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# APPLIED CREATIVITY ACROSS DOMAINS AND CULTURES: INTEGRATING EASTERN AND WESTERN PERSPECTIVES

## *Abstract*

*In this article, scholars from Germany and China from the fields of psychology, education, business, and engineering who participated in a panel discussion about applied creativity across domains exchange their perceptions of creativity, their experiences of promoting creativity, as well as their views of cross-disciplinary approaches on creativity. In addition, their statements were also examined from an intercultural perspective, integrating Eastern and Western points of view. Major themes were derived to provide conceptual and operational foundations for future cross-disciplinary and cross-cultural collaboration on creativity.*

**Keywords:** *applied creativity, innovation, cross-disciplinary and cross-cultural approach, fostering creativity.*

Recent years witness a boom of academic publications about creativity in a variety of disciplines (cf. Anderson, de Dreu, & Nijstad, 2004; Kaufman & Baer, 2005; Runco, 2007; Tan, 2007; West, 2002). When reviewing the status quo and foreseeing future directions of the field of creativity (see for review: Hennessey & Amabile, 2010), most scholars emphasize cross-disciplinary and cross-cultural approaches (Csikszentmihalyi & Wolfe, 2000; Kaufman & Baer, 2005; Sternberg, 2006). In reality, however, scholars across different domains and cultures rarely have opportunities to compare their conceptions and experiences on creativity. In what way do conceptualizations of creativity and its promotion vary across disciplines and cultures? What are the potential merits of collaboration across domains and cultures in creativity? To seek answers to these questions, a panel discussion was held as a comprehensive summary of a summer school of “Applied Creativity across Domains”, which brought together Chinese and German scholars from the fields of psychology, education, business, and engineering.

There were three general goals of the panel discussion: First, to identify the overlapping and differing concepts of creativity by exposing researchers to the views and perspectives of other domains. Second, to draw important themes and topics from various domains in terms of creativity promotion. Third, to summarize the perceptions and expectations of cross-disciplinary creativity research collaboration, thus providing conceptual and operational foundations for future cross-disciplinary collaborations. In addition, the scholars’ statements were also examined from an intercultural perspective in order to foster the cross-cultural understanding of creativity.

## PERSONAL REFLECTIONS

What does creativity mean in your discipline/domain?

Psychology

Guikang Cao: We define creativity in two aspects. The first is originality. The second is practicality or usefulness. Currently we are studying creativity by paying more attention to creative products and outcomes. Thus, we focus on real creativity. We are attempted to seek answers to the question: where does real creativity in different fields of application come from? Hence, exchanging our understanding of creativity across domains and cultures is an interesting and meaningful attempt to approach creativity.

Matthias Spörrle: Creativity in the field of psychology has two main objectives. (1) Creativity is a field of research. Psychologists examine creative processes, factors of creativity

promotion, the consequences of creativity, etc. (2) Scientists in psychology and in other fields of research as well, have to be creative. The scientific world and the scientific publishing have become increasingly competitive. Therefore, scientists are very well-advised to find creative approaches and methods to address their ideas and hypotheses. Since science is, to some extent, a market, the creativity of your research might be one approach to draw attention to your research.

Heinz Neber: In my field (cognitive psychology), creativity is usually used as a very general term, not related to a specific domain. The process definition of creativity (Newell, Shaw, & Simon, 1962) has specific advantages, as a process is an immediate course to creative products. All other factors such as intelligence, curiosity, and motivation are more distant factors. These aspects may have some influence on the process, but they are not clearly understood. The processes underlying the generation of creative products should be analyzed. There are serious reasons to consider the process as a problem solving process which, if it ends in creative products, is to be regarded as a creative problem solving process (Hélie & Sun, 2010).

#### Education

Zuoyu Zhou: First, there are two fields of creativity: one is value-laden, which includes those aspects that are directly related to human well-being. The second is value-free with no morals and no judgments. This is comparable to technology and engineering, you can use it to kill people, but you can also use it to support and serve people. Second, we should distinguish between two words. The words creativity and create. The first word indicates that something must be new. The second word indicates that you need to create. Thus, creativity must be comparatively valued (as new) and it must be related to action. Moreover, the perspective of time has to be considered: past, present, and future. If there is creativity, it should be future-oriented. But that is not enough. You need to gather data, information, and insights from the present and also from the past. Finally, one should consider to whom creativity is related? Is it related to an individual, to a group (Adarves-Yorno, Postmes, & Haslam, 2007), or to the mankind? For education of creativity, you need to keep this in mind – the subject, the time and the object. If you forget about that, you might fail to improve the understanding of creativity.

Joel Schmidt: In the domain of education creativity offers us vehicles of change and doorways into new discoveries as well as new ways of learning. Without creativity education might be unable to change as society moves forward. For education, creativity becomes a doorway to take teachers and students into new ways of creating relationships, to transfer new types of knowledge and to develop new means of expressing themselves in learning environments. Therefore, creativity helps us to be flexible, to address the needs of specific groups of learners, and to consider the individual differences that each learner brings into a learning situation. Creativity encourages us to address or to be open for multiple processes, or even, multiple solutions to learning tasks.

#### Business

Christian Werner: Usually creativity is not the preferred term in business. We usually talk about innovation. But creativity is a necessary pre-condition for innovation as innovation is the successful implementation of creative ideas (cf. Klijn & Tomic, 2010; Woodman, Sawyer, & Griffin, 1993). I think that creativity is extremely important in the business environment. There are three main reasons for this. The first one is competition. Companies have to survive in the markets and this means they have to do at least as well as their competitors. Of course, they try to surpass them. Thus, competition is the driving force behind innovation. Innovation pays off as new solutions to existing problems create a competitive advantage. Secondly, companies, as other organizations within society, have to cope with a changing environment – the environment changes in terms of new materials, new social structures, new technology (Burkhardt & Lubart, 2010), new infrastructure, etc. In this area, creativity is strongly related to problem-

solving. Thirdly, companies have to apply new solutions to improve their performances, for example, by finding new ways to manufacture products for lower costs or for the same costs but higher quality. This, again, gives you a competitive advantage and contributes to the final results of your business. Overall, creativity pays off economically, although it is not the key concept that business people deal with.

Xiangyang Zhao: Entrepreneurship as one specific field of business research is very well-suited to further illustrate these general insights. Entrepreneurship is highly related to creativity, but very few researchers integrate these two concepts, such as, for instance Sternberg (2005) linking entrepreneurship and creativity when talking about successful intelligence. In entrepreneurship research, creativity is conceptualized as producing something new, unique, original, and useful with added value. Once having transformed this product into a new profitable opportunity, you have the basis to create a new venture, which exactly is one of the definitions of entrepreneurship – new venture creation (Gartner, 1985, 1988). All of these entrepreneurial activities need creativity. As outlined before, creativity is a precondition of innovation. In my opinion, entrepreneurship research should keep in mind that creativity is the key aspect of entrepreneurial activity.

#### Engineering

Adrian Mielke: Engineers try to create something that has not been there before. This may be a product, a process or a service. Therefore, creativity is part of all processes. In engineering we start with identifying a need, and then we go into something called “illumination” when we come up with different solutions and ideas before we enter the next step of verification (Wallas, 1926). The definition of creativity partially depends on the person who defines it. For example, something creative and revolutionary like the iPod is an interesting product, because a music player has been there before and (technically) there is nothing new about it. But something new was created which was perceived by customers as valuable: the iPod addressed customers’ needs that have not been met before, such as design, easy functionality and easy applicability.

#### How to develop creativity in your discipline/domain?

##### Education

Joel Schmidt: In terms of developing creativity, education has the opportunity to play a key role. For example, within higher education, in training teachers, or in educational research, we have the opportunity to influence people who are going into the field and will have a major potential influence on other new learners. That is the top-down way for education to develop creativity. Another way is bottom-up, i.e., by continuing to put into practice the findings and the new developments that have been discovered and will be explored. Sometimes this is very challenging. How do we put our policy, our educational reform, and our research findings into practice? Within the educational reform in Germany right now, we are trying to address creativity from a macro perspective (at the educational systems level), then down into the institutions and then further down up to the individual at the micro level. Only by using this type of deconstruction and following reconstruction we can be effective in fostering creativity across the life-span.

Zuoyu Zhou: Education is crucial as it can kill creativity, but also motivate creativity. Rather than thinking about education we should think about learning as an objective of education. Who is responsible for a person’s learning and the development of his/her creativity? It is the individual himself. Instead of being afraid of this responsibility, we should be confident that we can be creative, that we can broaden and open our minds to our environment in order to learn and to be inspired. Consequently, individual experiences of power and controllability foster creativity. So just like a very popular Chinese song ‘My Youth is under My Control’ (我的青春我做主).

## Psychology

Guikang Cao: According to theory we have different levels of creativity – the so-called “Big C” and “little c” (Csikszentmihalyi, 1997). In our studies we have discovered that before a new product is launched, there is a period of time when we gather information. One of these sources of information is prior experience. The other source, particularly for experimental studies, is the situational condition (cf. Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). We have discovered that creativity is augmented by both, the information and the situational conditions. Thus, if we want to foster creativity we should accumulate our experiences and knowledge. This is in line with recent studies (Leung, Maddux, & Galinsky, 2008) showing that multi-cultural experiences can foster creativity.

Matthias Spörrle: Within the field of psychology there are often many different definitions of a single construct or concept, and, at the same time, the same label is assigned to different phenomena. The same applies to the field of creativity. So, it seems reasonable to indicate specifically which concept of creativity we are talking about (cf. Kaufman & Beghetto, 2009). Two recommendations to foster Pro-c and Big-C within psychology might be: First, inter-disciplinary approaches should be implemented. This is very important, as it might help us to draw analogies. The present stream of science makes researchers look at only highly specific and narrow research areas. Even though this might be good in terms of scientific efficiency, it is not good in terms of creativity as it makes it more difficult to find similarities and analogies from other fields of research. Second, an intercultural perspective might help to further elucidate the subjectivity within psychology (cf. Glăveanu, 2010). What are the views from other cultures? Even though interpretations of psychological phenomena are predominantly based on Western approaches (Anderson, de Dreu, & Nijstad, 2004), this does not mean that they generally are applicable to people in, for example, Asia or Africa. So, even though these are reasonable points to start with, there is no reason to stop here and to regard them as objective reality.

Heinz Neber: Instructional psychology suggests an integrated approach (Bassock, 2003; Cheng, 2004) for promoting creativity. Creative processes can create new knowledge which can be applied to different disciplines. You should construct knowledge on your own and, for example, invent or design in a functional way so that these processes are really used as instruments for producing something in a subject or in a discipline. This is called a situated approach (Cobb & Bowers, 1999). What is required in an environment in order to foster creativity? In general, tasks have to be offered in a way that necessarily requires the creative problem solving processes. These processes should not only be enabled, they should be required. Moreover, the environment should offer additional support for some people, but provide additional challenges for others. Thus, fostering or promoting creativity in terms of process fits very well in general contemporary intentions to develop person-specific new learning environments in schools worldwide.

## Business

Xiangyang Zhao: First, working under pressure reduces creativity. Therefore, relaxation can foster creativity. Second, even though knowledge is important, you should not be restricted by it, particularly by old knowledge. Third, research indicates that openness to experiences is related to creativity (Dollinger, Urban, & James, 2004; McCrae, 1987). Use metaphors to look at the new things in an old way or the old things in a new way. Fourth, extending knowledge and experiences is helpful (e.g., reading philosophy, history and arts; meeting people from other cultures). But the most important is to develop an authentic self-concept. Creativity should be promoted from multiple levels – the individual, group, organizational, and the national levels. At the individual level, for instance, passion and the intrinsic motivation might be the most important. At the group level, leadership should influence creativity of employees (Hirst, 2009; Huang & Farh, 2009; Zhang, 2010) by providing social support, emotional support (Baas, De

Dreu, & Nijstad, 2008), psychological safety and the tolerance for making errors (Friedman & Förster, 2001). At the organizational level, the organizational culture and the organizational atmosphere/climate will influence creativity (Baer, 2010). Within the entrepreneurial literature, there is one very rich theory called the Effectuation Theory (Sarasvathy, 2001) which proposes that based on the assessment of what you possess, you have to creatively think about what kind of goals you can develop.

Christian Werner: It is important to ask *how* and *where* to foster creativity. According to some leaders, creativity is the highest virtue within an organization. But in business creativity is a quite ambiguous concept. On the one hand, standardization is the key to increasing the productivity of the company (Dean & Bowen, 1994). On the other hand, we have understood that creativity is important for finding new solutions on the different levels. I have worked as a management consultant for almost 18 years. During this time I was often approached by company leaders asking “How can I foster creativity?” Quite often though they expressed great interest in developing creativity, but they were not willing to change too much in their structure and culture. So this is the reason why there is very little room for people to be creative. However, if you want to increase organizational creativity it is sometimes necessary to change the organizational structure or climate in order to create spaces for creativity and for collaboration (as a creative process within organizations is often a team process). At this point, organizational resistance to change sometimes emerges (Piderit, 2000).

Further, business is linked with education, as education definitely lays the foundation for creativity in business. As Zhou just now correctly said schools can kill creativity. So what can we do to avoid that? If we want to enhance and foster creativity, we have to do it right from early childhood. We have to start at the kindergarten because creativity is a life-long experience. If you sit in a classroom and mostly listen to what others say, the only thing you learn is to sit there and listen. So what is important is, right from kindergarten, to develop creativity and the capability to innovate things that are related to real-life challenges and problems.

#### Engineering

Adrian Mielke: Starting from the opposite side might also be helpful: How can we destroy creativity in engineering? Time pressure typically kills creativity (Amabile, 1998), because we then can think only in very limited terms. Another thing is if the team atmosphere is not open and ideas are criticized, particularly in the divergent thinking phase (cf. Ashton-James & Chartrand, 2009; Newman, 2009). This also kills creativity. So, how can we develop creativity in engineering? One way to create more creative engineers might be to change a bit the focus of their work and give them the opportunity to work on something not directly related to their actual tasks, which we could call job rotation (Morris, 1956). Another aspect is to provide them with a more open and interdisciplinary environment. For me creativity spans across domains because I can use it in many different disciplines. So the question is why our schools do not offer lessons on creativity? How can a student be able to apply knowledge in creative problem solving if we have not taught him creativity?

What can your discipline/domain particularly benefit from the cross-disciplinary collaboration about creativity?

#### Education

Zuoyu Zhou: James Heckman is a professor of the University of Chicago. Just a few weeks ago he visited our university and gave a presentation about economics. Recently he became interested in psychology and education and we talked about a possible collaboration between education, psychology, and economics. Why? He found out that pre-school education had some impact on later income. Why did I mention him? He is my answer to the inter-disciplinary

and intercultural collaboration in creativity. We now have educational economics, educational sociology and educational psychology, etc. If we merge the different perspectives we can have a new one and that is, to some extent, the basis of creativity.

Joel Schmidt: Our perception is limited if we only look through one pair of glasses. We can benefit from learning to adapt and to put on other glasses. There might be overlaps, but often there are new metaphors that can give us new insights. We want to build on our knowledge to make new metaphors and dialogue between disciplines will support these new learning processes tremendously.

#### Business

Xiangyang Zhao: Of course, we can benefit from cross-disciplinary discussion about creativity. But what I want to add is one precondition. First, you have to be an expert in one specific field. Then when you transform from your field to another new field you can benefit from new things. At university, I started with theoretical physics. Then I transferred to scientific philosophy. Afterwards I got a Master degree in experimental psychology. Then I moved to entrepreneurship. But every time when I turned to a new field I always benefited from my expertise in philosophy and physics. What I want to say is, if you want to be an expert in any field, you need at least 10 years with four or five hours every day's deliberate practice (Ericsson, 1996).

Christian Werner: I simply cannot imagine business without other disciplines. Where does the understanding of consumer (cf. Burroughs & Mick, 2004) and employee behavior come from? All this was transferred from the domain of psychology. Many products come from engineering or science. And where would we be without education all along our life-span? We are not only talking about individual employees, but also about human resource development programs, which are directly related to education. So, in my opinion business cannot exist without other domains and business has something to offer to other domains as well, because it makes sense to look at educational institutions also from the business perspective in terms of management, governance, and financial management. These are crucial aspects which are also important to engineers and somehow even for psychologists.

#### Psychology

Guikang Cao: I would like to relate my opinions to the summer school. There are two major characteristics of the summer school. The first is cross-disciplinary. The participants are from different domains. The second is cross-cultural. We see participants from different regions of China representing different cultures. And of course, there are instructors from both China and Germany. I am sure after the so-called cultural shock we will benefit from this experience. As I said before: after the accumulation of experiences and knowledge there will be place for creativity.

Matthias Spörrle: I particularly like the idea of exchange between disciplines. I just want to add some aspects: First, drawing analogies and metaphors. Secondly, seeing the reality through different perspectives. Not only trying to learn the methods, but also the way of seeing things. When it comes to the interchange and communication across domains, there are two questions, which are often asked from other areas to the field of psychology. One question is 'Have you ever looked at this?' This is a very important question to make psychologists think in a larger scope. The other question is: 'How do we apply psychological findings?' Sometimes the psychological research only concerns about the research and does not think about the application. 'OK! We've got a bunch of research findings. How do we apply these now?' Psychology as a discipline will really benefit if it addresses these issues.

#### Engineering

Adrian Mielke: Again, as creative engineers we have to come up with creative solutions for a complex problem, so theories about creative problem solving from psychology are beneficial. Secondly, I might be able to come up with creative and sellable products, but if I am

not able to communicate the advantages of the product clearly to others, who can understand and experience that creativity? So the discipline of communication is definitely something that we can benefit from. The third is leadership. Leadership has an impact on the environment and its creativity (Gong, Huang, & Farh, 2009; Zhang & Bartol, 2010). If there is a telling-leadership style (Hersey & Blanchard, 1988) that uses time and result pressure (Byron, Khazanchi, & Nazarian, 2010), I probably will be motivated to choose the first best solution. However, such a leadership style might not per se be bad for creativity. It is the situation of the leadership that accounts. For example, after I have made my decisions based on the cost-effective matrix, I can apply the telling leadership style to close the issue.

## THEMES IN THE PERSONAL REFLECTIONS

### Overlaps and differences in conceptualizing creativity

In the field of psychology there exists a convergent view about two defining qualities of creativity – originality/novelty and usefulness/appropriateness (Sternberg & Lubart, 1999; Tan, 2000). Through the panel discussion, we found that this consensus is also shared by the scholars from other fields under investigation. Among others, the differentiation of creativity at different levels seems overwhelmingly welcomed by the scholars of different domains. Meanwhile, we observed that each applied field (education, business and engineering) does have its special way of defining usefulness/appropriateness. While scholars from education highlighted the pedagogical and social function of creative teaching and learning, scholars from business emphasized the survival and prosperity aspect of innovation (Cropley & Cropley, 2005). Using a real-world example (iPod) engineering scholars pinpointed the crucial role of the social judgment system (Csikszentmihalyi, 1994) in determining functional creativity (Cropley & Cropley, 2005) in their field.

Researchers emphasize that it is important to distinguish creativity from innovation (Anderson, de Dreu, & Nijstad, 2004; Shalley, Zhou, & Oldham, 2004). This differentiation emerged clearly in the course of our discussion. Scholars from the field of business and engineering explicitly expressed their preference for the concept of innovation over creativity. While discussing this concept, they gave emphasis to tangible manifestations of innovation, such as innovative processes, end products, services, etc., in contrast to creative thinking or ideas within the fields of psychology and education. This differentiation is in perfect consistence with the existing literature about creativity and innovation, which puts weight on the successful implementation of creative ideas and procedures at the organizational level as the defining factor of innovation (Amabile 1996; Klijn & Tomic, 2010; Mumford & Gustafson, 1988; West & Farr, 1990; Woodman, Sawyer, & Griffin, 1993).

### Overlaps and differences in experiences of promoting creativity

A variety of experiences were shared by the scholars of different disciplines in answering the question how to promote creativity in your field. Scholars from education mentioned top-down and bottom-up approaches, meta-learning (Biggs, 1985) and open mindsets. Psychologists attach importance to the accumulation of experiences and knowledge, integrated and situated approaches, defining creativity for research purposes (Torrance, 1988), as well as cross-disciplinary and intercultural collaborations. Moreover, they emphasized that different concepts of creativity exist which should be addressed specifically. In business, openness to experiences, intrinsic motivation, creative leadership, standardization and creativity, collaboration, coping with resistance to change, etc. were noted. The engineering scholar stressed eliminating time pressure, establishing a creativity-supportive atmosphere, and job rotation.

One major theme arose from this round of discussion. That is that the importance of education in fostering creativity was well recognized among the participants. There is empirical evidence that creativity can be significantly improved through well-designed training programs (Cohn, 1984; Scott, Leritz, & Mumford, 2004; Torrance, 1984). In particular, it was revealed that more successful programs were likely to focus on the development of cognitive skills and the heuristics involved in skill application, using realistic exercises appropriate to the domain at hand (Scott, Leritz, & Mumford, 2004). Two major implications of these results are: (1) educational authorities, teachers, and parents should have confidence to believe that every child has a potential to be creative and such traits and skills can be nurtured through well-designed curricula and activities; (2) in designing the curricula and activities, situated approach (Cobb & Bowers, 1999) should be applied together with real-world problem solving tasks and cognitive tools.

#### Perceptions and expectations of cross-disciplinary collaboration

The panelists in the field of education pointed out that education itself is characterized as cross-disciplinary and this feature makes it a prerequisite and challenge for education to draw metaphors from other disciplines. The business field acknowledged that business, in large extent, relies on the input and development of other fields such as psychology, engineering, and education. Therefore, it is inevitable that business conducts cross-disciplinary collaboration. The psychologists echoed the merits of drawing analogies and metaphors from other disciplines and saw the reality through broader and different perspectives. In addition, they emphasized the importance of applying psychological results to specific domains and the importance of gaining cross-disciplinary knowledge and experiences. The engineering field stressed the relevance of creative problem solving theories, effective communication, and creative leadership, etc.

To sum up, voices from different domains under investigation point to the reality of an increasingly inter-dependent academic world and they highlight the necessity of cross-disciplinary dialogue and collaboration on creativity.

## INTERCULTURAL ISSUES

Compared with the inter-disciplinary differentiation emerged in the discussion, the intercultural differentiation seems not very apparent. The Chinese and German scholars from the same domain seem to be highly coherent with their perceptions and opinions. This result is coherent with what Spiel and von Korff (1998) found in their study of the implicit theories of a group of the “individuals who are assumed to influence others’ views on creativity” (p. 43) from different domains in Germany and Austria. In their study they also found significantly more variability among various professional groups (scientists, artists, teachers, politicians, etc.) than between German and Australian participants.

## SUMMARY

As one of the most complex dimensions of human potential, creativity defines any one-faceted or simplified conceptualization and investigation. The current paper is an initiative to synthesize various perspectives on creativity from different disciplines and integrated the perspectives of the East and the West. Major themes emerged in the inter-disciplinary and intercultural approach include the consensus across domains on originality/novelty and usefulness/appropriateness as two defining qualities of creativity, the affirmation of differentiating creativity

into different levels, the necessity of discerning creativity and innovation as well as a common understanding of the important role of education in the development of creativity. The surprising consensus among the scholars of different domains and cultures lays a good foundation for more in-depth exchange and collaboration across domains and cultures and provides promising solutions to the conceptual crux that Plucker, Beghetto and Dow (2004) have raised.

However, it is worth mentioning that lack of cultural diversities in conceptualizing and sharing experiences with promoting creativity might be due to the fact that the field of creativity is dominated by Western views (Anderson, de Dreu, & Nijstad, 2004). For a more meaningful exploration of creativity, it is necessary that the field of creativity provides more room for assimilating the views and approaches from the East and other countries.

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