Copernicus University, Faculty of Fine Arts) aimed at the development of a new study course in Poland (the unique one in our country): “Artistic education in the range of fine arts” including the specialization “Psycho-education of Creativity”. At this faculty, courses on the creativity are of basic character. This study branch was implemented for the first time in the school year 2001/2002.
In the period from 1994 to 1999, Professor W. Limont was very active in the ‘ECHA’ News (European Council for High Ability), as well as in the ‘High Ability Studies’ magazine. 1996, she became a member of the General Board of ‘ECHA’.
Since 1996, Professor W. Limont has been charged with duties of an expert of the Ministry of National Education in the domain of schoolbooks evaluation. She is also a member of the team established to reform school curricula, and a consultant to evaluate and coordinate the accomplishment programs aiming at the promotion of the talented youngsters.

The Warsaw University
Anna Matczak, Prof., Ph.D., and her university colleagues run study projects on abilities and creativity. The scientific activities of Professor A. Matczak were presented in the former Report. She is a supervisor and reviewer of the doctoral dissertation “Situating creative abilities in the structure of special talents exemplified by gifts for fine arts and music” prepared by Michal Chruszczewski, a doctoral candidate. Professor A. Matczak runs lectures on creativity for students; she promotes numerous theses for a Master of Arts degree, as well as doctoral dissertations.

High School of Social Psychology in Warsaw
At HSSP, students are given an option to practically apply their knowledge of creativity while making a specialization course in creativity. Professor Edward Necka runs this specialization. Professor Strzalecki is also a supervisor of students’ annual papers (that must be prepared to obtain a semester/year credit) and theses for a Master of Arts degree.

The Adam Mickiewicz University of Poznan
Michal Stasiakiewicz, Ph.D., published a monograph “Creativity and Interactions” (1999) pointed out in the former Report. He proceeds with several study projects and develops his research on methodological and philosophical aspects of research on the creativity.

The Catholic University of Lublin
Professor Andrzej SekowskiProfessor of the Catholic University of Lublin, Head of the Chair of Psychology of Individual Differences. Vice-President of the Polish Psychological Association, Editor-in-Chief of the Review of Psychology (Official Journal of the Polish Psychological Association). His scientific activity concerns on: research in psychology of abilities, intelligence and creativity, also special interests in the psychology of gifted persons.
Right now, Professor Andrzej Sekowski is about to publish a joint paper “Theoretical and practical forms of psychological nurturing of gifted people”. This year, there were issued: a second edition of a book as mentioned in the former Report, and several papers dealing with the problem of abilities.

The University of Lodz
The issue of creativity is studied in the Institute of Social Pedagogy; here, Krzysztof Szmidt Ph.D. is the chief scientist in this Institute to deal with this problem. He
published two books on the conception of creativity and educating towards the creative attitude; the following Polish educationists formulated this concept: Helena Radlinska, Kazimierz Kornilowicz (who introduced the conception of creative attitude and potential creating abilities as early as in 1930), Aleksander Kaminski, and the others. In those books, the author presents his own, original idea of how to assist children and the youth in their acts of creation (see materials ‘Lessons of creativity’ as presented in the former Report). K. Szmidt, Ph.D. is a President of the Polish Society of Creativity, and while fulfilling this function; he popularizes the knowledge on the creativity.

In the Institute of Psychology, Joanna Witkowska conducted studies dealing with measurements of creative abilities, and Hanna Bednarek conducted experimental research project on spatial imagination.

The University of Gdansk
Jozefa Solowiej, Prof., has been running research projects on creativity for many years. Her projects were commenced in the seventies when she entered into the cooperation with E. P. Torrance. In 1997, she published a monograph “Psychology of creativity”; and now, she is engaged in an experimental survey on the brainstorming method. She had several popular presentations on the subject of creativity for the Methodological Center of Ministry of Education as well as on the conference for art teachers. A lecture during the meeting of teachers of creativity was also presented. Alina Kolanczyk, Prof., and Barbara Szymanska jointly pursue a research project on changes in the affective meaning of conceptions depending on a particular task being performed by creative and non-creative persons. The results obtained indicate that creative persons evaluate conceptions corresponding with their task’s criteria as better ones, and conceptions, which do not meet those criteria – as worse.

The Kazimierz Wielki Academy of Bydgoszcz
Edward Cwiok, Prof., assesses talented children and youngsters. His projects involve the motivation, aspirations, needs, and school achievements of a group of the young that was carefully selected from among the high school students. Comparisons made referred to achievements in various school subjects, and analyses were performed with regard to both gender students representing differing degrees of talents.

The University of Bialystok
Study projects in the domain of creativity mainly refer to pedagogical issues: attributes of a teacher and prospective teacher (a student), a process of creative potential development in children and youngsters. Janina Uszynska – Jarmoc, Ph.D., and Monika Wroblewska, Ph.D, pursues those projects. The studies conducted by J. Uszynska are very interesting; they refer to the issue how pre-school children perceive (picture) themselves, and include the developmental analysis of the process of emerging and differentiating components of creative abilities.
APPLIED PROJECTS

Educating students
At our universities, offering psychological studies, the subject “creativity” is on the curricula of courses, trainings, and workshops. For example, the students of the Jagiellonian University are given a choice to make specialization in the domain of “Psychology of creativity”, provided, they accomplish the following courses during the three years of their studies: psychology of creativity and creative personality, identifying/diagnosing creative abilities, trainings in creative thinking. Here, students are trained how to run groups in creative thinking. Similar studies are offered for students at SWPS. Professor Edward Necka is a head of those two specialization ranges.

The employees of the Institute of Psychology at the Jagiellonian University Cracow also run courses in psychology of creativity, and trainings for students learning to become teachers at the College of Pedagogical Studies (obligatory for the future teachers).

The Academy of Special Pedagogy offers a complete 5-year study course to the Master of Arts degree: “Psycho-pedagogy of creativeness”; only 30 students can study here during one school year. This type of study is extremely popular among the young people, as are the indicated psychological specializations. This year, students specialized in those subjects will graduate for the first time. The study curriculum includes, among other courses: philosophy of creativity, history of creative concepts, psychology of creativity, sociology of creativity, emotional intelligence, intuitive intelligence, psycho-social barriers, diagnosing creative attitudes and talents, creativity in children and youngsters, interpersonal training, training of creativity, and workshops on creativity in fine arts and literature.

Educating teachers
Universities and some other institutions at the higher educational level organize various training sessions, courses, and postgraduate studies. In most cases, creativity constitutes the main subject of such courses. The Lodz University, Academy of Special Pedagogy, The Maria Curie – Sklodowska University, and many other institutions offer a variety of studies on the creativity.

At the Jagiellonian University, in the Institute of Psychology, postgraduate studies for teachers are organized. Teachers can study for the purpose of obtaining several specialization degrees, and among the other subjects: in creativity (courses: psychology of creativity, identifying/diagnosing creative abilities, psychological background of heuristics, training in the creativity).

Publications of various didactic materials constitute another form of educating teachers; also, they essentially support teachers and students in their developing many creative activities. For example, Krzysztof Szmidt, D. Ph., Lodz University, is an editor of a series of textbooks for teachers and students that are considered a
significant help in stimulating creative behaviors (as described in the former Report). In addition, he edited several complementary materials (so called “Creative Cards”).

The postgraduate studies for teachers are usually set up as a two-year course, unfortunately, not on a regular basis due to financial limitations.

**Artists for the creativity**

Actually, it seems almost impossible to describe all the activities undertaken by artists to publicize and promote their own creative activities (installations, performances). Additionally, with respect to the present Report, it is also a very complicated task to specify all the activities that have to stimulate creativity of ‘ordinary’ people. However, one example would be very useful, and namely, all the activities performed by Wieslaw Karolak, Professor at the W. Strzeminski Academy of Fine Arts Lodz. Professor W. Karolak runs lectures and workshops both at his University in Lodz, and at other universities as a visiting professor: Bielefeld and Cologne (Germany), Helsinki and Rovaniemi (Finland), as well as at artistic universities in Darlington (United Kingdom), Berlin (Germany), Stockholm (Sweden). The rich output of Professor W. Karolak is highly appreciated, and he was honored by the *Honoris Causa* title, University of Bielefeld, in 1999, and by the ‘Ziegfeld Awards’, 1999, USA (World Educator of the Year 1999); he has been granted many other rewards, too.

His artistic output significantly influenced the activities of other educationists employed at the Lodz University, and of some other people involved in his actions, performances, and installations. Among countless events and actions held by him, the following should be mentioned in this Report: - artistic-educational projects accomplished in the period from 1994 to 1997: ‘ZYWIOLY’ (‘The elements’) in the locality of Zalecze Wielkie (Poland), ‘Ziemie bede opiewal’ (‘The Earth I will extol’), 1994), ‘Ogien’ (‘Fire’, 1995), ‘Woda, woda, woda’ (‘Water, water, water’, 1996), ‘Powietrze, PoWietrze’ (‘Air, After Air Wind’, 1997). The titles of the projects as indicated were, then, applied as a general title of school-books by K. Szmidt and J. Bonar in their “The elements. Creativity lessons”. (2001), ”Creative cards” were issued; their artistic design of the Cards was developed by this artiste. It is worth mentioning that Professor W. Karolak co-operated with Edward de Bono who is, in Poland, a very popular author of many manuals on creative thinking (2000), participation in the realization of the Edward’s de Bono project, creative workshops in summer, Malta).

**Assistance to talented children and youngsters**

The Polish Children’s Found is an independent, non-governmental organization established in June 1983, directed by Ryszard Rakowski, Ph.D. One of major objectives is to help gifted pupils and students pursue and develop their abilities, and to adjust the educational system in Poland to accommodate the special needs of gifted and talented children. In this field the Fund has closely collaborated with the Ministry of Education as well as other legislative and executive bodies at the highest level. Fund’s activities are based on co-operation with numerous higher educational establishments, research institutes, cultural establishments, as well as individual academics willing to offer their time and experience and to work with particularly
talented children. The institutions especially involved in joint activities with the Fund include the Warsaw University, the Polish Academy of Sciences, the Jagiellonian University in Krakow, and the Copernicus University in Torun. A detailed description of the activities performed by the Fund was submitted with the former Report. Each year, the Fund publishes an official statement (bulletin) containing papers and works made by the pupils/students assisted by the Fund; also, the Fund issues a report on its activities. Besides this institution, there are numerous private and social organizations to support the highly talented children and youngsters. Fortunately, they are growing in number. Additionally, the more and more individuals (private persons) establish scholarships for them.

**Academic Junior High School (Gimnazjum Akademickie) in the city of Torun**

It is a government-owned school of an experimental character, the first one of this type in Poland. Here, highly talented children/youngsters continue their education after the completion of the sixth class at a primary school. It was established in the city of Torun, in September 1998. The school offers boarding for its students in a student hostel. A candidate must be psychologically and pedagogically diagnosed, and the scope of the psychological and pedagogical diagnosis (identification) is specified by the very detailed regulations. In the diagnosis, the following factors must be determined: level of the candidate’s intelligence, his/her interests/hobbies, his/her level of self-evaluation (self-rating), his/her creative abilities, his/her reaction/resistance to stress and fear. While diagnosis a candidate, his/her family background and references by his/her teachers must be taken into consideration. There are several research projects in progress on the subject how this special institution functions. Some projects have to investigate the school students and teachers, however, nothing was published so far.

**Other organizations and schools**

Owing to all the political transformations in Poland, it was possible to set public and private schools in our country. Now, their number regularly increases. Among them, there are schools applying unconventional methods of education, experimental schools, and creative schools. In the former Report, it was stated that systematic investigations on this issue are absent. For the purpose of this Report, the same must be repeated. Undoubtedly, highly talented children and youngsters can find a suitable place for themselves in such schools. In many schools in this group, additional creative classes and trainings are arranged. Moreover, they educate and teach their students in accordance with principles of the psychology of creativity. It is worth stating that the Polish system of school education is rather egalitarian than elitarian, and special education of highly talented children and youngsters is a novelty/innovation in our school system. In individual towns, special classes (forms) are arranged for the extraordinary (highly) gifted school-students. The City of Cracow is an example of such attempts. At this moment, it is difficult to evaluate the efficiency of this educational option for talented children and youngster. Generally speaking, it has become a routine that some chosen schools, famous for outstanding achievements of their students, select candidates in order to find and choose the most
talented ones. As for parents and school children, they usually follow the ranking rates and decide on the best schools that are annually specified by school superintendents (kuratoria oswiaty) and presented in educational magazines. Of course, it is typical that the best schools attract the best students, and, so, schools assembling highly talented students are found as if automatically, e.g. Marynarki Wojennej (Naval Forces) Secondary Education School No. III Gdynia, A. Witkowski Secondary Education School No. V Cracow, or S. Batory Secondary Education School Warsaw; several provincial secondary schools could also be named here.

In Warsaw, there is a ‘Society of Creative Schools’ run by Danuta Nakoneczna, Ph.D., and in Wroclaw – ‘Wroclaw Association for Future’ set up and managed by Professor Ryszard Lukaszewicz. The two indicated organizations have been successfully developing their activities for many years; they were considered a substantial support for the Polish education in the period when it was too difficult to promote creativity and to include it into our educational system due to the lack of institutional and legal solutions.

**Polish Creativeness Association** (Polskie Stowarzyszenie Kreatywnosci)

In August 2000, The Polish Creativeness Association was founded as an organization to integrate representatives of various professions showing interests in theoretical and practical stimulation and development of children’s, youngsters’ and adults’ creative potential. This Association has now about 200 members. Its President is Krzysztof J. Szmidt, Ph.D., from the Lodz University.

The most crucial objectives of the Association are:
- with respect to the knowledge and all the information on creativity: to acquire knowledge and information, to make them accessible for the interested people, to popularize and publicize them;
- to encourage and to promote creative approach/attitudes and creative life styles;
- to develop and verify innovative educational curricula;
- to animate social movements of creative teachers and educationists;
- to construct a multi-branch forum for exchanging experiences and mutual support by creative persons representing various disciplines.

The first scientific-methodological Session ‘New theories on creativity – new methods of assisting in the act of creation’ was held in Cracow, on 12\(^{th}\) to 14\(^{th}\) October 2001. It is one of the activities run by the Association, and it was decided to hold such meetings once a year.

(This report, as sent in by the authors in Poland is then followed by an extensive report of creativity studies. Because of space limitations only three are presented here. Readers may write the authors in Poland for the material that could not be reproduced here.)

Edward Necka, Jagellonian University, Krakow

Psychology of Creativity
This book provides a careful review of the classical and contemporary views and research into the psychology of creativity, including concepts and criteria of creativity, the structure of the creative process, cognitive components of creativity, the role of emotions and motivations, insight, individual differences related to creativity, its social context, system view and applied creativity. According to the synthesis proposed by the author, creativity can be analyzed from the perspective of four levels distinguished on the basis of complexity of psychological mechanisms operating on the particular level and on the basis of increasing degree of social respect for the products. These levels are: fluent, crystallized, mature and outstanding creativity. Each level is characterized by peculiar demands on the cognitive processes, features of the individual, emotions, motivations and social acceptance.

Stanislaw Popek, The Marie-Skladowska University, Lublin

Human Being as a Creative Person

This book is based on all the creative experiences gathered by a scientist, artistic painter, and poet. The author approaches human beings from the systematic and holistic points of view. He articulates those creative potentials of human beings that can be carried out exclusively under very specific social and cultural conditions, and which appear characteristic for each individual creator. The author analyses personality-associated (individualistic) determinants of creativity; he points out the individual differentiating of a subject, of creative acts, and of domains of creativity. He explicitly distinguishes between the eitarian and egalitarian creativity; this conclusion is that the most important and meaningful conditions of creativity (of being creative) are inborn abilities and special gifts/talents. The author gives a new structure of the condition determined by him; Kozielecki bases the structure in the transgression psychology. The author formulates many unanswered questions.

Andrzej Strazlecki and Dorota Kot, The Stefan Wyszynski Catholic University, Warsaw

Personality Dimensions of the Innovative Entrepreneurship.

The senior author's model of The Style of Creative Behaviour was used to study personality determinants of the innovative entrepreneurship. Two groups of subjects, a group of highly effective entrepreneurs (experimental group) and a group of civil servants (control group) were tested by the aid of the following tests: I. Strzalecki's five factors, "Creative Behaviour Questionnaire"-CBQ (1. Appreciation of Life, 2. Strength of Ego, 3. Self-realization, 4. Flexibility of Cognitive Processes, 5. Internal Locus of Evaluation); II. Herman's Questionnaire of Motivation"; III. Gliszczynka's "Internal-External Locus of Control"; IV. Spielberger's "STAI--State Trait Anxiety Inventory"; and Guilford's "Ship Destination Test". All independent variables, except the STAI, significantly differentiated both groups. However, three variables of the CBQ (Strength of Ego, Self-realization, and Internal Locus of Evaluation) have the
highest impact in explaining the variance of the criterion-success in entrepreneurship. The multiple R of these three factors is .63, and explains 35% of the total variance. The article concludes with a discussion about the creative and efficient personality as necessary condition of an entrepreneurial activity.
Portugal

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Publications

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Creative and Non Creative People: What Kind of Metaphors Do They Prefer?

Analogical and metaphorical thinking has been strongly associated with creative performance (e.g., Boden, 1994; Wechsler, 1993; Sternberg & Lubart, 1995). Both kinds of thinking demand the difficult search for similarities, which are present in very different situations. They demand the difficult search for remote associations of information, which seems to be nuclear to the creative process (Mednick, 1962; Martindale, 1989; De Mink, 1995).

Specifically, the production of metaphors has been explained by several authors like Gluksberg and Keisar (1990), Tourangeau and Rips (1991) or Tourangeau and Sternberg (1981; 1982). These last researchers, in our opinion, have developed very interesting empirical studies to found and to systematize their theoretical positions. They've concluded then that the better metaphors were perceived as those that bring together two criteria: Remoticity between semantic domains involved in the metaphor and Equivalence between words used within each domain. An example given by these authors is the metaphor "The Rolls-Royce is the lion of cars". In this case "Rolls-Royce" and "lion" belong to remote semantic domains (cars and animals) but there is equivalence between important characteristics of each word there (prestige, force, beauty,...). This format of metaphor studied by Tourangeau and Sternberg - X is the Y of Z - will then allow the thought "The Rolls-Royce is the king of cars as the lion is the king of animals".

These results about perception of metaphors would be replied by Trick and Katz (1986), and Sternberg (1988) called this kind of metaphors "creative analogies". However, we don't know any empirical study proving or exploring the relations between creativity and these two criteria.

Considering the importance of metaphorical thinking in the creative performance, the interest of the model given by Tourangeau and Sternberg (1981; 1982) and the necessity of empirical studies about it and its eventual relation with creativity, we are exploring a test to evaluate how people choose metaphors taking this model.

We built a first group of 28 items following the format "X is the Y of Z" and, for each item, we ask subjects to choose the word "Y" from 5 alternatives representing combinations between Remoticity and Equivalence. For example, we give the sentence "the camel is the___ of desert" and the answer can be a) "boat", b) "warehouse", c) "donkey", d) "stained-glass window" and e) "rat". In the fist case, we have a remote and equivalent sentence: "transports" and "animals" are remote semantic domains and the answer most expected to the metaphorical question "what is the boat of the desert?" is "the camel" which reinforces the equivalence of words. Answer b) shows a remote but not completely equivalent sentence: semantic domains are different and if a camel can be metaphorically a "warehouse of the desert", an "oasis" or a "tent" can also have this meaning. And following the same logic of both
criteria, answer c) corresponds to a not remote but equivalent sentence, answer d) shows a remote but not an equivalent one, and answer e) is a not remote and not equivalent sentence. These 5 alternatives of answer have different scores of evaluation (5 for the first alternative and 1 for the last one) and all the items are directed to high-school and university students.

At this moment we are analyzing several possibilities of exploring this instrument. We can give instructions explaining both criteria and ask for selecting "the remote and equivalent" metaphor or we can simply ask for choosing "the better" metaphor. Then, using a test of creativity and comparing results we can try to understand how creative and non-creative people perceive and/or produce Remoticity and Equivalence when metaphorical thinking is demanded. We can also use the "thinking-aloud" method and analyze what preferences, beyond these two criteria, guide the choices of metaphors of creative and non-creative people (examples: perception of beauty, power of visualization, sonority of the given words or the given sentences).

We know it will be difficult to make some decisions, to choose a reliable and valid test of creativity and to explore results without the support of similar studies. However, we believe that any information we can obtain will be useful to understand the production of metaphors, creativity, and thinking skills in general.

References
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Creativity And The Paradoxes Of Contemporary Democracy

*Tout comprendre c'est tout pardonner*

The history of humanity is also the history of the growth of freedom, which is the necessary resultant of the process of individuation and the expansion of culture. Thus democracy, insofar as it is the ideal political system, tends toward the creation of the real cult of the individual (in the non-egoistic sense of the term), liberating him from external authority; and, by allowing him to express all his thoughts and feelings, grants him the liberty to create, and in doing so, to seek happiness. That is why the right to freedom of expression is perhaps the most emblematic slogan of the defence of democracy, and surely the greatest contrast to authoritarian political systems, especially fascism.

However, totalitarianisms also claim the happiness of the individual as their goal, but they do so in a different way: they propound fusion with the collective as the way to achieve it. In the end, both the affirmation of individualism and the defence of collectivism take advantage of the desire of the individual to overcome death, and to survive through the memory that is left behind. And this is achieved either by affirming one's difference by means of creation, or by melting into the whole, adopting an ideology shared by others which can assure a permanence beyond death.

Yet the option for melting into the whole is the stronger, especially because it is the most direct way within the reach of the average individual, not only to escape solitude and powerlessness, but also to free oneself of the feeling of guilt resulting from an individual search for independence. In a sense, the price of this fusion is the abandonment of individuality, with its construction and affirmation of difference, since it is based on adopting the opinions of others as if they were one's own. Here, democracy as a political system claims exactly the contrary, in affirming individualism as the goal. On the other hand, it provides the ideal background for the emergence of selfish ideologies, since it gives their promoters a favourable field of action - provided that they do not openly flout the principle of the free expression of ideas. Thus, whether these systems are economic, religious or political, they can prosper only if they succeed in annulling individuality while firmly maintaining that they are there to help individuals achieve it, especially through free expression and freedom from the sources of authority.

Now, the problem is that the right to express our thoughts is meaningful only if we are able to have thoughts of our own; just as freedom from external authority is
only a lasting acquisition if our inner psychological conditions are such as to enable us to establish our own individuality and, at the same time, accept that of others without thereby feeling insecure. In fact, as is expressed in the epigraph to this text, the tolerance of the ideals of others is the highest virtue of any thinking being, and, for that very reason, is very difficult to achieve.

The doubt, then, is whether contemporary society is approaching the goal of full democracy or whether, strange as it might seem, it is moving away from it and creating the conditions for the emergence of a new authoritarian regime. Perhaps not a state authoritarianism of the fascist type, but another more covert one, fitted to the post-moralist, individualist and mediatized society in which we live, which sometimes seems to have no other horizon than a more or less regulated political and economic liberalism, which favours the freedom to exchange and consume, with the object of a better life. "A better life" means getting money, prestige and power, achieving "success" i.e. proof that the individual has managed to sell himself on the market.

Free from any faith in collective projects, we seem tacitly to accept the increase of emphasis on the self, and the fact that we are creating a real jungle of interests, even if this means we have to see an increase in corruption, abstentionism, social exclusion and delinquency, to the benefit of an increase in the power of rights and of law as a regulator of post duty-based societies. These are societies governed above all by the duties of the individual to himself, with an ethical viewpoint in which evil exists only when others are harmed, and good consists in the quest for well being through work, but not in work itself. In this way is created a coexistence between work and leisure, between professional and private success, in which people work to earn more money, and use this money to earn even more, while rushing in order to make more time. Then they use this time to rush more, to save more time; and the money and time thus gained are then spent in restless relaxation in places where happiness is on sale to people who are so exhausted that they cannot use the time they have saved, and where they are sure to meet others who are also horrified by the prospect of being alone with themselves, and prefer any company to facing their own emptiness or their own conscience. A conscience weighed down with the fear of death, because they have not lived; of ageing, because they will not be able to compete: of disapproval, because they are not accepted by everybody.

Modern society, in spite of all the stress it lays on happiness, on individuality and on self-interest, has taught the individual that the object of his life is success, to be obtained through fulfilling his duty to work. He thus labours under the illusion that his actions are in his own interests, although in fact he serves anything but the interests of his real self. Everything is important to him except his own life and the art of living; he is in favour of everything except himself. Subjected to an education that sells him off-the-peg global models, he has convinced himself that happiness is something "light", to be obtained by enjoying oneself a lot, possessing a lot, or being very important. He does not understand that the struggle for life (a struggle through merit) is exhausting and painful, and produces remorse; that going without some things is an essential part of happiness, and that this, like liberty and existence, needs
to be won day after day, and cannot be "given" or bought on request. Nor does he understand that a happy life should be a tranquil life, since only in a peaceful atmosphere can real pleasure exist.

Strange as it may seem, the last paradox of democracy derives from its being based on envy, because of the perverted interpretation people make of the egalitarian purism of Greek origin that says, "None among us is first". In fact, instead of promoting tolerance and difference, as it should, the competitive system of current society tends to "standardise" those who wish to fit in with prevailing norms, or to exclude them if they will not conform. And in affirming freedom of thought as a value to foster, contemporary society strongly encourages mass culture and bureaucratic oligarchies, which exercise a censorship in some ways even more terrible than that imposed by totalitarian systems, since it is a faceless enemy, not open to attack by those who do not wish to submit to it. Instead of repressing, it ignores; instead of attacking problems, it puts off solving them; while not going so far as to remove those who are independent, it passes them by and forgets them.

Now, envy is an aberrant way of paying homage to superiority, and it is certain that what is most envied is character, as is shown by the first murder in the biblical story, as it is precisely the affirmation of the individual over the alienating collective, the cultivation of the spirit in relation to an ideal, in a quest for perfection and happiness. Since the quest for the ideal presupposes an effort of the creative imagination, and not patient imitation, in order to keep the capacity to distinguish the bad that is seen from the good that is imagined, the idealist refuses to do a balancing act and bank on what is in fashion, preferring to keep his equilibrium in his own way. For it is only this equilibrium that can provide him with the true way to seek happiness, which is no more than the harmony between the individual and what surrounds him; it thus implies a control over one's own life, and an attention to others and to what is happening around one, rather than a concentration on oneself.

If mediocrity lies in the inability to maintain an ideal, then it is quite easy to realise what a terrible weapon envy makes in the hands of all those who cannot keep alive their youthful ideal, and so see themselves grow old as they gradually exchange the joy of youth for utilitarian calculation. So envy appears as the real reason for the destructiveness that the individual seems to adopt, as he sees himself overwhelmed by a premature old age, caused by a life that has not been lived.

As true happiness does not depend on external effects, but rather on the way in which the individual interprets them, that ideal demands a continual and persistent effort to create an internal order to supplant the external chaos imposed on us. It means, among other things, being able to control emotions such as fear, pain, rage, anxiety or jealousy, which lead to a psychological dysfunction that distresses the individual from what is essential and prevent him from freeing himself from the system of external rewards and punishments, and concentrate on his chosen activity, obtaining from it all the satisfaction he needs. Like the schizophrenic, who cannot distinguish between different stimuli and react differently to them, the individual totally subjected to external influences becomes neurotic and unable properly to use his own will to take action and take responsibility for doing so. Social neurosis inhibits creativity, and is therefore contrary to the free enjoyment of life and happiness.
In the end, only the creative attitude to life guarantees the essence of democracy as the social form for seeking human happiness. And this attitude is shown in the full affirmation of the individual as original and different from all others, true to his human nature, which leads him to seek what is good, and what is best for himself and everything around him. Each individual is unique and carries with him the potential to create something new, different and unexpected out of his subjective experience; to use his creating imagination to dream and to make something beautiful, freeing himself from the objectivity of the world and the suffering caused by the awareness of death. For resistance to the frustration of daily life depends on the capacity of the individual to create illusions - moving from belief in collective systems to the creation of his own meanings and symbols for the interpretation of reality. Thus, each moment of existence involves a creative act, and the unceasing search for this interpretation of reality gives the individual a reason to exist, and the capacity to put up with external obstacles. As Nietzsche says, "He who has a why to live can bear almost any how."
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Before presenting the results of my studies I must say that I discovered in the European Journal of Personality /15(4) 2001/ the article signed by Prof. Uwe Wolfradt (Martin-Luther-University Halle, Germany) and Prof. Jean E. Pretz (Yale University, New Haven, USA). Some conclusions of their researches are similar with mine. So, I am glad that I am not "alone" in my findings.

While defining creativity from a personological point of view Eysenck (1995) claimed: "Creativity presupposes a high level of psychoticism and a strong Ego". Psychoticism is defined by a set of specific traits like egocentrism, empathy, impulsiveness, aggressiveness, and no socialization. The Ego has the task to keep the psychic balance; to prevent the decompensation of personality (Rawlings, 1985) The creative type can be considered an antisocial type, endowed with a strong Ego. These features release needs for "change" and allow the person to surpass the limits of community. They provide the necessary "support" forgetting over the conflict opened by braking social routines. In the field of values, the insubordination to community rules can have either a positive connotation or a negative one, depending on the source that generates it. The motivation that prompts the behavior of breaking routines is quite different. Maisonneuve (1996) said "strongly resenting a conflict is due either to a source of lack of poise, which can lead to isolation or neurosis, or to a source of creativity, leading to certain decisive choices, or to a reframing axiological field."

The adolescence is the age essentially characterized by conflict of roles, as torn between infantile behavior model and adult behavior models, the teenager is often the subject of contradictory expectation, for the want of passage "rites" (Maisonneuve, 1986). This is also the period of personality structuring and ripening. Theories lay stress on the need of privacy and of communication, as two contradictory and compulsory facet's of the creative type's interpersonal relationships. Adolescence is characterized by a continuous "swing" between intense socialization on the one hand and isolation (no socialization), as a behavior formula necessary for defining one's own identity, on the other hand.

Anderson (1959) one of the pioneers of research in this field discussed the problem of creativity as follows: "With children creativity is universal, with grown-up it is almost inexistent. The big question is what has happened to this capacity?"

Our research tried to answer to this question. Step by step we tried to discover the relation established between the personality structure and the social context. And we discover.

The analysis of the distribution of the creative subjects and the noncreative ones, by means of the Three Vector Model (Gough, 1996), has revealed a higher concentration of creative teenagers within the gamma framework (extravert and questioning the

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1 This paper was read at the XXVII International Congress of Psychology, Stockholm, Sweden Jul 23-28, 2000. This is the first publication of this paper
rules), whereas noncreative one are better represented in the beta framework (introvert and conventional). The level of the teenager's creative performance depends on the potential level of personality type, as well as on the characteristic marks of interpersonal relationship.

As regard the role played by social interactions in the development of teenager's creativity, we have noticed that the features providing the characteristics of style and interpersonal relationships have different implications at the level of creative performance, depending on the level of potential. The performance is creative if the personality features establish a positive relation with the creative potential and with cognitive abilities. When the relation between the personality features, the potential and cognitive abilities are negative the performance is non-original. It can be stated that the interpersonal dimension of personality represents the mediating variable between the creative potential and the cognitive style, in this way determining the level of performance.

The profile of the creative teen-ager show that the personality traits associated to the cognitive style has two characteristics, the need to contradict the conventional and the need for social support and social recognition. This conflict, probably made stronger by the characteristics of age, the denial of adult value and the need of peer's patterns, can be considered as the tensional element generating behaviors of overfulfilment, but also an adjusting element of a relational kind, as the appropriation of the answers suggested by the majority enables the preservation of pre-established social relationships.

Positive social reinforcement (positive signification of behavior, according to Hampson, 1996) gives style and interpersonal orientation a creative run. As for the significance of behavior as an element of structuring or supporting style and interpersonal orientation, the results we have obtained allowed us to identify the difference between creative and noncreative. A less conventional educational pattern leads to the structuring of an “Ego child” associated with a more flexible system of social and moral values, in which the interrelation dimension is well valuated. These educational patterns seem to justify the creative teenager’s need for support, for “external” recognition. A classical educational pattern leads to the structuring of typical profiles for “Adult” and “Careful Parent”, in terms of a Transactional Analysis of a system of social and moral values dominated by traditionalism and conformism (Berne, 1961). At the end we arrived to a description of creative personality in terms of the relationships established between the potential, the performance and the interpersonal and the cognitive features. We consider a description of the dynamics of the personality traits generating creative performances at this age. The model obtained as a result of this research are described in what follows: a) creative potential, constitutive part of creative temperament; b) cognitive abilities, to be defined within the frame of thinking, perception and semantic abstraction; c) personality traits, belonging to the cognitive sphere and to the interpersonal relationship; d) factors of social context, educational factors within the family and outside the family; e) creative performance, acknowledged behaviors with in social group.
Creative potential (constitutive element of the creative temperament, Gough, 1992) subordinated to structure of personality, leads to the structuring of the creative, unitary and independent abilities, on one condition: the interface between potential and cognitive abilities should be ensured by personality features such as extroversion and nonconformist. The structure of personality features, responsible for interpersonal relation, making which allow creative development of process implies the existence of an open educational pattern, in the one hand and the presence of positive supporting and active acknowledging attitude towards creative types of behavior. The development of personality cognitive traits (independence, flexibility, tolerance, empathy) structures the creative cognitive style in correlation with the abilities level. An open educational pattern as well as positive significance of the behaviors develops cognitive personality traits that allow reaching original performances. A fact that shows the cognitive side of personality depends on social context.

In adolescence, an open social context ensures the structuring of a set of extravert and nonconformist interrelation personality features and that of a creative cognitive style, which allows turning creative potential into creative performance. Therefore we may relay on the validness of the following statement: “In adolescence, turning creative potential into performance depends on the constitution of personality features under the influence of the social context”

The behavior portrait of the creative teen-ager and of the noncreative seems to confirm the statistical results. The description of personality of the creative and noncreative adolescent are made using the "Anchored Scale for Rating the Creative Behavior" (Dinca, 2001). The peer evaluators make the description.
The creative teenager has a style of her own, thinks and behave differently, as compared to others. Under circumstances of failure he can pull himself together and start every thing "from scratch". Successive failures do not discourage him, eventually he succeeds, He is interested in absolutely everything, and he is always attentive. He inquires everybody about everything, everywhere. He does so not so much out of passion or out of a special interest for a given topic, but just in order to know. Besides his school activity, he practices a sport or other activities, out of pure pleasure, without being compelled by anybody, in this way he fills up all his spare time. He develops at various levels and getting a title is not important to him. Therefore, he goes on working, in order to gain higher recognition. He forces his "luck". He is able to see the good side of things. He does not care about the others opinion, he does not give up his own plans, even when he is aware that then do not lead anywhere. He easily finds new use for apparently useless object, he "transform grandmothers old damaged coffee grinder into a series of useful objects: the handler will be used for cracking nut, the metal box will serve at developing photographs, a.s.o." He is visionary type; he sees the evolution of human knowledge in perspective. He behaves according to his own moral code; he does not care about disapproving attitudes. He displays the same lack of interest in uncomfortable social rules, both in social life and in private one. He is capable of making the people around him feel easy and clear up, he know how to make the others like him and enjoy his company, he gets over award circumstances by a level-headed response. He is able to remember and to interpret details, which seem insignificant to others, like a person's name and age, their way of speaking.

The noncreative teenager behaves just like the others, he thinks just like the others, he does not attempt to do anything different from what those around him do and is being no means different from the latter. He does not establish his own aims in life. In a critical circumstance he makes no effort to get over it's. Is satisfied with a minimum loss. He is by no means interested in what others are doing. He display no interest in any debate or information, no matter how interesting or useful they may be. He is quite tired after a simple action. He does no additional information besides the "daily activities". He is satisfied with what he had already gained, incapable to find new solutions, he is "like an oyster", views everything in a tragic light and whenever someone makes a joke about him, he is incapable to appreciate it, be it good or bad. He is sad in merry circumstances. He is rigid, cannot joke, and cannot laugh with others. He is dull, silent, retired has only few friends, is incapable to make others like him. He is incapable to find a new use for old objects and to transform them. He strictly complies with the rigid and uncomfortable social rules, not always out of belief, but often out of a sense of duty. He behaves according to criteria established by society. As a rule, you can say he is detached and unconcerned. He only sees around him whatever he is especially interested in. He behaves according to well-established patterns and never abandons them. He is confused by unexpected questions, he is easily intimidated.
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Mentorship Pattern In Romanian Culture And Science

A Romanian study on mentorship connected to Torrance’s series is the first psychological approach of the topics in the Romanian culture. An experimental program was undertaken to test the hypothesis regarding the mentor factor in becoming of the prominent personalities and their excellent careers. The most interesting results are presented in his monograph published by the Georgia Studies Center for Creative Behavior, being one in a series of monographs on mentoring in different cultures: Arab, India, Spain, Japan, USA. Romanian “picture” of mentoring has proved to be a sensible social resonator and a school of peak emergent experiences.

The Romanian patterns permit some general considerations on the relations mentoring-learning and mentoring-society.

Two last decades the theme of mentor relationships became a scientific topic, in join context with creatology, leadership, human relations, alternatives of learning-teaching, career development.

Etymologically, “mentor” is derived from ancient Greek mythology: Mentor guarded, guided and taught Ulysses’ son Telemachus when the hero was away for the Trojan war. As a multidimensional and long-life interactive process, in memoirist literature the mentoring is “a matter of heart” or “a gift exchange”; charisma was supposed to be an important component of the mentor’s profile. E.Paul Torrance pointed out that “the presence or absence of a mentor makes a difference that cannot be explained by chance” (1984, p.5).

Goff and Torrance appreciate the mentorship as the most adequate medium for a free expression of ideas, a permissive training of courage; it is a catalyst for innovation (M.G.Zey) or “a tropical tree which enriches ground for plants” (Y.Willburg). Barbara Frey and Ruth Noller connect the mentorship with the chapter of new resources of creativity, as a “psycho-group” of innovation (M.Stein) and unequaled generator of intrinsic motivation (K.Hill &Teresa Amabile).

Our inquiry in the social Romanian space of mentoring was initiated in reply to Torrance’s proposal to collaborate in a transcultural study. A number of monographs have been prepared on the Arab culture, India, Spain, United States of America and Japan; monographs on other cultures are under preparation. Our monograph on mentoring in the culture of Romania (Mentor relationships and excellence in career: A Romanian study) appeared in 1998, edited by Georgia Studies of Creative Behavior, Athens, GA, and USA with a Torrance Forward.

Having in view the sure connection between mentoring and successful career, including the emergent personalistic changes for the whole life, we can name the disciple’s acquisition of experience “peak or apocgetic learning”. Beyond the picture of
refined beauty greatness, Romanian patterns of mentor relationships demonstrate a specific “unions of minds”, but a sensible resonator of the concrete social system too.

For a Romanian “picture” of mentoring: goals and method

The establishing of subject samples, the collecting and processing of the data referred to the following problems:

a) to make a distinction between “model”, “disciple” and “mentor”, all of them belonging to the positive function of favorable moves, but with distinct psycho-professional contents;
b) to point out the frequency of the mentor relationship among people with different degree of competence: school heads, founders of new domains, specialists in engineering research domain, didactic personnel, students, pupils;
c) to identify the mentor’s role and qualities, the consistent features and disciple’s benefits;
d) to systematize dates about the duration of the mentor relationships, the age difference between the mentor and the disciple, pointing out the gender aspects of the qualities transferred from the mentor to the disciple.

Seven samples of 266 subjects were investigated:
A. Prominent personalities (school heads, founders of domains) from eleven professions: architecture, biology, philosophy, physics, epigraphy-history, literature (critique, and literary esthetics), mathematics, medicine, medicinal plants, psychology and sociology; total: 40 subjects.
B. Didactic personnel of different specialties: 37 subjects.
C. Engineers of different profiles, engaged in activity of scientific and technological research: 32 subjects.
D. Undergraduate students in the middle of their studies, in an experimental-theoretic profile (physics): 55 subjects.
E. Undergraduate students at the end of their studies in biology: 48 subjects.
F. Junior students in biology, the first year: 27 subjects.
G. High-school students of pedagogical profile: 27 subjects.

The samples A through E were investigated through a questionnaire with eleven points used by E.P.Torrance (1984). The lots F and G were given divergent tasks, in this way: lot F was asked to name many “Factors of education”, and G was given the task answering “Questions about the future” and completing the Test of Cognitive Style (HIP, by E.P.Torrance).

The famous personalities lived in diverse periods; most of whom were born in the 19th century; the selection was guided by two criteria: (a) an exceptional work and a major contribution to the substantiation of a new domain; (b) the existence of some documents (articles, memorials, books, other accounts) about their lives, with clear information about their professional formation and educational activity; the
information from the written sources was filled out with dates obtained from the counts of fellow-workers, historians and experts.

Main findings and remarks

Regarding the extent to which being creative means mentoring, the data indicate that 93% of the prominent personalities had been disciples of great masters in the country and abroad; they all became at one time mentors, chiefs of scientific schools and founders of new domains of knowledge.

The next samples of subjects, with a diminished frequency, have had benefits of mentoring too: (B)- 62%; (C)- 62%; (E)- 49%; (D)- 29%.

The richest “picture” of mentoring was noticed in the case (A), where the greatest number of semantic categories with high frequency is a clarifying indication: professional competence (83%), strong personality (60%), professional devotion (58%), devotion to discipline (50%), educational art (45%), organizer (45%), contact to new information (38%), openness (38%), originality (25%), and other five characteristics.

Relative to the qualification and official position of mentors, for the (A) and (C) they were only professors of graduate and postgraduate schools, the samples (B), (D) and (E) were mentored in the period of “searching for a direction”, at the pre-university level.

The most favorable field for mentoring proved to be Medicine. Here special professional conditions are relevant: long-term instruction, high professional responsibility, techniques and knowledge of great complexity, operative intervention and perspicacity in decision-making.

All subjects, with or without mentors, appreciate mentors as influential persons who help young people to reach their life goals by training, learning stimulation, encouragement, facilitating contacts with experts in the professional world.

The main characteristics give a specific image from one sample to another: the prominent personalities (A) pointed out “the capacity to work hard”, “professional achievements”, “intelligence”, “curiosity” and “creativity”; for teachers (B), the main characteristics were “intelligence”, “receptivity toward the mentor’s style”, “curiosity” and “morality”; graduate students appreciate “compatibility, “work” and “self-confidence”.

Referring to the ways of mentor’s influence, the responses were of such a diversity: knowledge, new direction of thinking, self-confidence (for A), morality (B), style of work (C), personalistic traits related to the education endeavor (D and E). The main “gifts” received from their masters were stated: (A)- knowledge and techniques
of work (60%), new perspectives (59%), self-confidence (35%), style of work (32%),
personalistic traits (30%); (B)- perseverance (39%), sensitivity and educational
responsibility (25%); (C)- method of research and thinking (65%), instructional style
(40%), perseverance and other personalistic qualities (30%); (D)- character (36%),
professional orientation and thinking (18%).

A test for cognitive style (HIP) had not pointed out a significant correlation
with mentor preference or mentoring characteristics. This facts lets us think that
disposability for mentor relationships is not “a problem of style”, but one of the
paradigm of human formation by transfer of competence.

In searching for the concept of mentoring in the representational frame
about the human learning, in a special task to the undergraduate students was
addressed: “To name the most important factors facilitating human learning for an
excellent career”. The results are instructive: if the high school students have an
indefinite idea about mentoring, the faculty students give a high appreciation of
mentor’s support.

In all considered cases, the mentor’s age is greater than that of the disciple,
with values ranging from 7 to 45 years: the mean values are, respectively for (A)-(E):
40, 27, 16, 25, 22 years. The duration of mentoring varied from one to nine years,
with mean of 3, 12, 9, 3 and 4 years for the mentioned samples (A)-(E). The
disappearance of mentor relationships is due to “natural” causes: changes in the work
or in professional and familial status.

Synthesizing the main findings in order to obtain an ideal mentor checklist, the
next “picture” asserts itself:

The mentor is a person of many-sided culture and professional prestige, with
outstanding results; the main function carried out by the mentor is that of source of
genuine knowledge, fundamental for a safe career; some particular forms, such a
follower’s “tropism” can be understood as a stimulus towards a new direction of
personal fulfillment, concern for the existential needs and training, assistance in
elaborating and publishing of scientific works, help in contacting new specialists.

In mentoring we watch the unfolded mechanism of competence genesis: a
dynamic unity between theory and practice, flexibility and stability, thinking and
learning, intellect and affect.

The mentor invests hope that the protégé could become somebody; a specific
“Pygmalion effect” (R.Rosenthal) is a factor of progress in human formation arousing
the student’s interest for competence, the mentoring creates a high level of aspiration,
a historic vision on the field and a feeling of duty to one’s country. The great
Romanian aesthetician Tudor Vianu is outlined by a prominent disciple in this way:
“When he entered my life I felt for the first time the steady earth under my feet. I have
acquired an intellectual identity, questions such “who I was”, and “what to do” and, mainly, “what I had to want” were suddenly solved. In the ray of his bright personality and his unfailing method I felt I started to build myself. I felt that there I wouldn’t fail even if I would not succeed. It is rare that someone could find such an accomplished mentor who was a hard and an encouraging individual at the same time. Which a confidence could be mentally close to a hard personality, a parent who put sincerely in you all his hopes and especially when you are sure that such a man represented the most honest and the most securely paved way to culture” (Edgar Papu).

Mutual sacrifice and a great intellectual love, a reciprocal “sense of the way”, and a victorious devotion bind the mentor and the disciple in a spiritual family; the mentor passes over to the disciples the task of going deeply into some special fields where himself had only sown.

All disciples relate about their mentors as achieving a balance between a high degree of exigency and a rare kindness, “an organic need to see those working around happy”: modesty and discretion, patience and tolerance, tenderness, respect for the freedom of the student’s mind. The mentor has the feeling of the adequate moment when the disciple could “fly” alone. The disciples are proud of the knowledge and education they have as a “present from life”.

Sometimes the filiation appears in a chain. For example, in Medicine, dr.I.T.Niculescu has the same traits as his mentor (dr.D.Noica), who had inherited it from the French dr.Babinsky: “moral elegance”, “sensibility enlightened by a human philosophical sense of life”, “robust humor”.

A prominent phytoterapist, G.Racz, said about the ideas movement in the field, that it “…has many analogies with the symphonic orchestra; …the concert carries the conductor imprint. Naturally, on the quality of the performance depends if the concert is a correct or a bright one. In a certain way, the school creator’s merit consists in his capacity to attract all around the talented people who can give brightness to the <<symphony>> of ideas.” (Catinca Muscan, p.183).

The general desire for mentoring among young people (graduate students, more than 90%) is a good omen, an optimistic perspective for communion of minds, in that traditional manner of sample (A); we live a period of transition and the students are upset by the diminishing of the mentoring style in education.

Beyond the picture of refined beauty and greatness, such models of social relations, representative for the different historical epochs, could be a “Didactica Magna” for comprehension of the complex, long-life and contradictory process of a person’s formation.

Our investigation includes concerns about the reciprocal conditioning of creativity and mentoring, the consonance between personality traits and mentor profile, mentoring in children, youth and adults; mentoring and genre, obstacles to
mentor-disciple relation, formal and informal mentoring also having an experimental basis.

By analogy with Maslow’s concept of “peak experience”, the becoming of prominent personalities under the wing of a mentor may be defined as a “peak learning”; in this regard we can use the expression of the Romanian philosopher L.Blaga: “apogetic”, because a life-long, deep, and emergent process of learning occurs.

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Re-organizing Disciplines in Terms of a Synergetic Cognitive Model and Problem-Based Learning (PBL): Toward a Holistic Education

Abstract

This paper proposes that cognitive science can play a major role in education by applying a 3-D cognitive model to re-organizing academic disciplines with the assistance of Problem-Based Learning. This will enable us to make a paradigm shift from the current educational system to a more integrated and interdisciplinary education while reducing teaching contents and sparing more time for independent and collaborative learning on the basis of a learner’s initiatives and research interests. As a consequence, cognitive science will bring us to a more sophisticated and effective learning environment and remind us of the necessity of balancing intellectual development as well as emotional development from the view point of holistic education.

Introduction

For the last century, there have been a number of new findings in human cognition. Yet the findings have not been fully utilized for education. The very purpose of education is to draw out individual’s potentials. Looking back, we can ask whether the purpose has been achieved in the last century in concordance with the discovery of cognitive science. The answer to the question does not seem to be very positive in that education has not drastically been changed by the influences of cognitive science. However, cognitive science will be able to contribute to education by virtue of a synergetic cognitive model proposed by Kubo (1999a) and Problem-Based learning. In theory, it can play an important role in education in future. This will enable us to upgrade the current educational system to a more systematic and interdisciplinary education where learning and teaching can be done more effectively.

A synergetic model of human cognition

Kubo (1999a, 1999b) pointed out that there is a synergetic relation between language and brain and that the brain governs all human cognitive activities in many ways regardless of consciousness. A 3-D cognitive model was proposed on the basis of Yoro (1982)’s brainism and a more holistic view that all the cognitive functions are influenced by the functions and the structure of the brain. Having kept in view the advantages of mind-mapping in a 2-D representation, it was concluded that the 3-D cognitive model can show similarities between structures of language and brain and reflect upon cognition and that the cognition itself has to be affected by the structure of the brain.
The cognitive model is based on Backminster Fuller’s Synergetics (1975). The synergetic model comprises one three layered tetrahedron that is made out of ten smaller tetrahedrons. The cognitive model encompasses the basic constituents of linguistic perception in tandem with macro function of the brain. The bottom level has six basic information constituents of a sentence, that is, what, where, why, how, when and who. The middle level comprises three kinds of mind setting, that is, state, process and result. The top level is occupied by focus because focus is essential in relation with language as well as brain processing. The structure of the top, middle and bottom levels represented in the model are considered to be that of the reptilian, paleo-mammalian and neo-mammalian brains in McLean (1990)’s triune brain hypothesis. It is added that the middle level represents LeDoux (1996)’s Emotional Brain. In a nutshell, the structures and functions of human cognition can be neatly exemplified in the synergetic model.

When it comes to human mind-settings, the proposed model can exemplify human perception of the world by the light logic which was introduced by Kubo (2001). Metaphorically speaking, the middle level in the cognitive model functions as lighting colors whereas the bottom level functions as painting what one sees. The lighting colors tremendously affect colors in vision. If the lighting is not strong enough, the color looks darker than it is. If the lighting is colored, the color looks different from its true color. These help us to be careful about the lighting colors, in other words, mental composition of mind setting. To attain a colorless and strong light, we must pay full attention to the balancing of three primary colors, that is, blue, green and red, in other words, three mind settings of state, process and result. As we know, since they are additive colors, the addition of the three turns out to be colorless light. What this entails here is that it is inevitable to balance the mind settings in order to observe something objectively. For instance, two persons cannot see a relevant event or object in perfectly same manner.

The light logic introduced above is the case with Bohm (1994) who is the founder of quantum physics. He maintains that cognition can be governed by proprioception that is reinforced by thinking and feeling. The term, proprioception refers to the brain’s unconscious awareness of the sense of the body in space. He pointed out that that is why we do not have the word, felts, in our dictionary in comparison with thoughts. Moreover, the light logic stands in favor of De Bono (1983, 1998) because he emphasizes on simplification of our existing systems by re-examining and re-evaluating the rationales behind. The logic out of the synergetic model is rather simple but not heavily theory-laden logic. Furthermore, the cognitive model is supportive of the explanation of denial of phantom limbs by Ramachandran and Bleakslee (1998). If we see the synergetic model upside down, it is referred to as a simplified brain model where why-result-focus and where-process-focus are considered as left and right hemispheres, respectively. Each of the two cerebral hemispheres specializes in specific mental activities such as syntax, sound production, metaphor and ambiguity as far as language is concerned. This cognitive model can also explain that an over-result-oriented view gives rise to denial since the past accumulated data are regarded as more
trust worthy. To avoid the denial, a process oriented view is necessary to balance the two functions. It is quite essential to bear in mind human unconscious or subconscious tendency that our thinking habit of attachment to microscopic compatibility in belief system must be protected by denying new findings and values, and a malfunction or lack of process-oriented-ness causes neglecting what needs to be changed in the system. To put it differently, fragmentation and integration derive from the functions of left and right cerebral hemispheres, respectively. These functions can be observed in current educational systems. We need to think in a balanced way toward fragmentation and integration in educational disciplines. Thus we can make full use of the synergetic model to simplify the existing educational system. To make this possible, we can introduce Problem-Based Learning to reduce teaching contents of a curriculum while assigning problems in various topics that are interconnected on the basis of learning processes.

**Problem-Based Learning**

The objectives of Problem-Based Learning (PBL) are to develop skills to identify a problem and solve it appropriately, to cultivate the skills necessary to become a self-directed learner, to function effectively as a cooperative learner, to develop an appreciation for the interdisciplinary studies and to realize and develop the personal characteristics and attitudes.

In PBL, problem identification comes first. The problem is designed to act as the focus of learning and requires integration of many concepts and skills in the problem solving. What is noticeable here is that the role of a teacher in the traditional lecture based learning is supposed to be a facilitator rather than an instructor and the facilitator encourages learners to work as a team or in a small group. This mode of learning will provide a learner with the opportunity to develop the skills such as thinking skills, problem-solving skills, teamwork skills, time management skills and communication skills.

The process of PBL will naturally induce the learner to realize how to identify a problem and what he or she knows, needs to know and do via teaching each other in the team. In the end, learners come to find out that the project given is the means not just to completing it but to learning how to deal with it. Since PBL encourages independent learning and a deeper and wider understanding of the issues or problems, this new learning and teaching method goes well for the purpose of simplification and re-organization of current academic disciplines.

**Re-organizing existing disciplines**

There is a very wide range of academic disciplines in education. It can be said that cognitive science is one of the most essential and significant disciplines in the educational system because it deals with human cognition. It does not go too much to say that all academic disciplines are founded on human cognition. What is note -
worthy in academic disciplines is that we need to reconsider how the disciplines are divided in such a way.

Here comes an issue of observer-observed. Who fragmented a world of academic disciplines in education? A subsequent question is: for whose convenience has the fragmentation been done? Is researcher’s view not always compatible with learner’s view? What is important here is that the researcher’s diversification or creation of a new field of study is intended not for learners who study it later but for their own convenience and purposes of the study. From an educational point of view, this has not been discussed thoroughly for the sake of learners. One of the main characteristics in modern sciences is result-orientation in that relevant data, observation and descriptive explanation must be required. Fragmentation and categorization play key roles in the methodology.

What I am proposing here is that all the disciplines can be re-organized in terms of the synergetic cognitive model. The bottom level of the model shows that intellectual categorization works on the basis of six major categories, namely, what, where, why, when, how and who. This also entails that perceptual description involves the six categories. In fact, the categories are essential in a sentence.
To my best knowledge, this point has never been pointed out in cognitive science. Let us look at the diagram below.

The six major categories can be grouped into three, that is, state-oriented, process-oriented and result-oriented, depending on which mind-setting is related with them in the 3-D cognitive model. As you see, when, how and who have two different orientations in common. In a sense, the three categories seem ambiguous in the sense that they contain two distinct natures. The interrelation among the disciplines can be demonstrated in the triangle of the six categories. As mentioned in Kubo (1999b), it is crucial to balance our mind-settings for creativity and innovation because what (identification), where (re-evaluation) and why (logic reasoning) play important roles in human cognition. As cognitive strategies, the synergetic relation of academic disciplines can be visualized in the 3-D cognitive model.
Conclusion

The synergetic relation of human cognition as well as academic disciplines can be demonstrated by introducing a 3-D cognitive model into educational system. That will help us to pay more attention to a holistic educational development. Indeed, Problem-Based Learning (PBL) enables us to re-organize the whole existing education system into learner-oriented educational system. This implies that the current traditional teaching system will be upgraded to a holistic learning system where cognitive science can make great contribution to education. This new learning method will provide learners with an opportunity to learn on one’s own way at one’s own pace while catering to various needs from unique individuals. This will be a bona fide education because the education can draw out individual’s talents. The contribution of cognitive science will bring us to a more sophisticated and effective learning environment. Furthermore, cognitive science can remind us of the significance of balancing intellectual development as well as emotional development in education.

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Creativity in Singapore: Beyond Academic Achievements

Creative minds and behaviors set the momentum for socio-economic innovation, technological advancement, and cultural breakthrough. Indeed, creativity is a human asset. It exists in every culture. Nonetheless, the reception of creativity in education in each culture is unique. This paper presents a review of the reception of creativity in Singapore’s education. Three questions are asked. (1) What is the societal status of creativity in Singapore? (2) How is creativity introduced to Singapore’s education? (3) What is the status of the study of creativity in Singapore’s education? Before we provide some insights into these questions, we outline the demography of the Singaporean society.

A multiethnic and modernized society: Singapore is an island country in Southeast Asia, situated off the southern tip of Malaysia. The country has limited land areas, 659.6 square kilometres (as of 1999). Singapore is a multiethnic, multireligious, and multilingual country. Its total population (residents and foreigners) count as of June 30, 2000 was 4.0 millions. Of the total, 76.8% were Chinese, 13.9% Malays, 7.9% Indians, and 1.4% other ethnic groups. From a total population of 2,494,630, half of them believe in Buddhism (42.5%) and Taoism (8.5%), nearly one third of them are Christians (14.6%) or Muslims (14.9%), and four percent believe in Hinduism. The population’s life expectancy at birth for male is 75.6 years and for female is 79.6 years (June, 2000).

After its independence in 1965, over a span of three and a half decades, Singapore has achieved a relatively high living standard. Singapore withstood the Asian economic crisis well. After hitting the trough in 1998 with a growth rate of 0.4%, Singapore achieved a real economic growth rate of 5.4% in 1999 (Economic Survey of Singapore, 1999). It has a zero inflation rate and a significant low unemployment rate (4.4%, total population) (http://www.singstat.gov.sg/STATS). The English language and/or mother tongues (Mandarin, the Malay language, and the Tamil language) are Singapore’s official languages. Adopting the meritocracy system, the country has successfully educated qualified professionals and skilled workers. Singapore’s literate rate is high, 93%, with mean years of schooling 7.8 (Teo, 1999). From the World Competitive Yearbook’s (1999, extracted from Teo, 1999) statistics, Singapore’s Information Technology (IT) infrastructure ranked moderately high (11 out of 47 nations), 344 computers per 1000 people, and 13.45 hosts per 1000 people connected to the Internet (ranking 19 out of 47 nations). With respect to academic achievement, Singapore ranked first (out of 53 nations) in a survey reported in the Global Competitive Yearbook (1998, extracted from Teo, 1999).

Creativity, a national aspiration: Successful socio-cultural systems depend on the continuous availability of creative ideas and innovative actions (see e.g., Simonton, 1988). What is the societal status of creativity? To maintain its growth, as stated in the handbook of educational desired outcomes (Ministry of Education, 1998), Ministers’ (e.g., Lee, 1996; Teo, 1996), and Prime Minister’s speeches (e.g., Goh, 1996; Goh, 1999), enhancing creativity is a necessity for Singapore’s socio-economic,
technological, and educational advancement. Singapore ministries launched several projects to create opportunities for its citizens to realise their full potential. The Manpower 21 (M21), a report released by the Ministry of Manpower, is a vision for Singapore to become a Talent Capital, a centre of ideas, innovation, knowledge and exchange. The Ministry of Education implemented programs to improve the Information Technology infrastructure, thinking skills, and holistic development of every individual. The repeated calls for fostering Singaporeans’ creativity and innovation are made through these programs.

Creativity in Education
Singapore’s people are its sole natural resource. Education is thus of paramount importance to ensure the country’s continuous competitiveness and advancement in the global economic and technological environment. How is creativity introduced to Singapore’s education?

Before 1970s: The Guilford’s (1950) historical message as the president of American Psychological Association (APA) is commonly accepted as the landmark speech for the start of scientific creativity research in the modern era. The new scientific venture in the study of creativity attracted researchers across disciplines (e.g., education, psychology, and economy) and resulted in the publication of the first international creativity journal in 1967, the Journal of Creative Behavior. During this period, creative imagination was regarded as one of the essential aspects of the Singapore’s educational reform (Goh, 1972). Nonetheless, there lacked systematic studies and writings on this theme.

1980s: The second impulsion of creativity research is observed in 1980s. Socio-cultural theories, models and frameworks of creativity were developed (e.g., Amabile, 1983; Csikszentmihalyi, 1998; Runco & Albert, 1990; Simonton, 1988; Sternberg, 1988) drawing upon the earlier yet less appealing idea that the study of creativity has to include four aspects: Person, Process, Product, and Press (4Ps) (Rhodes, 1961). Effort in constructing socially acceptable connotations for creativity was observed. Creativity is not only a product of the geniuses, the talented or the eminent people, but also a possible product of common people (Sternberg, 1985). In 1988, the second international creativity journal, the Creativity Research Journal, was inaugurated. During this period, Asian leaders of some modernized and industrialized societies overtly addressed the importance of nurturing innovative and inventive minds. In Singapore the intensity of the drive to foster creative minds increased (Lim & Gopinathan, 1990). Innovations in the areas of curriculum (Ang & Yeoh, 1990), pedagogy (e.g., multimedia systems) (Chin, 1983), school management (Tan-J, 1996), learning activities (e.g., games, team teaching), economy (e.g., National Productivity Board, 1986), and science and technology (e.g., Seminar on Engineering and Innovation in the 80s, 1980) were highlighted. Towards the end of the 1980s, Thinking Programs were initiated in several secondary schools.

1990s: A continuous momentum of creativity research from that of the 1980s was experienced before the end of the twentieth century. Two handbooks (Runco &
Pritzker, 1999; Sternberg, 1999) and several books (e.g., Amabile, 1996; Csikszentmihalyi, 1997; Simonton, 1994; Simonton, 1999) of creativity were published. One of the highlights of these publications was the acknowledgement of the intimate interaction between the individual and socio-cultural contexts in creativity endeavor. Another highlight was seen in the introduction of creative cognition framework employing cognitive psychological approaches to understanding cognitive processes in creative contexts (Finke, Ward, & Smith, 1992). Its introduction opened up a practical and an empirical paradigm for creativity research (Smith, Ward & Finke, 1997; Ward, Smith, & Vaid, 1997).

In Singapore, the aspirations to enhance creativity became prevalent in the 1990s. Various institutions such as the Nanyang Academy of Fine Arts (NAFA, 1992), the Singapore Productivity and Standards Board (PSB, 1994), and the National Science and Technology Board (NSTB, 1991) initiated awards for talented artists, business organizations, and researchers in science and technology, respectively. During this period, attaining high academic achievement was a “norm” in education. In the Third International Mathematics and Science Study (TIMSS), Singapore 8th graders’ scores in science (1995: 580, 1999: 568) and mathematics (1995: 609, 1999: 604) were far above the international average (1999: mathematics = 487, science = 488) (Ministry of Education, 2000a). Despite the fact that education has brought forth high academic achievement, Singapore’s leaders called for educational innovations. Three major programs were released in 1997. The National Education (NE) program called for national aspirations to implant strong sense of community (Lee, 1997). The Information Technology (IT) master plan embarked on the journey to improve IT infrastructure of educational institutions and skills of educational officers, educators, teachers and students (Teo, 1997). The Thinking Schools and a Learning Nation (TSLN) framework outlined the directions for cultivating habits and culture of thinking (creativity, problem solving, and critical thinking) among students of all levels (Goh, 1997). Collectively, they brought forth a new educational paradigm that addresses holistic development (affective, infrastructure, and cognitive) of the individuals through citizenship education, character building, and inculcation of moral values. In relation to this aspiration, a document - the Desired Outcomes of Education (DOE) (Ministry of Education, 1998) was released spelling out explicitly desirable values and skills of students at each level as well as of future leaders of the society. Subsequently, the Ability Driven paradigm is proposed with the intention to develop the full spectrum of talents and abilities in every child. Embedded in this paradigm is the desire to modify teaching and assessment methods for nurturing creativity and thinking skills, and for encouraging knowledge generation and application (Ministry of Education, 2000b).

The Study of Creativity

Given the fact that fostering creativity is a component of Singapore’s education and an integral part of national development, what is the status of the study of creativity in Singapore?

Publication: Tan (2000) did a search on abstracts included in the educational (ERIC) and psychological (PsycLIT) CD-ROMs using keywords: “creativ*” and “Singapore*”, and synonyms of creativity: “innovation”, “invention”, and “discovery”. She also examined papers published in the proceedings and journals. In
addition, three local full and partially refereed journals were investigated: the Asia Pacific Journal of Education (APJE, renamed from Singapore Journal of Education, SJE), Teaching and Learning, and Mathematics Educators. Furthermore, unpublished seminar papers and theses were searched. Publications for teachers and students were considered. Papers included to analysis were related to the study of Singaporean creativity or views for fostering Singaporean creativity. Table 1 summarizes the results of the analysis. Number of Publication and Nature of the Studies

<table>
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<tr>
<th>Number of Publication</th>
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<tr>
<td>CdRom</td>
<td>1</td>
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<tr>
<td>ERIC</td>
<td>6</td>
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<tr>
<td>Proceedings</td>
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<td>7th International</td>
<td>3</td>
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<tr>
<td>Thinking Conference</td>
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<tr>
<td>ERA (1998)</td>
<td>7</td>
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<tr>
<td>ERA (1999)</td>
<td>6</td>
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<tr>
<td>Local Journal</td>
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<tr>
<td>APJE (SJE, 1978-1999)</td>
<td>1</td>
</tr>
<tr>
<td>Teaching and Learning</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics Educators</td>
<td>1</td>
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<tr>
<td>(1996-1999)</td>
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<tr>
<td>International Seminar papers</td>
<td>5</td>
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<tr>
<td>Thesis</td>
<td>8</td>
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<tr>
<td>Book/chapter</td>
<td>14</td>
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<tr>
<th>Nature of the Studies</th>
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<tbody>
<tr>
<td>Conceptual</td>
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<tr>
<td>Empirical (conception, competence)</td>
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<tr>
<td>Programs (review, report)</td>
</tr>
<tr>
<td>Pedagogy (general, subject-related, personal)</td>
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<tr>
<td><strong>Total</strong></td>
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Source: Tan (2000a), Table 1 and Table 2, pp. 264-5.

The studies were grouped into five categories.

**Conceptual framework**: Papers that discussed models or theoretical frameworks of creativity were grouped under "conceptual framework". Less than one tenth of papers are in this category which outline frameworks for fostering creative thinking, as well as suggest teacher roles helpful for promoting creative thinking, and components of creative teaching (e.g., motivation, pedagogical skills, and creative techniques).

**Conceptions of creativity**: The category "conceptions of creativity" includes papers that examined the Singaporeans' views of creativity. Contents of these papers are such as adults’ and children’s conceptions of creativity, children’s confidence of creativity, and factors that influence people’s conceptions of creativity (e.g., educational level, birth order as well as peer and supervisory supports). We cite some of the salient findings. Creativity in the arts program introduced to schools in the 1980s (see e.g., Lim, 1986) seemed to have an influence on Singaporean conceptions of creativity (see
also Soh, 1999). Singaporean adults (n = 162, age: 18-25 years) defined creativity as an ability to construct something. They also associated uniqueness, imagination, and art with creativity (Tan, 2000b).

Singaporean children (n = 115, age: 8-12 years) possessed a serious view of learning activities that can promote creativity. They projected a positive futuristic view of their creative competence. Children did not highly regard activities they liked such as recess, games, riddles, and puzzles, as appropriate for promoting creativity (Tan, 1998). More children (nearly all, Tan, 1998) than adults (Tan, 2000b) thought that they would be creative one day or in the future. In contrast, more adults (n = 162, age: 18-25 years, 70%, Tan, 2000b) than children (n = 115; age: 9-12 years, 40.9%) (Tan, 1998) admitted their creative competence.

Creative competence: Papers that reported on the empirical studies of Singaporeans' creative abilities and performances were grouped under "creative competence". Two instruments were employed to find out creative competence of the Singaporeans: The Torrance Tests of Creative Thinking (TTCT) and the How Do You Think (HDYT). Studies across cultures using the TTCT showed that Singaporean young children (n = 34, age: 4-7 years) scored lower than their counterparts whose parents were the expatriates (n = 35, age: 4-7 years) (Chang, 1984). Similar to the findings of the children, non-local parents scored significantly higher than their Singaporean counterparts in all attitudinal scales (Kwan, 1991). Ng’s (1999) study with 158 Anglo-Saxon Australian (age: 19.1 years) and 165 Singaporean (age: 20.6 years) undergraduates supported this statement. The researchers attributed the low scores of Singaporean participants in a test or in a survey to their attitude towards paper-and-pencil tests. Living in a competitive and an examination-oriented culture, Singaporean participants may not be as at ease as their counterparts from other countries in attempting a survey or test (see also Ng, 1999). Teo-CT (1996) did not find any significant correlation between the intellectually gifted adolescents’ (n = 239, age: 13 years) academic scores and their HDYT scores (see also Quah & Teo, 1998).

Creativity programs: The category "creativity programs" discusses institutional efforts to nurture creativity. We cite some examples. A mentoring program was designed for gifted adolescents in science and creative arts. This program provided scholarship, supervised skills training (Goh, 1993-94), and nurtured secondary and junior college students in the field of creative writing (Goh & Goh, 1996). The program provided students with role models, career options, extra resources, and facilities beyond the core curriculum (Lim & Tan, 1997; Tan & Lim, 1998). After the launch of the TSLN, all schools (secondary and primary) gradually integrated activities proposed in the Thinking programs into their curricula. Marzano’s dimension of thinking model was introduced for citizenship education (Han, Tan-Niam, & Mashhadi, 1999). The NIE organized workshops and seminars on thinking for the in-service teachers (Seng, 1998). At the Temasik Polytechnic, there were efforts to use IT to enhance creative problem solving (Soo, 1999).

Creative pedagogy: The individual educators' views of how to nurture creativity in the classroom or domain-specific creativity were grouped under "creative pedagogy". We
cite some issues of concern. The first concern was related to the need for teachers to be creative in order to teach creatively (Teo, 1998). Some educators have raised concerns about teachers' competence in teaching creatively. The second concern was related to attitudes towards creative teaching of certain subject matters. Singaporean teachers, for instance, may not hold serious attitudes toward music education. It is likely that they are unclear on the objectives and aims of music education, lack knowledge of music education, and may not know the future (professionalism) of music education (Chia, 1998). The third concern was related to the importance of interdisciplinary study. Creative teaching in geography, for instance, should enhance interdisciplinary teaching between geography and other subjects, increase the real life practicality of geography, and the interaction between humanistic and the natural sciences (Wong, 1998). Finally, some educators discussed the importance of a psychologically safe environment, variations in pedagogical techniques (Soh, 1997), and characteristics of creative students (Soh, 1998), and the use of IT and creative teaching (e.g., Williams 1999).

Creativity in the Twenty First Century

Impacts of the TSLN: After the TSLN, the Ministry of Education (MOE), higher educational institutions, the National Institute of Education (NIE), schools, and research associations initiated a series of workshops, seminars, and courses for teachers. Teachers have been encouraged to teach creatively or to find ways to foster students’ creative, critical and problem solving competencies. University professors have been urged to integrate into their lectures and tutorials ways to foster these competencies. At the NIE, the number of core and elective modules that include components of creativity have been increased. Student teachers’ competence to stimulate critical and creative thinking is assessed during teaching practice. The Singapore Educational Research Association (ERA) and the Singapore Center for Teaching Thinking (SCTT) have attempted to feature thinking in their annual conference or workshops. From 1997 to 2002, there has been a revival of interest in researching on creativity in education. Themes of dissertations at the Master level include exploring children’s conceptions of creative characteristics of a teacher (Raslinda, 2001), and creativity in learning science using computer (Ng-L, 2001). So did the interest in academic writing on creativity. Contents of such writing are such as creative teaching insights for science educators (Tan, Lee, Goh, & Chia, 2002), reasons for Asians’ low creativeness (Ng, 2001), and a theoretical framework for cultivating creativity (Tan, 2002).

Exploring indigenous educational needs: Creativity in education should take into account the characteristics of a society, its culture, and the needs of the target groups. Numerous questions need to be attended in the future which look into how creativity studies, research, and classroom practice can embed needs of the Singaporean learners. In Singapore, achieving high academic performance is an embedded learning culture. As such most Singaporean learners spend their leisure time in doing homework besides watching television. How do these behaviors affect learners’ attitudes toward creative activities? Home and school environments are important for nurturing children and students’ creativity. Are parents and teachers ready to reduce
children’s time in doing worksheets focused on examinations but instead spend time in designing creative learning activities? Do parents and teachers have sufficient knowledge of and competence in nurturing children’s creativity? Are they confident of their own competence in nurturing creativity? Are schools ready to include creativity as a main area of assessment? Do Singaporean child rearing styles allow early identification and fostering of creativity of young children? Will fostering creativity include minority students such as students with disabilities?

Exploring the methods/instruments: What kinds of instruments then are suitable for studying Singaporean creative behaviors? Given the fact that creativity tests and survey papers are likely to induce insecurity among Singaporean participants (as they may perceive them as examination papers, which invokes fear of failure), alternative instruments should be designed to measure and uncover Singaporean creativity. As voicing opinions freely is not a learned habit, Singaporean participants need to be convinced of the benefits and joy they can experience when they participate actively and express their ideas openly. Singaporean participants also need to be convinced of their creative competence. A long tuning-in time into the creative activities is essential to enhance intrinsic motivation and foster confidence of the participants.

Establishing research culture: Between 1997 and 2002, there seemed to be a revival of interest in creativity research and writing. Can this type of interest be sustained? How can research culture of creativity be cultivated? Singapore is yet to set up establishments such as creativity centers, creativity clubs, creativity research interest groups, and creativity Internet chat rooms or discussion groups. These establishments are likely to attract researchers and others who share the same interests. University and community libraries should systematically build up databases and resources on creative techniques and creativity literatures. Researchers should collectively establish regional journals of creativity and publications on creative techniques, creative persons, creative products, and creative teaching and learning.

Final Remark

Constructive creativity: As a final remark, we wish to highlight the importance of cultivating constructive creative behaviors and minds. Creativity in education refers to the effort in and the support for developing competence in carrying out novel and useful behavior and cognition. It, on the one hand, is about a teacher’s self-cultivation of dispositions and competence for creative behavior and cognition. It, on the other hand, is about to a teacher’s act of scaffolding other persons in uncovering their potentials for creative performances. Constructive creativity should be the focus of all efforts of fostering creativity in education. The adjective constructive entails connotations such as non-destructive, harmless, beneficial, humanistic, morally upright, and determinant. As such, wellness of the individuals and the communities is the landmark of constructive creative behavior and cognition. To be able to progress as a science for wellness, creativity research has to be empirical (Albert & Runco, 1999), and creative teaching has to go beyond academic achievement and be humanistic and culturally inclined. In line with this view, we claim that it is important
for Singapore’s education to consolidate constructive creativity within its new educational paradigm that nurtures holistic development of all individuals.

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Interests
Creativity Training, Life Skills Training, Linguistics
Creative Education for a Better South African Future

There is an old joke about past inventors returning to earth: Alexander Bell is amazed to see the huge advances made in communication technology; the Wright brothers cannot believe what has happened to air and even space travel, etc. Only Aristotle - the great teacher who lived more than 300 years BC still recognizes everything happening in teaching today.

At last this is changing in South Africa. The 1999 report gave an overview of the new education and training dispensation in South Africa, focussing on the new governing and quality control structures, terminology and the *functioning* of an outcomes-based education system. Currently the methodology and practice of outcomes-based training is being phased into the school system from the bottom up.

The main characteristics of the mind shift that has had to take place to move from the so-called sage on the stage "pouring" information into the "empty vessels" seated in his/her class are:

<table>
<thead>
<tr>
<th>Traditional Teaching</th>
<th>Outcomes-based Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge acquisition</td>
<td>➢ Knowledge application and skills development</td>
</tr>
<tr>
<td>Teaching information</td>
<td>➢ Facilitating learning process</td>
</tr>
<tr>
<td>Isolated students in rows</td>
<td>➢ Interactive learning, group work, co-operative learning, peer communication</td>
</tr>
<tr>
<td>Memorizing</td>
<td>➢ Gaining insight and understanding</td>
</tr>
<tr>
<td>Regurgitating facts</td>
<td>➢ Ability to manipulate and apply information creatively</td>
</tr>
<tr>
<td>Academic tests</td>
<td>➢ Practical assignments</td>
</tr>
<tr>
<td>End result as only goal</td>
<td>➢ Process equally important to result</td>
</tr>
<tr>
<td>Single academic outcome</td>
<td>➢ Multiple diverse developmental outcomes</td>
</tr>
</tbody>
</table>

Implementation of the methodology has realized all imagined advantages, but it has also yielded a number of unexpected benefits. Paul Torrance, after twenty years of studying the unpredicted successes of graduates of average academic intelligence, confirmed that IQ was a poor indicator of real-life performance. The language of South African educators has also changed - from limiting the gauge of achievement to IQ only, varied and numerous intelligences are recognized. This has bridged the cultural gap and allowed us to redress past educational inequalities.

Because the teaching methodology requires new and different skills from learners as they actively participate in discovering, internalizing and utilizing information, there is a new understanding of what intelligences encompass and how they are applied in
processing information. Dr Kobus Neethling, after revisiting the issue of intelligences and researching the outcomes-based process of information manipulation, has published an adapted version of Bloom’s Taxonomy, which redefines the concept of “clever” in the 21st century:

21st century clever model

CREATIVITY: CREATION THINKING

CREATIVITY: MAKING BETTER

GETTING TO THE ESSENCE

APPLICATION

COMPREHENSION

KNOWLEDGE: STORE AND RECALL
Research conducted at 4 universities and 110 schools to determine what levels of understanding were required to complete the traditional final exams, showed that 97 percent of both school final papers and exams for third year degree students required nothing other than the ability to store and recall and comprehension.

In sharp contrast to this, outcomes-based training requires that comprehension and application have to be mastered before learners can apply their knowledge. As problem solving is an integral part of the outcomes-based learning process, students have to know how to distill the essence of any problem before exploring possible solutions.

Probably the most exiting “spin-off” of this new methodology is that creativity has become an essential skill for every learner. Results of research conducted in 1999 amongst learners in the traditional teaching system once again showed that 98% of children between the ages of 0-6 years tested superior in their creativity while only 2% of persons aged 25 and above were still superiorly creative. Someone made the observation that it is like a child arriving at school with 26 colour crayons and leaving with just one blue pen!

The South African Education Department is adamant that creativity training should form an essential part of the new training system. But because creativity used to be a nice-to-have or an add-on to the old system of teaching one might wonder how, by whom and in what discipline students would be trained to rediscover their creativity?

The South African Quality Authority (SAQA) – the governing authority for the new qualification framework – has structured all qualifications to include core learning (main subjects), electives (choice subjects) and fundamentals (essential skills to support learning). Fundamentals comprise 45 of the 120 credits required for a complete qualification. Of this 45, Life Skills makes up 25 credit values; and it is here that the answer to creativity training lies.

In the past three years numerous workshops on Life Skills facilitation have been presented and the demand for creativity training is increasing daily. Karen Hodges represents the South African Creativity Foundation in the Western Cape and is a specialist in the field of creativity training of children from pre-kindergarten to high school. She is currently presenting creativity-training sessions for children ranging between 3 and 18 years of age at public and private schools alike. These sessions are
presented either as extra-mural activities or as part of the new school curricula. Teachers are calling her at home to tell her about the “miracles” that have happened in their classrooms since learners have started with creativity training!

She focuses on 5 critical factors of creativity, namely fluency, originality, elaboration, essence and resisting thinking closure. I will briefly outline these factors and demonstrate why they can be related directly to success in the new outcomes-based learning environment:

Fluency: The ability to generate many ideas/alternatives. Instead of the former single correct answer, learners are now encouraged to explore alternatives and experiment with possible outcomes.

Originality: Persisting with idea-generation until one finds new and unusual solutions. Uniqueness, as opposed to conformity is now celebrated in each learner. The South African reality also demands that future leaders find new answers to the challenges facing them in the ever-changing global village they now inhabit.

Elaboration: Persevering to realize a concept, idea product or vision. Outcomes-based training replaces the pursuit of passive knowledge with active demonstration of utilizing or putting to work what we have learned.

Essence: Discovering the core of any reality. Learners are no longer provided with a finished product in the form of one definitive answer, but need to engage with the process to discover the essence of problems and answers.

Resisting closure: Refraining from closing the mind to possibilities and opportunities. Outcomes-based education is an inclusive approach allowing exploration of all possible outcomes and encourages the identification of opportunities as opposed to negatively guarding against threats. This is especially important to learners in an African context ----to stretch and go beyond the solutions of the past.

Once schools realize the importance of developing creative learners, they also wake up to the fact that it has become a crucial part of their staff make-up. We regularly present staff training on creative and whole brain teaching, utilizing creativity and whole brain thinking on managerial level and applying the principles of creativity and whole brain thinking to dealing with PTA’s and governing bodies.

We envisage that the teaching revolution which was initiated by implementing outcomes-based education will eventually result in the managing of an entire training institution and system through a creativity approach and that the South African society of tomorrow will have creativity as their point of departure in navigating all aspects of their existence.

Creativity Training in Business and Industry

The past few years we have given up-dates regarding the status quo of creativity and innovation in the workplace. The South African Creativity Foundation and The Kobus Neethling Group, the two major creativity role players in Southern Africa, are at present involved in creativity training in most of the large companies and many of the
smaller companies. Mines, banks, insurance, petroleum and technology companies remain the major clients of the Foundation. During the first 3 months of 2002 for instance more than 2500 employees of one insurance company were trained to market more creatively. Kobus Neethling’s television program on Creativity, a weekly ‘creativity in action’ program is very popular, especially amongst viewers from education and business.

All of us who live in Africa realize that if we do not take creativity seriously, from birth to death, we cannot survive another 3 decades. Navigating a more creative future should become the vision of every child and adult --- we will not have time to do it over, we will have to do it right.
United Kingdom

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Publications
1. "Gifted Children Grown Up", London, England: David Pulton Publisher. The book may also be ordered through the author's web-site www//Joanfreeman.co.uk, Amazon or any bookseller.

2. The author is conducting an international survey for the UK government on out-of-school activities for the gifted.

3. Many more. If needed please communicate with author.
A UNIQUE FOLLOW-UP

The years have passed all too swiftly and I find that my follow-up study of gifted and non-gifted children is now 27 years old. The update, Gifted Children Grown Up, was published in August 2001 to very satisfying international publicity. There are two essential differences between my study and other follow-ups, which make it unique.

Firstly, it has been deep. All participants were interviewed in a counseling style (though with a basic set of questions) in their homes all over the country. I really got to know most of them. The parents and the teachers were interviewed too, so an all-round picture of the child in their own circumstances emerged. There is, I find, a world of difference between being made welcome in someone's home and marking ticks on postal questionnaires. It's the difference between looking into a pair of bright young eyes and laughing together and analyzing statistical data.

Secondly, the study compared the recognized gifted and the unrecognized gifted with their randomly taken classmates. They were very carefully matched. There were 70 in each group which made it statistically viable, so I managed both a personal and a statistical analysis. Of course, I would have liked a bigger sample, but in this kind of one-to-one work there is a limit to what one individual can do. From time to time it has tended to take over my life, though the richness of the results were always very satisfying.

The sample came from very different circumstances, from real poverty to wealth. They experienced many types of schooling and life opportunities. I audio-taped all our hours of talking and had it keyed on to my hard disk to be analyzed, along with the statistically rated responses. Some surprising things emerged from the re-readings which I hadn't thought to ask about. For example, many of the gifted described themselves as lazy, though their parents told me they were extremely hard-working. It looked as though they felt guilty about the ease with which they learned. I edited down perhaps a thousand pages of their own words on how they felt, what had happened to them and their dreams for the future, and put it in print. As with the home visiting, there is a striking reality in their own words that is not in any way the same as a tick on a posted rating scale. Only they describe how it is to be them, to live as gifted whether recognized or unrecognized, or a normal youngster growing up in their homes with their parents.

Because of these comparisons, I was able to lay many myths about the development of the gifted to rest. These youngsters were not emotionally different, for example, though being gifted did sometimes bring special challenges. Those with emotional problems were troubled because of other matters in their lives - for which the gifts too
often got the blame; the same sort of things that happen to other people, such as parental divorce or unhappy homes. Although the sample contained 16 children who bumped their heads on the top of the Stanford-Binet scale with IQ 170, I did not find that extremely intelligent sub-group to have greater peer relationship problems than other children. Other researchers have proclaimed the unhappiness of extremely high IQ children, but then they have never compared them with matched control groups as I did.

There were differences, though, between the happiness of the labeled gifted and the unlabelled gifted. The unlabelled ones were in some ways let off the hook of having to be "gifted" all day and every day. They did at least as well at school and in young adulthood had somewhat more contented lives. The reasons for which they had been labeled gifted were sometimes more related to their circumstances and social behavior than their abilities. In all research, we know that when we do not use comparisons we do not really know what we have. Any group of children selected in any way is inevitably biased because of the sampling method chosen - even an IQ test.

I sorted out the creative children and compared them to high-level school-achievers. The two new groupings were identical in 10, but very different in personality and what they did with their intelligence. The creatively gifted were much more lively-minded with more friends of all ages but were less well liked by their teachers. They also did less well in school grades and national examinations. So the image of the creative child as somewhat deviant in class seemed to be true.

Now in adulthood, most of them have gone on to be creative people, such as architects, musicians and painters. Just a few are famous in their fields, such as the tenor who has taken top roles at the opera houses of La Scala in Milan and Covent Garden in London. His mother had recognized his ability when he was two and a half. She'd gone out to work to get him extra lessons and was now seen to be entirely justified in all she did. When he was eleven she told me to go and see him in a school concert, to hear him sing, she said, before he was famous. I am so sorry now that I did not. Some of the girls, have set up their own businesses. It is still too early in their careers to see how successful they will be. Many are now mothers and struggling to be good ones while keeping their careers afloat. That label of giftedness had sometimes been a pain and they spoke with joy about being able to relate to their children as people rather than as gifted: the children didn't know about the label.

Not all the young people of extremely high promise had realized their potential. The reasons were partly due to their circumstances and reactions, and partly to inadequate educational provision - in some poor areas they might have had to share text-books, for example. At the other extreme, some schools had force-fed their gifted pupils for examination honors, so that at times, they told me, their grades seemed to matter more than they did. Mostly they would have liked a more equal and friendly relationship with their teachers; they felt it was too tempting to coast along in the crowd. Most schools did not provide an adequate emotional preparation for the transition to university and work, and some of the young people had suffered. For instance, the
gifted from modest backgrounds who found themselves at the prestigious universities of Oxford and Cambridge, met social-class divisions which caused them discomfort, and in one case departure from home.

These bright perceptive young people were extremely concerned about the way they were taught the curriculum. They were obliged to follow and the way the school was managed. They knew that such matters as self confidence and personal relationships can be as important in life as the often excellently taught mastery of skills and knowledge. They loved teachers with a sense of humor and also with a sense of modesty, who were willing to guide them but who did not claim to know it all. They often enjoyed lessons in which they were not taught didactically, but discussed or thought about the matter in hand. Some, though, were indeed lazy and preferred to be spoon-fed. Their experiences, opinions and achievements are important. The conclusions of the study about the make-up of a gifted individual and how it is the best to assist such precious potential, are unquestionably pertinent to bright children everywhere. The study offers valuable insights into the special situations of the gifted as they grow up, as well as suggestions for much needed changes in their care and education. These are not only important for their own fulfillment and happiness, but for the future of society.
United Kingdom

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Teaching creative skills through video, music and other media. Creativity and special educational needs. Different cultural approaches to creativity.
The Creativity Centre Educational Trust

The CCET is the non-profit arm of The Creativity Centre and was set up to widen access to training and education about creativity. It has a highly experienced Board of Trustees, including Sir Ernest Hall, Prof. Morris I Stein, Roger Standen, Prof. Norman Socha, John Mee and Dr Lynda Foster. Professor E. Paul Torrance is Honorary Member of the Trust.

The CCET focuses on working with the community and the general public, including youth groups and schools. We are running a number of initiatives this year. These include:

Creativity and Cultural Diversity Conference
15-19 September 2002

Our major international conference takes place at the University of Sussex in Brighton, UK. One of the key aims is to recognise that creativity is perceived and developed in different ways by different cultures. Creativity and Cultural Diversity will explore creativity in its widest sense, from many different cultural perspectives, including minority and aboriginal cultures from around the world. This conference is just a beginning. Our long term aim is to encourage more collaboration and discussion about creativity across cultures. This will allow us to pool our collective strengths, share skills and give us all a better understanding of one another's cultures and approaches to creativity.

We will have a diverse selection of workshops led by people from many different cultures and countries from around the world including, for example, China, Portugal, Spain, India, Poland, Romania, Argentina, Malaysia, Australia, the USA and the UK, several Native American peoples and Maori people.

Conference themes include:

- Explorations of creativity in different cultures
- Organisational creativity in a multi-cultural world
- Personal creativity development
- Creativity in different sectors - science, technology, the arts, business, education etc. and the cross-over between sectors
- Creativity in education
- Creativity for beginners
Keynote Speakers
We are really excited to be presenting some first class Keynote Speakers. This unique event brings together many key thinkers and pioneers of creativity from around the world.

Our main Conference Keynote Speaker is Kobus Neethling. In addition we are also delighted to present Sid and Bea Parnes, Morris Stein and Vincent Nolan in our ‘Creativity Pioneers’ session. Arthur Cropley will join us from Australia to present ‘Creativity and Cultural Environment’; Margaret Talboys will talk about ‘Creativity Across the UK Education Curriculum’, M.K. Raina will present ‘Re-enacting the Cosmic Paradigm: Indian Perspectives on Creativity and the Creative Process’ and Elizabeth Rasekoala will discuss ‘African Perspectives on Creativity & Innovation’.

Networking
We will be bringing together a broad spectrum of delegates from many different areas of work, including education, business, science, technology and the arts. This will give everyone the opportunity to network and share experiences and ideas across different cultures and fields. New links will be made, partnerships created and future collaborations planned. The conference will present many structured opportunities for networking including a Talking Circle and a World Cafe.

Further details
If you would like to find out more about the conference, please see our website for more details and online registration - www.creativitycentre.com/ccd

Community Projects
The Woodingdean Summer School Challenge
This summer school project, referred to in my last Global Correspondents article, was a great success. We were joined in this by Russ Schoen, from Chicago, who also specialises in running creativity programmes for young people through his organisation ‘Marathon Creative’. On the first day we felt like we had the most energetic, uncontrollable group of students ever, but by the second and third days they were focussed on their goal of creating an original performance.

This was an inclusive project and the children with special educational needs (SEN) were an asset to the group. Everyone made an effort to make them feel part of the group. Interestingly it was often the students who would normally get into trouble who bonded best with the SEN children – perhaps because they felt that they were different too.

One student who had recently been excluded from school (we were unaware of this until the end of the week) responded really well to working with the SEN students and helped everyone to communicate with them by teaching us all some sign language.
Despite the other children encouraging him to get into fights, he worked really hard to avoid this and was a really positive member of the group. We couldn’t believe he had been excluded from his school. On his feedback form, under ‘What did you learn?’ he put ‘helping, being good’. It was very encouraging to see that developing children’s creative capacities for a performance also allows them to approach other things more creatively.

**Out of school hours learning**
The CCET is working in partnership with Brighton & Hove City Council’s Children’s University project which invites young people aged 9-12 to attend a series of Saturday morning workshops on a variety of subjects. The idea is to create fun, informal learning experiences. Our workshops have been focusing on producing a television news programme. The students have the option of using real or imaginary news, or a combination of both. They love using video and this is a great medium for teaching creativity skills, as well as improving their communication and negotiation skills, both vital to successful creative achievement. The students are having so much fun they don’t even realise they are learning! One of our future plans is to run longer courses of workshops and evaluate the children’s creative development over a period of time.

**Teachers’ days**
We recently ran the first of the CCET’s *Creativity Days* for teachers in which we explored with them the application of creativity across the school curriculum. This event was sponsored by Binney & Smith. The teachers learned more about some of the key thinking in the field, and how to apply that to their work. They also tried out a number of creative learning activities, designed by the CCET to encourage children to be more creative in their lessons. We plan to run more of these days throughout the year.
United Kingdom

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Making Mistakes

We are told that making mistakes is a legitimate part of the creative process; some might even say essential. But is this so? Are all mistakes as useful as one another? Are there qualitatively different kinds of mistakes? Are some mistakes more worthy than others? Can one make valid and invalid mistakes en route to creativity? And if so, what is the difference between them?

I first wrote this piece on a train. That was definitely a mistake as I’m finding it really hard to decipher my writing, which because I’m left-handed, is not good at the best of times. Come to think of it, an incredibly large number of people interested in creativity are left-handed. On the other hand (no pun intended) drawing spurious conclusions from this could be erroneous – that’s certainly a rhythmic mistake!

Now I feel guilty making plays on words for those readers for whom English is a second, third or even fourth language. That’s English English by the way and not American English which insists on calling buses ‘ground transportation’ and drinks ‘beverages’. That’s catching on here too. You can no longer, get a ‘Take Away’ meal, you have to be satisfied with ‘To Go’. Just try asking for a small’, ‘medium’ or ‘large’ coffee these days. You have to go without, or put up with ‘short’ or ‘tall’. Mind you, I’m all in favour of short words – just not short coffee.

The English tradition of writing from right to left is definitely a mistake as far as I (and I suspect all other left-handers) are concerned. It’s such an awkward thing to do. I should have been born right-handed. Actually I was a mistake. To tell you what next came to mind might be another one.

Fun mistakes are good as long as they’re in good taste… and they do lead to fresh perspectives, fresh perceptions even – shades of R. D. Laing here and his meta-perspectives, not to mention meta-meta perspectives (which for the uninitiated means that my view of what you think I think is influenced by what I think you think I think - and so on – or have I got that the wrong way round?)

Not acting on one’s gut feelings is definitely a mistake as far as creativity is concerned. Just think back to all the good ideas you had but didn’t capitalise on, until you found that several years later: distance learning was all the rage, as was internet shopping, hot-desking, time-share and Bill Bryson’s travel books – I could go on.

Students often tell me that mistakes are useful because you can learn from them. So even awful mistakes could be good. However, if we mistakenly believe that creativity doesn’t count, then surely that’s one mistake that can never be counted as good, can it? Unless of course we realise the error of our ways and learn from that. Two thoughts:

1. Clichés are not helpful mistakes.
2. Maybe it’s not the mistakes that aid our creativity, but the learning that comes from realising that we’ve made them. But how do we know?

My computer has just printed the above line twice – it’s not allowed to join in!

More thoughts:

1. Do there need to be mistakes, so that we can appreciate the instances when we didn’t make any?
2. What about intention and consequence?

I’ve just received a phone call from a hotel booking agency, reserving me accommodation in Pepe’s St. which is in fact Pepys St – the home of Samuel Pepys who put British writing on the map! Which brings me to my next point that in unfamiliar areas the blissfully ignorant, or the supremely confident, are more likely to brush off mistakes without a second thought, unlike the more neurotic who tend to agonise over them. So personal characteristics seem to have a role to play in the relationship between mistake-making and creativity.

What counts as a mistake varies over time. For example, in Shakespeare’s day the English language was far more fluid. Then it was quite acceptable for Shakespeare to spell his name in any of seven different ways. These days, I can’t even cope with tall or short coffee. Though I’ve always wanted to invent a word game in which the rule was that you had to misspell everything.

Seemingly innocuous blanket statements like, ‘feel free to make mistakes’ or ‘feel good about making mistakes’ are not really all that helpful when it comes to creativity. They’re far too vague to be of any use and they ignore the role of value judgements.

Looking out of my train window on the English Fenland around the Wash (near England’s ‘Boston’) I’m struck by the elegant beauty of its flat and largely featureless landscape – something I found extremely boring in my twenties as it held no surprises. Now it seems like a rich source of abstract paintings and photogenic material. Clearly during the course of one’s life-time, it is possible to make mistakes about what counts.

Perhaps it’s not mistakes themselves which have a role in creativity, but the courage to persist in spite of them. Or is it the insight which comes from realising you’ve made a mistake? Or could it be that different kinds of mistakes are of varying use in being creative?

I suspect that what is needed is a proper categorisation of possible kinds of mistakes – arranged along a useless/useful continuum, if you see what I mean. Such a classification also needs to take account of the context – in space and time, for example. There also needs to be a recognition of subjectivity in terms of evaluation, and responses to mistakes as well as an appreciation of the complexity involved.
What then can be concluded? Perhaps that this whole piece is a waste of time and I shall have to wait until next year before I can correct my dreadful error of judgement. Just maybe, it could lead to a more precise exploration of creativity and error, including a consideration of the factors involved, and of the circumstances in which it is valid to assert that, in the course of being creative, it is ‘all right to make mistakes’.
United States

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Barlow, C.M. (In Press) “Following and Accelerating The Design Evolution Curve in Health Care” In Geisler, E. Management and Technology of Healthcare Delivery The Hospital of the Future, Greenwood Publishing Group, Westport, CT
Ethics, Values, and Creativity: Some Lessons from Enron

The creation, operations, and fall of the Enron Corporation have raised many issues of ethics for accountants, managers, and politicians, but it also raises some interesting issues for those involved in the promotion of deliberate approaches to creativity. These issues can affect the reputation of our field and the way we practice it.

Our reputation has probably suffered as the word "creative" is consistently applied to the accounting and tax dodging schemes that were employed. Even worse, their executives and managers talked long and loud about their commitment to creativity and "out of the box" thinking, while pushing hard to overcome "resistance to change".

If we cannot make a clear distinction between our efforts and their actions, we may have a hard time getting clients for our services.

Also, if a firm whose management did such an excellent job of talking the talk and walking the walk of the standard approaches to improved creativity created one of the biggest financial debacles ever, what does this tell us about our use of these methods?

Do issues like ethics belong within the toolkit of the leaders and teachers of creativity?

I think they do. I will use some alternative perspectives on creativity and ethics to discuss this issue.

Creativity as Insight

My attempts to understand and research creativity have benefited greatly from using a different definition of creativity. Instead of looking at the creativity of the ideas, I see the creativity as an event within the creator, an event where a new perspective is adopted because it is a better fit to that person’s knowledge, experience, and values and because it makes better alternatives obvious. So, in the classic example of "Don't raise the bridge, lower the river", the creativity was not in the idea of lowering the river, but in the insight that making the gap bigger or getting boats past was a better statement of the goal.

While a great deal of research has tried to analyze the worth of ideas in a historical or real world context, it is important to note that the ideas generated reflect very clearly the knowledge and values of the creator. If brainstorming produces ideas that will harm someone you don’t like very much, those ideas seem to have more worth and creativity.

So, when Newton is hit on the head by an apple, it jogs his pre-existing ideas and knowledge and gives a new perspective that the same force that holds the planets is the one that pulled the apple down. Drop an apple on most people's heads and they
will either get out from under the tree or eat the apple, because they have not been worrying about how to explain the paths of the planets.

Therefore, the kinds of ideas people have reflect both their knowledge and their values. I have seen major differences in the brainstorming in different companies in their attitudes toward the customer. In one company, people are looking for ways to serve customers more effectively, while in another, they put all their creativity into seeking ways to take advantage of the customers. While some software companies invest their creativity into developing new and useful features, others seem to be spending great amounts of their creativity in figuring ways for their software to prevent other people's software from working.

On the other hand, Southwest Airlines, who values their employees above their customers, seems to be constantly seeking ways to make the employees' lives easier, which then increases the efficiency of operations, helping the customer and the bottom line.

People who are given more information about the ultimate goals of a project are likely to have creative ideas that better fit the overall intention of the project.

**Pragmatic Ethics**

Most children are frustrated by many of the rules and constraints imposed by parents, teachers, and society, and cannot wait for adulthood when they can make their own choices. Looking back, many of the constraints and rules seem hard to support, even a little silly, and certainly are not carried into adulthood.

Ethics is often discussed in business and business schools like those constraints, silly rules imposed by other people who do not value your agenda. In many cases, ethics becomes attention to making sure you don't get caught breaking any of a number of laws that seem like someone else trying to impose their morality on you.

However, ethics are quite different from morality. Ethics are about protecting industries, companies, and societies from actions that seem beneficial, but which have a negative long-term effect.

The Catholic Church has the confessional, in which people confess their sins and discuss things with the priest. There is a strong principle that whatever the priest learns in the confessional cannot be told to others. Many movies and books have used this principle as a plot point. This is an ethical principle, because without it the process could not exist. If people felt that the priest would be telling stories from the confessional in a friendly card game, no one would be willing to go to confession, and no one would get the benefits of having someone help you think through some tough issues. The whole process would be destroyed.
Accountants doing an audit have a responsibility to report any misrepresentation and fraud to the public, to the stockholders. Once the trust based on this ethical principle has been destroyed, the public accounting industry has no value, a lesson they are learning today.

Lawyers have ethics similar to the confessional, for many of the same reasons. If the lawyer hired to defend you gathers enough evidence to not only realize you are guilty but to get you convicted if the prosecution learns it, it would be profoundly unethical to let that information out. In may well be immoral to allow a guilty person to go free, but it would be unethical for their lawyer to get them convicted. Again, if you have to guard every word with your lawyer, your lawyer will not get the information needed to do a good job.

If you hire someone who is both a lawyer and a CPA to look over your company's books, you had better be sure which one they are when they are looking. The CPA has to turn you in and the lawyer has to keep quiet.

Breadth of Vision

Our creativity perspective shows us that people given a detailed assignment without knowing the ultimate goal are unlikely to have insights that will get them closer to the ultimate goal. This is when we have sub-optimizing ideas, which solve the stated problem very well, but actually harm the longer-term goal. There are plenty of ways to raise the bridge that will in fact prevent the boats from getting past.

It may well be that Enron's executives saw ethical behavior as simply avoiding the violation of laws with an ethical intention. They had no comprehension that the ethics of markets, the ethics of accounting, and the ethics of financial instruments were the foundation stones for the industry they hoped to build. In many cases, they took the even more creative approach of lobbying lawmakers to change the laws so their preferred actions would not be illegal.

Indeed, it may turn out that in this whole event, there were few violations of the law, but there were tremendous violations of ethics.

Their actions have shaken the trust needed for many kinds of companies to operate in those industries. Many of the most "creative" accounting and financial engineering schemes are now being investigated carefully for their integrity and implications.

These companies may be starting to realize that they should have lobbied congress for stronger ethical laws to keep an even playing field for all and a healthier industry.

Implications for Deliberate Creativity

It might help facilitators to not only make sure that the knowledge and experience necessary for good insights and ideas are included in the creative efforts, but that some time is spent discussing values and ethics as part of understanding the problem.
When I encounter clients with a strong value for taking advantage of workers or customers, I get a bit preachy. I push hard for ideas that will improve the lives of workers and employees, then help them select the ones with best profit potential in the situation.

I also get participants into discussions of what makes the industry thrive, providing a healthy environment for the company. Often participants are surprised that others see the value of keeping competitors in the market or that while it is can be possible in bad times take advantage of customers or suppliers in price negotiations, this can bankrupt these people so there are no suppliers or customers the next year. These are strategically ethical decisions.

When the knowledge has been exchanged, the various values and ethical perspectives shared, the team is ready to generate better insights and ideas. These insights and ideas help the organization profit greatly while achieving values and building ethical support for the long-term success of the industry or profession.

Ethics and values are an essential part of effective creativity. If the people who had taught Enron about creativity had discussed more than out of the box thinking and overcoming resistance to change, this whole episode might have been very different.

If we want our field to prosper and to have a good reputation, it seems that we must teach people more than brainstorming to get "out of the box" ideas and to implement by overcoming resistance. Maybe if we get teams to pay attention to more constraints and values, they will be less likely to generate Enron-like results, and our knowledge will be much in demand.
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Torrance Center Fellow
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Over 200 professional articles, 10 books, and is included in 11 books on training and creativity.
Wandering the World in Search of Creativity

For 73 days this (2001) summer I wandered completely around the world in search of creative thinking, creativity and creative people, while challenging myself to be creative every day. What started out as simply a dream trip to fulfill a fantasy of a life-time: travel around the world like Philleas T. Boggs did in Around the World in Eighty Days; became partially a research project.

My initial attempts at preparing this article for this edition of Creativity’s Global Correspondents 2002 were more like Alan’s attempts at out writing Bill Bryson and Rick Steve, both excellent travel authors or Charles Kuralt and Peter Jenkins, both excellent authors of the human experience based on their travels throughout the world. To read that I invite you to visit my wanderings journal website: http://groups.yahoo.com/group/alan2001. The following is based on learnings and relearnings based on my 73 days of wanderings this summer.

S.P.R.E.A.D.ng Creative Thinking
Since 1976 I have focused much to most of my efforts (personally and professionally) on the application and development of creativity: mine and others. Over the 26 years, professionally, I have slowly refined my focus to S.P.R.E.A.D.ng™ creative thinking throughout workplaces. S.P.R.E.A.D.ng™ is the acronym I use to demonstrate to people what I believe needs to be done within workplaces to enhance, expand and enrich the creative thinking of all employees (SUPPORT, PROMOTE, RECOGNIZE, ENCOURAGE, APPLY and DEVELOP).

Overall Approach to My Wanderings
During my 73 days traveling around the world the summer of 2001, through New Zealand, Australia, Malaysia, Singapore, Sri Lanka, India, Dubai, Turkey, Denmark, Germany, The Netherlands, England and France; I sought to find examples of creativity everywhere I went and to interview people about their own creativity and creativity in general in their country.

Structure of My Post Review of My Wanderings
As a skeleton structure for this article I have chosen to use two lists of traits of creative people. The first list comes from the TTCT™ (Torrance Tests of Creative Thinking) and the second comes from an on-going project I have been working on since I was a doctoral student studying with Paul Torrance in 1980. The 20 traits from the TTCT™ represent 20 traits that are examined by the TTCT™ tests based on over 40 years of E. Paul Torrance's scientific study with subjects around the world. The 32 traits from my, "Are You a Crayon Breaker?" exercise, come from a survey study I did of articles on the traits of creative people written from 1950 to 1980. I have used the survey as part of over 2100 professional speeches and workshops since 1981 to suggest the existence of creative thinking potential in all people and also to indicate different styles of creative thinking.
The Initial Process
During my trip I often had people I met and interviewed complete the 32 traits survey to share which they believed fit them. While we talked together I introduced them to the work and ideas of E. Paul Torrance and the 20 traits from the TTCT™. In addition as a post trip survey I have reviewed my daily journal notes using both the list of 20 from the TTCT™ and my 32 "Crayon Breaker" exercise traits for potential understandings of what I experienced and discovered.

The Traits

TTCT™ Traits
1. Fluency - many ideas
2. Flexibility - different types of ideas
3. Elaboration - addition of details
4. Originality - uniqueness
5. Abstractness of approach moving from reality
6. Openness-resisting early closure or completion
7. Change of Context (cross-interpretation)
8. Combination of Ideas/Facts - synthesis
9. Breakthrough from Current Limits
10. Unusual Viewpoint
11. Internal Perspective
12. Humorous Perspective
13. Richness & Colorful Detail
14. Feelings & Emotions
15. Fantasy
16. Movement & Sound - sense change
17. Multiple Idea Combinations
18. Macro Scale Perspective - seeing from larger view
19. Provocative Viewpoint
20. Future orientation

Are You’re a Crayon Breaker™

1. sensitive
2. not motivated by money
3. sense of destiny
4. adaptable
5. tolerant of ambiguity
6. observant
7. perceive world differently
8. see possibilities
9. question asker
10. can synthesize correctly often intuitively
11. able to fantasize
12. flexible
13. fluent
14. imaginative
15. intuitive
16. original
17. ingenious
18. energetic
19. sense of humor
20. self-actualizing
21. self-disciplined
22. self-knowledgeable
23. specific interests
24. divergent thinker
25. curious
26. open-ended
27. independent
28. severely critical
29. non-conforming
30. confident
31. risk taker
32. Persistent

The Beginning of My Creative Wanderings

*From 3:30 pm in Athens, Georgia on June 25th to 5:30 am in Auckland and finally 11:00 am June 27th in Christchurch I began my first trip around the world.*

After I arrived in New Zealand: in Christchurch, on the train to Dunedin, in Wellington and in Auckland I asked architects, designers, advertising art directors and account executives, landscape architects and theater people I met and/or stayed with to complete my “Crayon Breaker” survey.

Discovery
Initially I discovered that the lowest number of traits checked off by the people was 15 with a few marking all 32, including #28, severely critical. Over the 20+ years I have been using the exercise the people in my programs or audiences have generally marked between 5 and 15 with a few, most times, who mark over 15.

Severely Critical as a Trait
Most people do not openly admit to this. It is the one trait I discover in personal interviews and reviews of biographies and autobiographies of highly creative people, living and dead. My assessment is that the “higher” creative people are severely critical of 3 things and are accused of being severely critical of a 4th. They tend to be severely critical of 1) themselves, 2) their work, 3) the potential of their fields of
passion. Because of these three people who are much less creative as them see the “higher” creatives as being severely critical of other people. My experiences and on-going study does not support that anywhere in the 53 countries I have traveled in during my life.

**Deliberately Developing Creative Thinking in New Zealand companies**

During my interviews in New Zealand after the 32 traits survey was completed and reviewed I discussed the TTCT™ traits as trainable/learnable traits asking the people who were company owners or managers, if they actually, consciously, strived to increase the creative thinking abilities and skills of their people. Except in a few isolated cases where the interviewees were creative thinking consultants the answer was always No and generally the people were unaware that creative thinking could be increased or taught.

**Australia Clockwise from Sydney to Brisbane**

My four-week journey around Australia (6 states and 2 territories) took me to Sydney, Canberra, small towns and a self-sufficiency site on a mountain in the Snowy Mountains, Melbourne, Hobart, Adelaide, Uluru, Alice Springs, Perth, Darwin and a couple small towns in the Northern Territory, Cairns and finally Brisbane.

**My Australian and New Zealand Hosts Were Chosen as Subjects Too**

In most of the cities and towns I stayed with SERVAS members, an international travel organization who members open their homes to other members as their guests. Using the SERVAS Australia directory as I had in New Zealand I hand selected a mix of creative people to stay with in each city with no repeats of professions or occupations. They consisted of creative thinking consultants, designers, theatre promoters/directors, therapists, ceramic artists, counselors, writers, fabric artists, sculptors and teachers or trainers.

**Researcher Becomes Searcher**

As my trip continued I became less systematic with my data collection primarily because I became much more involved in getting to know my hosts and the people I met along the way instead of playing scientific researcher and also I become more involved in simply the various experiences day by day.

**Study continues in Australia**

Periodically in Australia I had people complete the “Crayon Breaker” survey The results were the same: very high numbers of traits selected. I continued my sharing information about E. Paul Torrance’s work and some about my own and other creative thinking consultants I have gotten to know from various countries and ones I got to meet along the way during the journey.

**A Primary Creative Learning: Dealing with Daily Frustrations**

One learning that kept coming back again and again throughout my trip was one I learned from Joel Goodman from the Humor Project many years ago: “If when something happens you can say ‘some day I’ll laugh about this’ then why not start
now!” When frustrating and highly stress producing or simply very negative things happened during my travels around Australia and then in other countries later I would “step out of my shoes, boots or saddles” and remind myself of Joel’s bit of wisdom and within a few moments I was smiling and laughing and making notes of how to turn the experience or situation into material for a future article or speech.

**Learning from the Weather**

*Have you ever thought that it takes more creativeness to enjoy a rainy day than a sunny one?*

Instead of becoming frustrated by the many days of rain I experienced in the southern states and territories of Australia I chose to use my creativeness to turn them into wandering adventures.

One example would be my third day in Sydney. It had rained off and on, mostly on, for the entire three days making it difficult to capture the beautiful sites and experiences with my point and shoot Fuji camera. That day after the first couple of hours of riding one harbour boat after another, there are a series of boat lines that crisscross Sydney Harbour from one end to the other, I noticed that the streets were becoming extremely crowded with people. All the while it began raining harder and harder.

Most of my life I experienced claustrophobic like reactions in crowds of people, especially when the people all seem to have gotten up that morning with the sole intention of getting in my way. That day by noon it had gotten worse and worse. I felt like a young chicken stuffed into an extremely wet and overly crowded chicken growing house with chickens all around and over me, so packed in a can of sardines would seem vastly loose.

I pushed my way through the crowd and found a train station under one of the high-rise blocks of buildings. On the spot I had decided to go out to the 2000 Olympic Site just to get away from the mobs of people. As I pushed my way through I asked person after person how to get to the Olympic Site. After seven or eight different answers I just got on a train heading out of town and asked the conductor once I sat down. My luck was with me. The train I had run onto was the right one.

In about 20 mintues I was walking in the vast, very, very open area of the Olympic Site enjoying the environment and architecture. One person per 20 acres instead of the thousands per 200 square feet I had just left behind in Sydney. After enjoying the openness and viewing many of the contemporary sports arenas I realized that the only building, way off in the distance, almost to the horizon, that was open had a very long line wrapping nearly around it. So I decided to head back to Sydney to catch the bus from downtown Sydney, near the Opera House, to my creative thinking consultant friends’ home in the northern suburbs and end my day of wandering in Sydney.
I slowly walked back to the empty train station. There was a good reason it was empty. The last train back to Sydney that evening was leaving in 3 mintues.

**Learning: Trust Your Subconscious**
Once again my subconscious or intuition had taken control and I had unknowingly trusted it to guide me.

That was another learning/re-learning I discovered as I traveled throughout the journey: trust my subconscious and intuitive skills.

**Learning: Trusting Some Natural Creative Traits**
In Hobart, Tasmania, while staying with Helen and Andre, two very successful and accomplished ceramic artists, I experienced the value of trusting the natural creative traits of curiosity, exploration, divergence, openness to premature closure, independence, imagination and others. Because I was trying to experience something of each of the 8 states and territories all within 4 weeks I had only planned to be in Hobart and Tasmania 3 days and 2 nights.

Tasmania is an absolutely beautiful island state, which until this summer I mistakenly had thought it was a separate nation. By only planning to be there for such a short time I was not going to see or experience much of the natural beauty of the island on the ground: the vast forests, valleys, rivers, mountains, snowy peaks, etc. Add to that it was raining most of the time as well.

So I played tourist and gathered up maps, went to the Chamber of Commerce plus the Tasmanian Tourist Agency offices to pick up information of what I might see in less than 48 hours by bus (commercial or tour), bicycle or foot.

After a couple hours of frustration of trying to make my time work I simply decided to enjoy Hobart by foot and plan on returning to Tasmania in the future for a much longer time. I was scheduled to speak in the afternoon on adding creative thinking to your life and I wasn’t using my own.

I threw away all but a simple street map of the downtown area of Hobart and began to “wander”. It became another “re-learning”—allow yourself to creatively experience life instead of always trying to create it. That day and the next 1/2 day became fantastic. I experienced many people, the streets of Hobart, the interiors of many shops, restaurants, much urban art and toured several artist studios enjoying a great variety of art.

“Letting go and experience the creativeness and creativity that surrounds you”, became a creative tool throughout the remainder of my 73-Wandering Journey because of my time Hobart.

**Learning: Wandering Without a Predetermined Plan**
A learning that I often share with participants and students is that of simply “wandering” and letting the creativity that surrounds them remove the “clouds” or blocks of creativity that prevent them from being creative at any given moment. This I did in shops, malls, streets, banks watching the customers, waiting around ATM machines, in ceramic, painting, fabric, sculpture studios, toy stores, grocery stores, along piers, in restaurants.

**Wandering: My Greatest Creative Tool**

After Hobart it was Adelaide, Uluru (Ayers Rock, Alice Springs, Indian-Pacific) train across from Adelaide to Perth, flights to Darwin, Cairns and Brisbane. The experiences and lessons during those 3 weeks continued to reinforce what I had already lived.

**Learning: Experiencing Varied and Many Cultures to Expand Creativeness**

By the time I reached Brisbane, my last destination in Australia, located in Queensland, I had already experienced many cultures and sub-cultures. That was one of my earliest creative learnings from 1977 when I first took an extended trip involving visiting 20+ countries in Europe, Eastern Europe and North Africa. Learning: to expand and enrich our creativeness and creative thinking skills we need only expose ourselves to varied cultures and peoples.

From Athens, Georgia on June 25th until August 8th in Brisbane I had experienced New Zealanders, natives and immigrants, from the very northern part of the North island to the southern section of the South Island, Maori natives who live in a variety of ways from very old custom to very contemporary. I had traveled thousands of miles by train, bus, cab, foot and plane experiencing Australians from all eight states and territories: New South Walves, Victoria, Canberra, Tasmania, South Australia, Western Australia, the Northern Territory and Queensland. They ranged from very contemporary residents of Sydney, Melbourne, Adelaide, Perth and Brisbane. Throw in hedonists who enjoy their lives in Darwin, Cairns or along the Gold Coast between Cairns and Brisbane, some making their livings as scuba diving instructors or street artists. Also they included self-sufficiency living people from the Snowy Mountains who work only when the money runs out plus country people from each of the 8 areas. Add to that were outbackers who spend days and weeks totally alone in the barren outback. Plus include a mix of Aborigines from those who live as their forefathers and mothers have lived from 40,000 years to college educated professionals who had been trained by both their native cultures and the white culture of modern Australia.

**Varied Traits Provoked Through Cultural Immersion**

The learnings from such immersion in varied cultures help to expand, enrich and provoke increased creativeness through the following traits:

Abstractness of approach moving from reality—seen through the art and thinking of so many different peoples.

Adaptable—experiencing how so many different Australians live their lives.
Breakthrough from Current Limits—caused by the contrast of my culture with so many others.

Change of Context (cross-interpretation)—continually exposing my self to daily to by the hour changes of context and culture.

Combination of Ideas/Facts(synthesis)—trying to create a synthesis of everything I was learning and experiencing.

Synthesize correctly often intuitively—trusting these abilities in myself by the hour and day.

Curiosity—pushing this to extreme limits everywhere I went whether flying by helicopter to the top of a glacier in Franz Joseph, New Zealand or a seaplane over the skyline of Darwin, Northern Territory, Australia or walking around the famous Uluru Rock.

Divergent thinking—being open to experiencing this everywhere I went.

Open-endedness—reminding myself not to go to premature closure quickly

Elaboration - learning to see through the eyes of others

Fantasy—trying to experience the fantasy lives of other cultures

Multiple orientations: past, present, future, virtual

Internal Perspective-trying to experience these in others and myself

Question asker-being willing to ask and be asked

Richness & Colorful Detail-experience vast varieties everywhere I went

Risk taker-opening myself to risk taking daily or by the hour.

See possibilities-opening myself to possibilities everywhere.

Unusual & Provocative Viewpoints-opening myself to these everywhere.

**Changing Cultures**

During the first six weeks I traveled where English, at least some version of English, was spoken wherever I was.
When I left Brisbane for Kuala Lumpur I left that security blanket behind me at least part of the time each day.

**The Physical Environment and It’s Creativity**
Kuala Lumpur and Singapore have much in common. Both have worked very hard to enter the 20th and 21st centuries in less than 40 years each. Both skylines are filled with the most contemporary buildings any architect could dream of. Each of the major cities I had been in so far in New Zealand and Australia also were filled with many relatively new buildings, with Brisbane having the largest concentration, mostly built in the 1990s and Sydney slightly behind it because of it hosting the 2000 Olympics.

What Kuala Lumpur and Singapore still possess that neither New Zealand nor Australia do not is also the ancient. NZ and Australia are barely 200 years old. Both KL and Singapore are also ancient countries filled with temples, shrines, and slums, by today’s standards, that use construction types and living styles that people have lived for over 3,000 years.

**Learnings: Western Creative Meets Eastern Creativity**
The learnings for me as an outsider with little to no knowledge of the many cultures that have lived and died in Malaysia and Singapore were that of watching the contrasts which produce the richness along with the vast confusion and stress that appear to exists in both of these cultures.

Seeing the simple lines, colors and forms of the newest contemporary buildings and developments contrasted against the extremely complex, ornately detailed and poly-colored Hindu temples caused me to recognize the need for juxtapositioning of our thinking.

**Onto Sri Lanka to Learn More: Creativity During Revolution**
From Singapore after about 10 days spent traveling back and forth between KL and Singapore off I went to rebel torn Sri Lanka, the paradise that has drawn many people from around the world. Less than two weeks before I arrived, rebel forces blew up 5 commercial airplanes on the runways at the airport. I was traveling to Colombo, Sri Lanka with the purpose of presenting professional programs on creative thinking in their workplaces and touring a little.

From my arrival at 12:30 am to be picked up by a total stranger to be driven through totally dark streets to a hotel, that I only knew was located somewhere in Colombo, the capital city where I would sleep and finally meet my formally unmet client in the morning, I needed to use my creative skills to learn to accept and let go of my growing fears.

**Learning: Our Cultures as Blocks to Our Creativity**
The greatest learning for me among many from my 4 days and 3 nights in Sri Lanka was the power of blocks upon the creativity of a complete culture of people. With all
the road blocks, checkpoints, military personnel, nightly curfews, daily required power outages; I saw creativity everywhere I went from how to drive effectively in a non-geometric fashion to get from point a to point b through absolute chaos without traffic lights or electric auto turn signals to some of the greatest creative lunch and dinner buffets I have ever experienced. True I felt like a dragon with a flaming mouth most of the time I was eating but I did learn how to enjoy even the pain of spice as long as I had a glass of fresh orange juice, something sweet or ice cream to contrast the spices in my mouth with.

When I reacted to my driver’s actions by putting up my hands to cover my eyes from the possible car crashes at every turn I was laughingly warned to watch out for the drivers in India.

The warning was truly well given.

**Going Deeper into the East like Marco Polo in Reverse**
From Colombo I went onto Chennai, India (once Madras) located near the southeastern tip of the Indian peninsula.

Chennai is a very ancient city that too tries to mix the ancient and the near contemporary. Ancient construction techniques are used to build the local EDS office building or the local Dominoes Pizza delivery shop.

**Learning from the East**
Visiting countries such as Sri Lanka and India as a citizen of the United States of America is a learning in itself. From our nearly anal obsession with geometrically laid out streets and driving laws to the totally amorphic conditions on their streets and apparently non-existent driving laws you truly experience the contrast between focused convergence and seemingly aimless divergence.

**Going Home Again to Istanbul**
From Chennai I traveled to Istanbul, Turkey stopping for a few hours in Dubai, the most modern convention/conference mecca of the world. In the 140 degree desert of Dubai lies the most modern airport with the largest and most contemporary duty-free mall, not shop or shops, a full-range mall. One lesson from those two hours was that creativity can occur in any environment no matter how harse or repressive to human existence.

Arriving in Istanbul was a pleasure, partly because I was being picked up by a friend I would spend much of my time with in her beautiful city and, because I had been there 3 times before. I was not going to experience the shocks of the unknown or simply imagined environments and cultures of Malaysia, Singapore, Sri Lanka and India. Instead I was returning to a favorite city that I have traveled extensively about with friends and alone.

**Learning: Integration of Ancient, Old, Current and Future**
One of the extensive creative learnings that Istanbul provided was the integration of ancient, old, current, future cultures, religions and peoples. The most distinct difference at first for westerners is that the population is over 90 percent Muslim with a very small minority of Christians or Jews. Yet there is a sense of peace that exists in the initially appearing chaos.

**Wandering to Replenish My Creative Soul**

This time in Istanbul I chose to walk or boat most places when I wasn’t riding in my friend’s car. Wandering through the streets basically unnoticed was a pleasure. It enabled me to explore, experience and examine the on-going creativity that surrounded me in the Bazaar, the commercial areas where the wholesale trading goes on or some of the most contemporary and pricey malls I have ever seen in the world. Combined with that were several strolls along the Bosphorus Straits on both sides, European and Asian.

**Learning: Integrating Contrasts**

A significant learning Istanbul comes from the fact that it is a city of over 20 to 24 million people and is the only city that exists in two separate continents connected by bridges. The learning is the value of contrasts and integration of contrasts to produce creativity and innovative ideas and solutions.

**Revolving Back to Western World**

Time to contrast again, a flight from Istanbul to Copenhagen. From ancient chaos to modern and contemporary highly controlled order. From high contrasts in nearly every aspect of life to sameness and uniformity, much by law and culture.

**Learning: Control and Orderliness Can Produce Creativity**

My first learning from returning to Copenhagen after 24 years was how controlled and orderly it is and apparently lacking in spontaneity and creativity. It took about a day to clear up my creative blinders from Istanbul, Chennai, Colombo and Kuala Lumpur and to begin to see the wonderful creativity in Copenhagen and the countryside of Denmark.

The learning… no matter how much control and systemization a culture may generate the natural desire for creativity will show through. In Copenhagen individual creativity does not seem to exist initially until you begin to look for it and become more open to experiencing it. Doors, doorways, entrances, window flower boxes, personal window displays, gardens, graphics, furniture, silverware, artwork, ceramics from artistic to everyday chinaware; these are what demonstrates the creativity of the Danish people as individuals and not just members of a highly refined creative nation. After once again seeing their creativity I felt more relaxed. Then I went with an Italian friend, who had arranged to be in Copenhagen while I was there, out to dinner to walk the streets at night and to visit Tivoli, one of the oldest amusement parks in the world. Viola, the internal creativity and desire for independence and divergency showed inside Tivoli even until 2 or 3 in the am.
From Refined Control to Refined Individualism with Control
From Copenhagen by train, boat, bus, foot and car I traveled for an entire day to Delft in the Netherlands across northern Germany to be welcomed by my cyberspace friend, Marc Tassoul, professor of creativity and industrial design plus a consultant and creator of the first creativity focused internet email discussion list, CREA-CPS.

Prior to this trip I had the pleasure of visiting and staying in Delft several times beginning in 1977. Delft is a walking town, medieval architecture and design combined with the most contemporary available in the world. Each integrated beautifully at a human scale. No high rise buildings within the city. Everything is located a few minutes away by foot.

Learning: Vary the Scale and Speed to Rejuvenate Creativity
The learning for me was in the need to vary the scale and speed of our lives to help expose, expand and enrich our natural and developable creative thinking traits and skills.

Delft is an example of a completely designed and integrated community. All that is built new is integrated to create a harmony that is rarely experienced in any other community, town, city or country.

Off to the Center of the British Empire: Shakespear’s Home
After an abundance of sensory enjoyment and ample time with friends I was off to England, Stratford specifically, to experience another small scale integrately designed community. What Stratford lacks in contemporary design it relishes in historic and singularly focused creatively. It is an entire community devoted to the creativity of one man, William Shakespear. Yet within and among all the curios and tourist attractions is the love of the beauty of the landscape and the blending of the architecture and contemporary life.

Learning: Change of Scenery Can Relish and Replenish Creative Spirit
A learning for me from Stratford is that I can enjoy intensely crowded streets and parks during the mid afternoon while being able to jump on my rented bicycle to travel off to the countryside in a very few minutes getting lost in the beauty of a travel along the Avon that William and Anne and their children probably walked hundreds of years ago. I can also bicycle or walk the same busy streets at dawn or late at night after the evening’s Shakespeare Theater performance as if I was the only person on earth.

Learning: Juxtapositioning Imagination
Added to that learning is the ease with which I can play with my imagination in a town like Stratford-on-Avon juxtapositioning my thoughts from contemporary life, talking with a political cartoonist I met on the train ride to Stratford to pretending I am a citizen of midevial time Statford walking to experiencing William’s latest creation at the theater.
Juxtapositioning in Time
From Stratford on Avon I traveled by train to Salisbury to meet a recently meet a cyberspace creativity friend, John Thomas, a retired teacher and creativity author and to return again for the third time to the time of the Druids at Stonehenge.

Every Town Possesses Vast Contrasts of Creativity
Salisbury provided a sampling for contrasting time comparing the famous Salisbury Cathedral to the Druid Circle of Stones at Stonehenge to experience distinctly different spiritual expressions of creativity. Walking the now controlled, physically and electronically, route around the world famous stones, then walking slowly around the famous cathedral both at midnight under the spotlights and in the early morning at day break simply experiencing both provided me a “creative soul” fill up.

Back to Modern Times
Off to London next, not really wanting to be there, except to meet up with some highly creative people at a creative consultant firm and St. Luke’s advertising agency, reported to be one of the most creative in the world today was my next planned destination.

Letting Go Once Again to Learn
Thank you goes to Joel Goodman again. I chose to laugh and to enjoy the on and off rain and chose to walk aimlessly the first day before meeting my contact at What If?! From my visit at the offices of What If?! I received several tips for what to see in London today. I combined that with on and off rides around London via a constantly available series of double bus tour busses around the entire city. Instead of being frustrated by the scale and density of London I fell in love with experiencing parks from small squares to Hyde Park in size, art galleries with the work of Picasso, Dali, and many yet to be known as famous artists, the British Air Eye gigantic ferris wheel, etc.

Learning: Changing Perspectives Without Specific Plan
A learning from London this time came in the enjoyment and creative potential of constantly changing perspective and scale both deliberately and spontaneously as the spirit moved me. From the reconstructed Globe Theatre to walking along both sides of the Thames to the Tate Gallery to a seafood festival to a street musician playing an ancient Chinese instrument to a mix of varied food cultures.

What started out as depressing 3 days turned into fantastic and richly creative days.

It Can’t Be done!: Tunneling to Even More Creativity
Then it was off through one of the greatest examples of engineering creativity in Europe, the England to France tunnel under the English Channel. The learning: what seems impossible with today’s abilities can become easy with tomorrow’s.

Arriving in Paris is always fun. This was my 7th visit to Paris. My goal was to complete my trip in a beautiful city and give a speech to the newly formed French
Speakers Association in Paris on my last night at the American Church along the Seine on creative thinking as a professional speaker.

Learning: Complete Openness to Experience Breeds Creativity
My 4 days and 3 nights in Paris and the surrounding area including Paris, many of its suburbs, Chartres and Disneyland Paris were nearly completely spontaneous filled with creative adventure and complete openness to experiences as they happened, minute by minute, hour by hour, person and experience by experience. Included was walking from the front door of my hotel with a complete view of the Eiffel Tower only a few blocks away, a view I would experience many times throughout the time I was there day and night.

The overall learning from my time in Paris this time was to remind myself to set basic goals, targets, that fulfill my mission and fit my vision while being open to experiencing life as fully as possible at all times during the day each day.

Returning Home Once Again
73 Days in search of creativity, creative thinking and creative people from Athens, Georgia to Auckland to Paris and back to Athens again. I found and experienced each of the three everywhere I went and so will all of use if we simply apply the natural traits of creative people and creative learnings that appear throughout our lives.
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(Lauer and Wilson (his name follows) collaborated on the article that is reprinted here: “Lessons from Boss Ket.”)
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Publications
(Ed.) Frontiers of creativity research: Beyond the basics (pp. 305-313). Buffalo, NY:
Bearly Limited.
Isaksen, S.G., Dorval, K.B. and Treffinger, D.J. (2000) Creative approaches to
Lessons from Boss Ket!¹

Have you ever asked yourself how different types of creative behavior and style can lead to highly productive outputs? We have and would like to share with you the result of our reading and thoughts on the subject. We focused much of our thinking and reading on a man who believed that all problems could be solved if viewed with an open mind. Although no longer with us, this modest and inquisitive man helped shape our present world and was affectionately known to many as Boss Ket. Although he might not agree, we believe his story still has much to teach us about creativity.

Charles F. Kettering had little use for stories about the past and history. Eugene said his father often stated that, “The only reason we should read about the past is to study the future, because that is where we are going to spend the rest of our lives.” (Young, 1961, p.vii) Keeping this in mind, we explored many documents concerning Kettering, especially his famous story about painting cars. We found that this man’s life provides excellent insights into our (current and future) appreciation of styles of creativity and problem solving - an appreciation stimulated by these stories where Boss Ket identified and solved problems by utilizing a full spectrum of creativity and problem-solving styles and behaviors.

Charles F. Kettering

Charles F. Kettering was born a poor farm boy in northern Ohio on August 29, 1876. Throughout his early years, Kettering worked on the farm with his family and was reported to have an insatiable appetite to understand how things work. When he was seven, he contracted scarlet fever, which left him nearly blind and unable to read for extended periods of time. Shortly after this illness he disassembled his mother’s sewing machine out of curiosity. As you might expect, his mother was not happy about this, scolded him, and stood over the still weak boy as he put the complex machine back together without the aide of a manual. After many hours of fretting about what her son had done she was told by Charles that it was back together. To her amazement she found that the sewing machine operated better than when it was new!

Charles graduated in 1895 from high school and became a teacher at a country school. In September of 1898, Kettering enrolled at Ohio State University in the electrical engineering program. During his freshman year, he worked for a telephone company installing poles and later headed the installation of an entire telephone exchange system (which he learned to do from reading a book). During that installation, he met Olive Williams, a friend of a coworker, who played piano. Kettering, who was responsible for testing each and every line installed, found it time consuming to voice test each individual line. To complete the testing more efficiently he took the transformers to Williams’ house, hooked them up to her piano, and tested the systems by listening to her music transmitted through the lines. Kettering married Olive

Williams in 1905 (already showing signs of complex multi-tasking!). During the end of his final year of college, Kettering was invited to work at NCR (National Cash Register Company), where he invented the first electric cash register. Part of his invention stemmed from the transfer of knowledge he gained as a child working on a farm and adapting it to the task at hand. Over the next four years, Kettering worked on electric motors trying to make them run on both DC and AC current.

As a side interest, Kettering began working on the problems associated with starting a car. Here he adapted the knowledge gained when he developed the electric cash register and his work with magnetism and relays. By combining these components he devised the first ignition circuit in 1909. That same year, Kettering left NCR and started a company named Delco (Dayton Engineering Laboratories Company). In 1911, he combined the ignition circuit, a battery, and an electric motor to create the first battery ignition system which eliminated the need to start a car using a hand crank.

The new electric ignition system was quite a significant event in the history of automobile safety since the process of manually cranking automobiles was dangerous and a leading cause of serious injuries to motorists. The invention of the self-starter also meant that women could finally drive an automobile safely and, “It was because of Kettering’s self-starter that women’s fashions in 1912 changed radically. The long skirts got in the way of operating accelerator and brake. They went. Into limbo, too, went the petticoats, the hourglass corsets, and the wide hats.” (Young, 1961. p.112). A final point of interest is that after a dinner at the Detroit Athletic Club, where all the leaders in the automobile industry met for social activities, Charles Kettering was approached by Henry Ford who told him that he’d never put the self-starter on his automobiles. Kettering’s humble, yet confident, response was, “I think the future will take care of that, Mr. Ford.” (Young, 1961. p.114).

In 1916, Kettering and his partners sold Delco for 17 million dollars to United Motor Company. A few years later this company became GM (General Motors Corporation). Kettering became Vice President of GM in 1920. In the early 1920’s, during a GM divisional managers meeting, Kettering told them that, although they could put a car together in a minute, it took 17 days to paint a Buick and 34 days to paint a Cadillac. And if they were thinking about making a couple thousand cars a day, that creates a major storage problem. Alfred Sloan, then President of GM, agreed with Kettering and asked him to solve the problem.

Kettering’s next step was to call a meeting inviting Joe (from one of GM’s largest paint suppliers), a number of paint chemists, and some of GM’s painters. He asked the group what could be done to reduce the time needed to paint a car, the response he received was “very little.” After much discussion, the group decided they could reduce the time by a maximum of one to two days. Someone then asked Kettering, “How long do you think it should take to paint a car?” Kettering replied, “One hour would be about right.” The group reported that the problem was that the paint wouldn’t dry
that fast. Kettering asked, “Can’t something be done to make the paint dry faster?” They responded, “Not a thing in the world.”

Depressed about the outcome of the meeting, Kettering went for a walk along 5th Avenue in New York, looked in a jewelry store window, and saw a small painted pin tray that had been finished in all different colors. He entered the store, purchased a couple of the pin trays, and asked the clerk where he could contact the supplier. Upon visiting the man in New Jersey, Kettering found the painter making lacquer from cellulose in a shed in his backyard. Kettering asked if he could buy a quart of the paint. The man replied that he had never made a quart before. The painter then asked Kettering, “What are you going to do with it”, and Kettering replied, “Paint a car door.” The man laughed and replied, “You can’t do that, this lacquer dries almost instantly. If you put it in one of your spray guns, it will dry and blow away as dust before it reaches the car door.” Kettering asked, “Can’t you do anything to slow it down?” The man replied, “Not a thing in the world.”

So there he was. On one hand, nothing could be done to speed up the drying time and on the other hand, there wasn’t anything that could be done to slow it down. We know from our experience that these types of predicaments require some creative thinking and hard work if an acceptable solution is to be found. Kettering had the dedication, persistence, resources, and ability to accept this no win situation and not let the ‘experts’ opinion stop him. In fact a motto he kept hanging on his wall said, “Let the problem be the boss.”

At this point Kettering took some of the lacquer back to the lab, combined it with the slow drying paint, and had his staff paint an automobile in about two hours. Although it took nearly two years, DuPont (a GM supplier) developed a fast drying pyroxylin lacquer that would carry the pigment required to make a satisfactory enamel in 1922. However, that early paint was hard to apply, left a dull, lackluster finish, and when the cars hit a curb, the paint would peel and fall off the car in huge strips, because the paint softened the primer coat. Kettering asked the paint line manager, “Can’t we put on another primer coat?” “No sir.” was the reply, “We adopted that, and that is our standard.”

Kettering, not to be stopped, did a very interesting thing. He went to the general manager for that division and asked if it would be possible to give the paint line manager a vacation. The fellow liked to fish, so Kettering got him to go away for six weeks. During that time, they found that when they put a Duco Pyroxylin agent in the primer they didn’t have any trouble getting the new paint to stick. Almost instantaneously everybody changed over to using a pyroxylin agent on the cars. This changed the painting time of a car from 17 days to the 1 hour Kettering originally proposed.

One day, to play a joke on the paint supplier that said it couldn’t be done, Kettering called Joe into a meeting. He had a color chart on a desk with samples of different colors. At the beginning of the meeting, he asked Joe, “If you were going to have your
car refinished what color would you pick?” Joe picked a color, and they both went out to lunch. When they returned, Joe glanced out the window and started screaming that someone had taken his car. Kettering just laughed and assured him that no one had taken his car. While they were at lunch, Joe’s car had been refinished in his selected color.

Now that the problems were getting worked out of the painting process, Kettering had to find a GM division that would allow him to paint their cars using this new painting process. At the time, he couldn’t get a single division in GM to try it out. H. H. Rice of the Cadillac division went so far as to warn Kettering that it was a dangerous thing to adopt a new painting method before it had been tried in every conceivable fashion. However, Kettering was in luck, the Oakland division was in deep financial trouble and badly needed an outstanding selling point. In 1923 Kettering was allowed to remodel its finishing department. The first cars came out in August, but there were some minor problems. The paint only came in one color—light blue, it would not take a proper sheen, and it left a dull, eggshell finish. Kettering quickly converted the negative aspects of the paint into positives. By advertising the distinctive appearance of the new paint, soon customers were waiting in long lines for the “True Blue Oakland”. Oakland’s success prompted other GM divisions to look again at the Duco paints, and by 1924 every division of GM offered at least one model in Duco.

Insights

Throughout this article we have attempted to focus on the curiosity and actions of Charles F. Kettering and “how” he identified problems and created solutions. In addition, we also tried to describe how he was able to implement the solution despite other problems that included personal, social, technological, and organizational obstacles. One thing we did not mention (and hope to explore more in a future issue of the Comuniqué by exploring the life of Edison) was that Kettering was what many would consider to be an unorthodox inventor.

We say this because Kettering did not work in secret and he did not work alone. Instead he shared his ideas and was always looking for the input and insights of other individuals. He did not fear that others would steal his ideas and as a leader he was able to outline the problem at hand to his staff, give his perspective and invite contributions from his team. Kettering knew the power of group creativity and had many traits Greenleaf would attribute to a “Servant Leader”. In fact twenty-five years after graduating from Ohio State he was awarded an honorary Doctor of Engineering degree (one of 36). When he gave the commencement address to the graduates he concluded that on the trip through life, everybody is a servant to somebody or something. Based on this he stated that, “When you pack your bag for this eventful journey, if you pack egotism and selfishness in the bottom of your bag and lay on top your uniform of service to humanity, when you come to the end of the trip, your passport will not have to be inspected. They will pass you right on through the line.” (Young, 1961. p.173-174).
Unfortunately this article is limited by its description of only a few of the many successful initiatives taken by Kettering. He is credited with 147 patents and additional contributions across many domains. These included a robot bombing plane, the spark plug; safety glass; four-wheel brakes; automatic transmissions; leaded gasoline (he knew 14,999 ways not to get the knocks out!); synthetic aviation fuel; and freon for air conditioners. Some of the unfinished work Kettering left behind was his work on solar power as a means to increase the world’s supply of food and fuel, a cure for cancer, and other ways to help increase the life expectancy and comfort of humans. All this from a humble man who after receiving an award from the United States Chamber of Commerce recognizing him as one of the greatest living Americans told a reporter, “They didn’t need to make so much fuss. I’m just a plain old inventor.” In the remainder of this article we will highlight some of the major insights we have found in our research focused on Kettering.

**Highly Creative People Exhibit Behaviors Across the Spectrum of Change**

Our preference for managing change is called our “style.” We all exhibit behaviors, and have preferences for “how” each of us manages change. Our preferences for change, which manifest through behaviors, can be located on a continuum ranging from “more adaptive” to “more innovative” (Kirton, 1989). Kirton reminds us that over time, each one of us will create and accept different types of change ranging from more radical/innovative types of change to more incremental/adaptive types of change depending on the situation. Situations will also arise in which, to be productive, we will need to flex away from our preferred way of working. When we work outside our preference, tension tends to increase, and at some level, we will use coping behaviors to help us manage the change at hand. Knowing about the tension that develops when working outside one’s preferred style can bring insights that help people better understand how they think and feel about their job, employer, co-workers, and themselves.

Kettering had to think differently to be successful when testing a large quantity of phone line connections (he hooked up transformers to a piano that was being played). That action seemed to solve his problem and was quite revolutionary (outside the paradigm)! Kettering’s development of the first electric cash register was based mainly on previously gained knowledge within the paradigm. From this perspective, the electric cash register seemed to rely on a more evolutionary orientation towards solution. We hope you would agree that Kettering was very successful and productive in both endeavors. His ability to flex his behavior to meet the needs of the situation provided him the necessary pathway for successful outputs across the full spectrum of change. In both instances he was very good at making “novel associations that are useful” (Gryskiewicz, 1987; Stein, 1975), both from within and outside the paradigm of each situation.

Kettering’s persistence towards solving the paint problem helped remove an expensive bottleneck in the mass production of automobiles, accelerated the production of car
bodies, and helped transform the low-priced car from a strictly utilitarian vehicle into something more.

Although people have preferences, high levels of sustained creative outputs require behaviors along the full spectrum of change including more adaptive, moderate, and more innovative. Kettering, recognized as being highly creative and productive, tends toward exhibiting behaviors across the full spectrum.

Isaksen & Dorval (1993, p. 308) reported that highly creative and productive individuals seem to flex their behaviors around problem solving and decision making across the full spectrum of change. They operate at high levels of capacity - motivation, domain relevant knowledge, developed skills, openness to possibilities, interest, influence, etc. These individuals use their imagination to develop outputs with the highest probability of success, are tenacious and efficient, take appropriate action based on the task and its desired outcome, and extend their effort to understand and implement novelty in useful ways. This list is far from inclusive, but it begins to provide us with both the challenge and pathway for increasing productivity.

A further point we’d like to highlight is the common misperception that creativity is just ideas when, in fact, it may be said that 50% of creativity is actually implementing the solution! To us this brought an ‘aha’ in respect to so many people who we know are creative and yet are unable to flex their style when needed to have their creative product, idea, or service accepted. Kettering knew that, “The surest way to kill a new idea is to submit it to a committee!” (Young, 1961. p. 140). Yet he was a master at getting his ideas implemented in organizations where committees were the norm.

Highly Creative People Take a Systemic View

It took Kettering nearly three years to transform his idea of quick drying paint into reality and he didn’t do it alone. What enabled him to be successful was that he seemed to keep the “big picture” or “systems view” in mind when overcoming challenges dealing with: people (e.g., removing the paint line manager for six weeks); processes (e.g., painting cars); products (the paint itself); and the environment (e.g., GM) in which he was enacting change. Kettering knew naturally that to be most effective in leading, managing, and implementing change, it would be necessary to take a systemic approach to the task by managing people, processes, products, and working environments (Isaksen, Dorval, & Treffinger, 2000). If any one of the components is ignored, it is highly probable that the change initiative will fail, have a short life span, or will be of less impact than expected. This systemic approach to solving problems, making decisions, and managing change includes the things highly creative people must pay attention to and take action on. A systemic approach also highlights the importance of not just ‘brainstorming’ a new idea, but also following through and being able to implement the solution!

Closing Thoughts
As we wrote this article we were consistently amazed at the life of Kettering. Of particular interest was how he tirelessly addressed and solved problems with an attitude of never ending optimism. In 1905, while working with NCR, Kettering described his optimism when he stated that, “There are no unsolvable problems. Just problems that we don’t know how to solve.”

At one point in the development of this article we were going to suggest that Kettering had an Innovator’s preference according to the Kirton Adaption-Innovation Theory. Initially we thought this because he often looked for answers without considering barriers or paradigms. And yet can we really be so sure of this? Kettering also had qualities that one may ascribe to an Adaptor in that he got organizations to accept ideas, he remained focused on problems for extended periods of time, he collaborated with others on problems, and he often created solutions that were “inside-the-box”. Our opinion now is that while it is true we know Kettering had a high level of creativity it would be premature to label him as having an Innovator or Adaptor style preference until a much more in-depth study had been done of his life and work.

We began this article by asking the question, “Have you ever asked yourself how different types of creative behavior and style can lead to highly productive outputs?” We think that the results of this article point out that it takes a mixture of styles and behaviors. A mixture that we can currently help create through education, training and research.
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Interests
Development of Cognitive Skills, Dynamical Complexity, Leadership & Strategic Thinking
Creativity in Negotiation and Conflict Resolution

Introduction
It is probably the case that, when most people think of creativity, they think in terms of problem solving or the arts. In the former, a “gap” exists in a situation, and only a novel solution will fill it. In the latter, finding new and effective ways of expressing oneself or giving form to aesthetic concepts presents an ongoing challenge. But there is another area in which creative thinking helps greatly and may, in fact, represent the only avenue to success. This is the area of conflict resolution.

My training and experience have shown me that the ability to generate creative alternatives and potential options for individuals and groups at loggerheads is one of the key characteristics of the successful negotiator. I would, in fact, go so far as to say that creativity and empathy are the two most important traits for individuals involved in conflict resolution. In this article, I would like to explore how one might utilize creative thinking to reach agreements in personal or professional circumstances.

“Classic” versus Contemporary Approaches

It is unfortunate that “classic” approaches to negotiation seemed to have been power-based. That is, the models that most people were exposed to were those of tough talk, threats, strikes and lockouts, ultimatums, etc. “Negotiation” was viewed as a series of maneuvers and ploys aimed at ultimately overcoming one’s opponent or at least tricking them into giving what one wanted. Such negotiations were also generally positional in that each side took a stance or position regarding their desired outcomes and held that position for as long as possible. A worker might, for example, demand a $4.00/hour wage increase; the manager may reply that no more than $1.00/hour was feasible. Both would hold out for as long as they could, giving ground only if necessary and then only as part of a compromise with the other side. Positional negotiations could be characterized as both sides grudgingly moving toward some middle ground while making the process miserable for all concerned.

Such approaches have not disappeared. Power and ploys remain the negotiation tools of choice for many individuals. And many people, including professionals, are very reluctant to enter into negotiations because they feel disadvantaged by such tactics. They believe the other side knows more, will use all sorts of tricks against them and will generally come out ahead. Regarding these situations, it is also important to note that most people have not been formally trained in negotiation or even conflict resolution in personal circumstances. And even though we face negotiations or conflict situations on a regular basis, we generally resort, as best we can, to the old approaches of power, threats and trickery, or at least to defending ourselves against such tactics by the other side.

But in the past twenty years, new models have arisen. They are based less on power and position and more on principle, criteria and creativity. They bring with them a recognition of a different reality. Replacing the attitude of “I must do what I must in order to meet my own needs,” is a new attitude of “My needs will be met only if I help the other side meet theirs.” This new perspective is that negotiations and conflict
situations can be resolved in ways that benefit all parties if they are approached as joint problem solving situations. Such understanding comes when individuals recognize the following:

• The other side has something they want, and they have something the other side wants.
• The old concept of a “fixed pie” (a gain for one represents a loss for the other) generally does not apply.
• Both sides must benefit from an agreement for any resolution to be viable.
• The processes of negotiation and conflict resolution need not be rancorous and exhausting; in fact, they can be handled expeditiously and even pleasantly.
• Such processes need not ruin relationships, but may, instead, maintain or even strengthen them.
• Results need not be a matter of will, but can be reached through objective criteria fairly applied.

When individuals reach this level of awareness, they begin to recognize that they do not need to feel disadvantaged; that there are alternative modes of resolution besides power plays and “hard bargaining;” that the other side is less of an “opponent” and more a “partner;” and that compromise may not be the only goal to pursue. And that is where creative thinking comes in.

Many people believe that compromise is a good result in negotiation or conflict resolution. Each side gives some to get some, and they go on their way. Sometimes that is the case; it is as good as things get. But compromise is based on the “fixed pie” concept; it really represents an agreement as to how to divide the pie. Creative thinking, on the other hand, offers a clear alternative. First, it gives the parties hope that an impasse can be broken. Second, it challenges them to see beyond the “fixed pie” by redefining their problem and potential solutions. Third, it holds out the possibility of even greater gains for each side should an initial agreement be reached. Let’s look at each of these roles in turn.

Interests and Needs versus Positions

Positional bargaining is not creative. The parties adopt one perspective and attempt to wear each other down, even though they are aware that they will eventually have to give up something. Just being open to the possibility of a creative solution, on the other hand, provides the parties with hope and incentive to resolve their differences in a mutually beneficial manner. Thus, creativity’s first role in negotiation begins with the attitude that there may be different perspectives and many alternatives available to each party.

Creativity’s second role is more functional; it has to do with the definition of the shared problem. As in the inventive process, a new way of looking at a problem often precedes a new solution to that problem. Such is also the case in a negotiation. Here the trick is to focus on the interests and needs of each party, rather than positions. If instead of, for example, demanding a $5.00/hour wage increase, a worker focuses on what they need the money for, the possibility of resolving differences increases
substantially. If their basic needs are for resources for their children’s education or for healthcare insurance or for credit to buy a new home, the negotiation can be enlarged to discuss some combination of wage increase and access to company scholarships, a better benefits package, loans from the company’s credit union, amount of overtime work available, etc.

Likewise, the parties can be creative about the kinds or quality of materials or services exchanged, quantities, payment schedules, guarantees or warranties, exchanges of “in-kind” services, delivery dates, adjusting the degree of any risk involved, meeting each other’s public relations or political needs, etc. Here one valuable approach is to generate option packages. Instead of taking one issue at a time, for example, monetary concerns, the parties can simultaneously discuss different amounts of money relative to different quantities or qualities of goods, paid for on different schedules, with different options available, etc. Whenever their preferences overlap, they have viable options for a potential agreement.

The Role of Brainstorming

Brainstorming can play a significant role in reaching such agreements. The traditional guidelines for brainstorming apply, but there may be need for some modification within negotiation or conflict resolution circumstances.

Let’s start with who brainstorms. Ideally, the parties most involved would brainstorm alternatives and potential solutions. If there are no constraints here, then that should be the case. But sometimes, circumstances make such an approach difficult. This is often the case in international negotiations. It is difficult for the Presidents of the United States and Russia to easily meet for brainstorming. Such may also be the case for negotiators in business situations. Here there is potential in having others, usually representatives who do not have the power to make the final deal, do the brainstorming and even the initial negotiation. The major parties can then “seal the deal” in an expedient manner without taking a great amount of their time or wrangling over the details.

With whom does one brainstorm? Each side should probably brainstorm with their internal colleagues first. This would serve to prepare them well for the negotiations per se. Then they should be willing to brainstorm with the other side to fully explore issues and possibilities.

When and where should brainstorming take place? Once again, the most direct approach is often the most fruitful. If possible, brainstorm at the negotiation table. Sometimes, however, circumstances militate against such direct or open sessions. In such cases, consider brainstorming with your counterpart “informally” before or after the official session—on the golf course, over drinks, at dinner, etc.—without the trappings and constraints of official meetings.

Are there any differences in how to brainstorm? Potentially, yes. First, it is very important to clearly identify when brainstorming is taking place; that is, it should be very obvious to all concerned when a party is generating a hypothetical alternative versus when they are offering an option as part of a deal. If, during brainstorming, a manager generates a potential pay increase of $ 4.00 per hour, it would be
inappropriate for the worker to say, “I’ll take it!” Beyond clearly signaling that brainstorming is now occurring, one way to insure against such misunderstanding or awkwardness is to generate simultaneous alternatives. The manager could, for example, say, “I could give you a $4.00/hour increase, or I could offer you a $3.25/hour raise with an open invitation for up to 10 hours of overtime per week.” Both alternatives would be recorded for evaluation and discussion along with all other options at the end of the brainstorming session.

Post-Settlement Settlement

By generating several options and option packages designed to meet each other’s multiple and diverse needs, the parties increase the probability of a negotiated settlement. Let’s say that by doing so, an agreement is reached. Most people would stop there. They would feel relieved of the stress of the negotiation and glad to have achieved their objective. And they would make a very big mistake.

Psychologically, this is the very best time to negotiate further. Here we see the third role for creative thinking: to “increase the size of the pie” through a post-settlement settlement. The concept of post-settlement settlement (PSS) was devised by Howard Raiffa, a professor of managerial economics at Harvard’s Business School and JFK School of Government. Taking advantage of the feeling of achievement and good will around the table at the time of agreement, the parties could continue their efforts with the goal of negotiating for even more mutual benefits. The ground rules for a PSS are that a) the current agreement becomes the default agreement and will be honored if no further agreement can be reached; and b) any further agreement must benefit all parties and must do so in excess of the current agreement. Agreeing to such guidelines, the parties can now enter a new phase of negotiation bringing in other valuable possibilities that can be shared by all sides.

We often train people in this approach through the use of negotiation simulations. In one such negotiation, a performer and concert hall manager must negotiate a contract. The first challenge is to agree upon compensation. Once agreement is reached on the money issue, both sides know they have a deal acceptable to each other. They then feel free to bring in other possibilities knowing that the first deal stands as their current alternative. We often see people begin to negotiate about recording live performances for CDs, joint publicity campaigns, perks for the performer in trade for her services as an instructor to new talent, etc. At this point people are only limited by time and their imagination as to how big and sweet the deal can get.

Conclusion

We see then that creativity can have three powerful roles in reaching agreements whether in professional negotiations or personal conflicts. The willingness to explore possibilities beyond positions opens the door for goodwill, joint problem solving and constructive attitudes. Reframing the problem and generating options creatively can overcome impasses and provide the means for agreements where none seemed likely. And going beyond a first agreement with a creative post-settlement settlement can not only add to the benefit of all parties, it can strengthen and enhance relationships tremendously.
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CREATIVITY AND THE TAO

The Dialectic Paradox or The Resolution of Opposites

The philosophy of the “Tao” or the “Way”, was set down in approximately 600 B.C. by Lao Tzu in 81 poems, entitled “The Tao Teh Ching”. The Tao poems contain a philosophy of life that has lasted through the centuries and they have been retranslated as well as rewritten many times. They contain many ideas which are relevant in the area of creativity: being in the moment, effortless action, enjoying the journey, the importance of nothingness, listening to your own inner way, and the beauty of the integration of opposites. Two of these ideas, listening to your inner way or your intuition and the importance of opposites, will be explored in this article. Part One deals with the integration of opposites and through an exercise, the Dialectic Paradox, you can experience and use this idea to solve problems or gain new insights into issues.

The following is one of the Tao poems that talks about the importance of opposites

Tao #2
People finding one thing beautiful,
Think another unbeautiful,
Finding one creation sound,
They judge another unsound.
Yet, creation and destruction,
Difficult and easy, high and low,
All arise from each other.
Since something and nothing
Give birth to one another,
Offer texture to a life,
And nourish the imagination,
A creative person accepts no rules,
And knows that opposites,
Are part of the whole.
Accepting everything as it is,
The let it come and go,
As something to participate in,
Yet not to dominate,
To nourish, yet not to possess.
In union with what is,
They give birth freely,
Without claiming authority,
For creativity is all around,
And within us all.

This poem reflects the idea that opposites enrich and contribute to one another, “varying tones makes music”, and are not something to be avoided or removed. In the
integration of opposites we “accept everything as it is” and don’t make judgments or rules that something should be one way and not the other.

When applied to creativity the importance of opposites resonates with Einstein’s idea that the answer is within the problem. The concept that the problem itself may be a part of the solution is an important part of the Tao. An exercise called the Dialectic Paradox is one way of trying this concept out on an issue or problem that you would like to solve. It involves the Resolution of Opposites (Dialectic means opposites and Paradox, the resolution) and uses the negative side of the problem to come up with new perspectives. It reflects the idea that creativity is wholistic, not dualistic.

The Dialectic Paradox

1. Put a problem or issue into one word - find the word that most describes the problem. For instance, if it is a struggle with someone, perhaps the word most descriptive of the problem would be “conflict”. If it is a feeling of being unmotivated or stuck, perhaps the word might be “stagnate”. Find the best word to describe the negative side of the problem.

2. Find the polar opposite word - the word that best describes the ideal resolution of the issue. For example, the resolution of “conflict” could be “harmony” and for “stagnate”, it might be “motivated”.

3. Put the words into a two word phrase, such as “motivated stagnation” or “stagnate motivation”, or “harmonious conflict” or “conflictual harmony”.

4. The next step is to resonate with these opposites and think of some examples of them in an object or process. Nature is a good source to find examples of the two forces combined into one. (The Tao is full of nature metaphors.) Examples: “harmonious conflict” might be mediation, negotiation, symphony, akido, parasites, fever. “Stagnate motivation” might be hibernation, cocoon, meditation, yoga, etc. This step is one that usually takes some time and/or is one that is helpful to brainstorm with other people. Asking others for their response or associations to the dialectic can be stimulating and fun. The more examples the better your possible choice will be and the more you have “played” and opened up new perspectives. It is helpful to do this step in a relaxed state:

Tao #16

Quiet your mind of thoughts,
So your heart shall be at peace.
Being at peace,
Your imagination may more easily arise.

There are many ways of entering a relaxed state: going for a walk, taking a shower, deep relaxed breathing, listening to music, etc.
5. Choose one of the examples that resonates with you and write down all of its qualities. Working with “stagnate motivation”, for instance, one might choose the concept yoga and have the following associations to it: stretching, movement, breathing, quiet environment, feeling the moment, expanding, flexibility, contentment. In doing the list, it is important to write down anything that comes to mind even if it seems far “afIELD”. Other more “way out” ideas connected to yoga might be: India, gurus, cults, strange, mystical, unknown.

6. Choose one or two of these qualities and “force fit” it back into the issue. For instance, if one chose the quality of movement they would ask, “how might movement help with my sense of stagnation”? Perhaps physical exercise would help - “changing one’s physiology can change one’s psychology”. Movement might mean bringing more energy into one’s life through friends, hobbies, classes, etc. Or one could take the broader idea of yoga and directly force fit it back into the issue. What comes to mind is the idea that stagnation may be a kind of yoga, a chance to relax, to be in the moment, rather than achieving or doing. In fact that idea connects to another word on the list, hibernation. Hibernation is a time of deliberately taking a break, especially in harsh or non-supporting circumstances, winter. Hibernation is a way of protecting the organism and resting until circumstances are more supportive. Perhaps, stagnation is a way of taking a break - a hibernation of sorts with renewal and rebirth at the other end. Maybe the environment is not supportive at this point and the solution is to find a more nourishing community. One might choose one of the words that was more far afield like, mystical. In what ways might the mystical be involved in stagnation? Perhaps, stagnation is not the problem but the solution - the unconscious acting as a guide telling one to stop, to not move forward on a certain project at this time.

Tao #23

Nature does not insist,
That things last forever.
High winds may last
For part of a morning,
Heavy rain for half a day.
If nature does not insist,
Why should you?
Like the forces of nature,
Creativity is natural too.
It may flow for part of a day,
Hibernate for half a year,
Or illuminate a night.
Open yourself to it,
And feel well used,
Feel at home,
Feel welcome.
Honor the natural way,
And it will honor you.

From the above connections, there are several possible new perspectives on the problem: 1. Infuse more energy or movement, 2. Change how one thinks about stagnation and embrace it as a time for rest and renewal, 3. Change the environment into a more supportive one, and 4. Perhaps not pursue whatever it was that one was feeling stagnate about, maybe their intuition is telling them to not move forward.

One can take all of the words or processes that were listed and force fit them back into the issue. Pretend it is somebody else’s problem so that you are freer to try on different possibilities. The answer or resolution might be right there or it may take some time, an incubation period, to resonate with some of the new insights. Incubation is an important part of the creative process. The Dialectic Paradox exercise opens up many possibilities and new ways of looking at an issue and will bring the Tao philosophy into your creative thinking process. Play with the ideas and words that come out of doing the exercise and see if some new perspectives are opened.

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Part Two: Intuition: Non-Logical Problem Solving

Tao #6
Intuition

Intuition is like a timeless valley;
It lies deep, is sometimes dimly seen,
Yet is always present,
Giving birth to the planted seed.
Because it lies so low
It cannot fall,
And to it all things flow.
Draw from it all you wish,
The more it is used,
The deeper it grows.

The Tao often speaks of listening to one’s inner voice rather than listening to others and of using one’s intuition rather than knowledge gathered from outside authority:
Those who seek to live a creative life,
Often give up formal learning,
To find their own way.

Intuition can be defined as “knowing something without knowing how we know it”. According to Carl Jung, intuition is one of the four functions of our minds and does not “denote something contrary to reason, but something outside the province of reason”. For some people, it is like a hunch, a gut reaction, or it can speak to us in images, perceptions, feelings, etc. but it always feels “right”. There are many ways of tapping into intuition. One that will be discussed in this article is through the use of Haiku poetry.

The Haiku is a Japanese poetry which can be easily practiced. It is a wonderful way of learning to write poems as well as being a tool for non-logical or intuitive problem solving. The Haiku consists of three lines with five syllables in the first line, seven syllables in the second, and five syllables in the third line. The brief form eliminates the use of sentences or connecting words such as “the, “and”, “as”, “but”, etc., and, therefore, tends to be non-linear or non-logical. It’s purpose is to bring one into the moment and, like the Tao, often uses nature as a metaphor.

One way of beginning to write a Haiku is to think of a topic and write down any and all words that come to mind around that topic. Include one word from nature. As an example, suppose the topic is the sea. Words that come to mind are: blue, waves, wind, white sand, soft breezes, wild sea, driftwood, palm trees, hammocks, herons, gulls, sandpipers, sunsets, moonlight, sea grass, swimming, running, walking, play, being. The next step would be to go back and underline eight or ten words that are the most powerful or have the most energy or interest: white sand, moonlight, wild sea, trees, herons, driftwood, waves, wind, sunsets, play. Next to these words, put the number of syllables each word has: white sand (2), moonlight (2), wild sea (2), trees (1), herons (2), driftwood (2), waves (1), wind (1), sunsets (2), play (1). Then begin to play with the words putting them together in a non-logical way but so they sound right to you. It is helpful to actually put them on small pieces of paper so that you can move them around and arrange them in a pleasing way. Let the words reveal a moment in time or a theme. Use other words if they come to mind and seem to fit. An example:

Moonlight water plays,
Heron sunsets color be,
Driftwood waves wild sea.

Haiku’s ability to reveal a new thought, or new perspective can be used in problem solving. Choose a topic or issue and write down all the words that come to mind around this issue. Supposing the issue is an upsetting change (a divorce, a move, a health issue, etc). Words that might come to mind: upset, sad, angry, betrayed, change, transformation, new identity, bereft, alone, anxious, hurt, new, closed, open. Underline the ones that are the most important or perhaps intriguing and put the number of syllables with each one. In this list, add a word from nature or a season and
include that in the list: winter. The nature word may trigger other word associations that can be added to the list. Winter brings to mind: cold, bleak, hibernation, ice storms, etc. Arrange the words in a Haiku and allow them to flow without thinking about it too much, let the words determine the arrangement:

Winter sad, cold hurt,
Angry transformation change,
Identity new.

This Haiku started with upset and anger and ends with a more positive opening to a new identity. It still acknowledges the upset but leads to a possible new perspective. It is important to stay as non-logical as possible so that new information may be revealed.

Tao #32
Creativity is as spontaneous as the rain,
As broadminded as the clouds,
And as receptive as the earth.
Like life, creativity,
Is available to all, ruled by none,
And is as natural,
As a river flowing to the sea.

References


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Creativity and innovation education and training. TRIZ, systems theory, dialectics and organizational theory

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Many in physics. Currently, many publications in creativity education and training, especially TRIZ, in all its aspects.
ARE METHODOLOGIES OF CREATIVITY REALLY USEFUL FOR YOU AS A TEACHER OF CREATIVITY?

I have a strong desire to know the questions that students usually put to my colleagues, who are teaching courses related to creativity and innovation all over the world. As far as I am concerned, my students, during my lectures or breaks, or when they come to visit me, often ask this question: "Do you really apply what you have taught when you work on a problem and have to make decisions? What problems have you solved?"

If the time is limited,-- during a lecture, for example-- I will offer a brief answer: "Yes, I do. I have actually applied what I teach to the solution of the problems I encounter or create during my life." If the time is not too limited, I offer the answer from a comparative perspective, that is, the answer will clarify the differences between a present situation and its past counterpart, so that the questioner can figure out for himself the problems to be solved to achieve present results. If I am given more time, I will analyze in detail the process by which my own problems have been solved to illustrate the methodology of creativity. Depending on the field of expertise the questioner is working in, I try to select the most relevant examples to illustrate my presentation. Those examples are usually taken from the areas of science, technology, entrepreneurship, leadership, management, public relations and communication skills, for they are the problems I have usually coped with in my own work and life.

In the year of 2001 we commemorated the tenth birthday of the Center for Scientific and Technical Creativity (CSTC). This year, 2002, sees the twenty-fifth year (1977-2002) of the course "Creativity Methodologies Based on Scientific Technical Knowledge for Problem Solving and Decision Making" (hereafter abbreviated as CM) offered in Vietnam. On this occasion, I write this brief paper to present a few results achieved by the application of CM to the solution of problems that arose from the introduction, propagation, and development of CM in Vietnam.

The year was 1977. Two years before, the war in Vietnam had ended with three million Vietnamese casualties, of which more than 300,000 bodies have not been found, and several millions of people with war-related disabilities. Many rural and mountainous areas, as well as forests, have been severely affected by bombs, mines, and Agent Orange. Vietnam, however, did not enjoy complete peace yet. The southwestern border war, and then the northern border conflict, broke out. The embargo against Vietnam was still effective, and Vietnam was one of the poorest countries on earth. As a university lecturer then, I was paid about 10 dollars per month. To solve the problem of food scarcity, many times I took my students to the countryside for cultivation work. The availability of office
stationeries was also a big problem. My writing of the course book was often hampered by a lack of paper, pens or electricity, and also by pangs of hunger.

In other words, the whole country and every single individual was faced with a host of problems. Such a situation urged me to engage in the materialization of a dream cherished since I enrolled in the course offered by Mr. G.S. Altshuller, the founder of TRIZ (the Russian acronym for Theory of Inventive Problem Solving) at former Soviet Union's Baku Public Institute of Inventive Creativity (BPIIC): popularization of creativity methodologies. I was committed to the belief that a poverty-stricken country must know how to apply creativity methods to the solution of its problems, because the traditional trial-and-error method, which requires a lot of time and money, would be a luxury item that it can't afford to try.

Since then I have made a list of problems to be solved. First of all, a program of teaching creativity must be designed, lecture summaries compiled for students, who are merely required to have a high school educational level, regardless of age, occupation, expertise, position, or social status. Teaching programs had to be tailored to the needs of Vietnamese students, because what I learned at the Soviet Union BPIIC could not be applied fully to Vietnam's particular cultural, socio-economic, and scientific-technological conditions. This work came from the concept of "innovation," expressed as follows: Innovation is a process of **thinking up** creative ideas and **implementing** them so that all changes as results of this process are fully, stably and sustainably **accepted** by related systems which after that **function better** than before.

The next thing to do was to persuade the university administrators to give a greenlight to the establishment of course programs on campus. How to attract students to the program was also an important concern. During this initial stage, I did not receive any overtime pay and my course was offered free of charge to anyone willing to study. The mechanism of central planning, bureaucratic structures, and the subsidy system then, usually, did not support anything that seemed to veer off from the prescribed plan. Another reason for university administrators' unwillingness to endorse my teaching program was that most of them did not correctly understand the objective, purpose, meaning, and benefits of CM. They based their interpretation of CM on their mistaken understanding of the terms "creativity" and "methodology." Some said methodology is part of philosophy and creativity is a high-level feat that can be performed by scientific geniuses like Einstein or Edison, that is, it cannot be taught or studied. Problem-solving and decision-making are the top-level leader's or manager's jobs alone, so the rest are just employees. For those reasons some were skeptical of the value of CM. Some even raised objections, saying that CM was abstract and impractical while there were urgent problems that deserved more attention. Apart from some backbiting remarks, some of my colleagues expressed their skepticism in a more direct way. "Have you," said they to my face," just landed from Mars?" or "Only crackheads take your course."
Later, when everything was in order, some of my ex-students confessed: "When I was taking your course, I did not tell anybody, afraid of being made a public laughing stock. I just said I was taking a course in language." In short, it is a form of psychological and systems inertia that I always encounter on my way.

After the problem of obtaining permission to teach creativity courses and students for them had been solved, I went on studying how to improve the quality of the program of CM and teaching methods so that all class participants, regardless of their socio-economic statuses, could understand my lectures more easily and apply what they learned to the solution of their own problems, which arose from their daily jobs and life. The core of the program was TRIZ. TRIZ, as I was taught, started from the area of technical invention and was designed primarily for technical inventors. Although Mr. Altshuller had more often than not emphasized the possibility of expanding TRIZ to other non-technical areas, no significant attempt was made in that direction then. This lack encouraged me to engage in the attempt to enlarge TRIZ and teach enlarged TRIZ to everybody so that enlarged TRIZ could be learned and applied by anyone to the solution of his/her practical problems. The potential of TRIZ proves the possibility of its expansion and I have obtained some promising results. Additionally, the already obtained results, in my opinion, can open up possibilities to construct a general theory of creative problem solving of which current methods of problem solving are only particular applications. This is our long-term research orientation.

In 1986 Vietnam started the process of renovation (doi moi), transformed itself into a mixed form of state-controlled and market-oriented economy, and implemented the Open-Door policy of integration into international communities. In 1991 I decided to set up a professional center guided by an overall aim: teaching and doing researches on CM, which must be operated in accord with market mechanism. In other words, the center would attain financial self-sufficiency by collecting tuition fees from students, so that it could cover expenses related to the propagation and development of CM in Vietnam. I did that against my will, because formerly I had had many times applied for financial aid from different offices, government institutions, including some international cultural and educational organizations, but what I received was a flat refusal. Apart from a certified permit issued by University of Ho Chi Minh City, our Center for Scientific and Technical Creativity (CSTC) had nothing else. No space allowed, no office facilities, no start-up capital, and many other "No's." In terms of staff, the Center had two persons: a university teacher and myself. That colleague took my course in CM in 1986. My salary was about 20 dollars per month and I had almost no experience of business markets. Still, I was optimistic and figured out, rather clearly, the ways to make something out of nothing and to create more from less. The fact that the market has accepted our products, as exemplified in the increasing number of students, is a shot that aims at more than a bird: 1- realizing my own dream of introducing, propagating and developing CM in Vietnam; 2-
achieving financial self-sufficiency for our Center, which, as a university unit, should have been funded by the university; 3- enjoying the pleasure of commitment to one's favorite work; 4- creating additional legitimate sources of income for the Center's staff, who cannot just rely on their official pay to make both ends meet.

In fact, all the self-appointed tasks have been successfully done. Up to February 2002 we have taught more than 8,000 participants who enrolled in 188 basic and 12 intermediate courses (60 periods per course). In addition, there have been thousands of other people participating in talks, seminars, workshops, or short-term custom courses of approximately from 4 to 20 periods. The Center has a website in Vietnamese and English and a quarterly newsletter. The association of CM alumni elects a representative board and entrusts it to the maintenance of contact among alumni. The first Sunday after the Teacher's Day (November 20) has been chosen to be the CM Traditional Reunion Day and celebrated with several meaningful and interesting activities at Ben Nghe Hotel (the director of which was also an alumnus). Participating in that meeting, talking with alumni, listening to their Song of Creativity, and seeing how excited they were when they related the successful applications of CM, I was filled with happiness. I was happy because the attempts made by teachers and students have borne fruits, which gives me a great dose of encouragement, a source of energy to keep the ball rolling and enhance my confidence in the ability of CM to solve future problems.

Somebody said, "Teaching is learning for a second time." I want to add, "Applying what has been learned is learning again and again." First, practical experiences are more telling than theoretical formulations. Second, application enables you to digest what you want to teach to others. Finally, application will give an edge to your lectures because you will present your ideas in a more inspiring way, stimulating your students better into the act of creation.

I have the good luck to study CM early, when I was a university student (actually, I should have started earlier), and have applied CM since then. I believe that CM will enable people to find solutions for their problems and make correct decisions so that a sustained development can keep growing, that is, all the parties will win and the rise of problems, which would not have arisen, will be nipped in the bud. By the same token, CM will enable every single individual and the whole humanity to enjoy more happiness in their life.

FURTHER READING:

For detailed information on some of the points presented in this paper, please consult the following articles, books and journals in Vietnamese and English

In Vietnamese:


In English:


