

# FROM DIALOGUES, AMBIGUITIES AND CONFLICTS: THE CREATIVE PROCESS AS AN ACT OF LEARNING

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## ABSTRACT

This article is a first attempt to discuss the creative process and its relevance. It aims to a better understanding of how a novice becomes an expert. Through personal reflection and the literature review, it attempts to highlight some key features of creativity within the fields of History, Psychology and Socio-Anthropology. Although studies suggest an information gap about how the creative process works, most of them agree that the notions of conflict, ambiguity and dialogue are important characteristics in creativity. In my view, the Vygostkyan theory connected with the Zone of Proximal Development (ZPD) and the Dialogical Perspective (DP) of Mikhail Bakhtin might shed some light on viewing creativity as a part of the learning process. In other words, I suggest that every act of learning is an act of creativity, since both take place in a zone where the dialogue, conflicts and ambiguity are necessary to produce a novel idea or new understanding.

**KEY WORDS:** Approach, creative process, expert, learning, conflict, creativity, campo, novice, conflict, ambiguity, dialogue, proximal development.

## RESUMEN

Este trabajo constituye un análisis preliminar sobre lo que es el 'proceso creativo' basado en una revisión de la literatura relevante y algunas reflexiones personales sobre el proceso creativo y su importancia para entender mejor cómo un 'novato (a)' puede convertirse en experto. Destaca algunos rasgos claves sobre el concepto de 'creatividad' recogidos en campos de la historia, psicología y socio -antropología. Aunque la revisión aquí hecha sugiere la existencia de una brecha posible entre la falta de descripción en el desarrollo de un trabajo creativo y la concordancia con las nociones elementales de 'conflicto', ambigüedad y diálogo, como rasgos importante de todo proceso creativo. La teoría de Vygostky (Desarrollo Proximal) y Bakhtin (Perspectiva Dialógica) pueden dar luces para considerar la creatividad como proceso y parte constitutiva de todo aprendizaje. En otros términos, planteo que un acto de aprendizaje es un acto de creatividad pues ambos ocurren en una 'zona' donde el diálogo, conflicto y ambigüedad son necesarios para producir una 'ideal novel' o una 'nueva comprensión'.

**PALABRAS CLAVE:** Enfoque, proceso creativo, creatividad, novicio, experto, campos, conflicto, ambigüedad, diálogo, desarrollo proximal, comprensión, aprendizaje

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## Introduction

The most classical idea about creativity among people might be related to a genius person or people who have extraordinary abilities to discover and create novelty ideas and things. When I mention to my friends my concern on how people can create novel ideas, they usually say to me: "Oh, that is interesting... I am not a creative person at all" or "I wish to be creative, I do not have creativity". It seems that people perceive creativity as 'something' that you have or do not have; they might not associate creativity with everyday life in order to solve problems or even concerning with learning processes. Some well known studies about this topic (Torrance 1963; Guilford 1957; Kaufman & Stenberg 2006) have dealt with the study of the creative phenomena only for having a better understanding of how remarkable people figure out problems by finding novelty solutions. The literature reviewed in the historical, psychological and anthropological fields show similarities related to highlight some key components of creativity as dialogue, ambiguity, and conflict. However none of them describe in depth how creativity works. This possible gap about going into depth in the creativity process itself might be filled by the notion of creativity developed by Vygostky (1962) and the concept of dialogue developed by Mikahil Bakhtin (1981). The purpose of this piece of work is to discuss, from a dialectical perspective, some thoughts and findings about the nature of creativity as an important part of the learning process.

The concern about the nature of creativity arose from the several topics discussed during the classroom experiences. This is related to the concept of expertise and novice, extracted from the book *How People Learn* (2000) and the ideas of Jerome Bruner (1996) which rethink and rebuild the purpose of education in an always changing world. In my view, creativity is one of the key areas to keep on developing because creating and innovating everyday constitutes important processes to 'survive' or to operate in a globalized world. This current stage in the human history is demanding people to be 'cognitive flexible' (Suarez-Orozco and Qin-Hillard, 2004) and develop meta-cognitive skills to move around a world where uncertainty and change are the main rules.

It seems to me that the explanation on how a novice becomes an expert of the process of transferring is not fully developed in *How People Learn* (2000). This study describes the different aspects involved in the initial learning and the previous experiences as a key piece within the process of transformation. Nevertheless, in my view, there is a lack of ideas related to how the learning process really happens. In this sense the cornerstone of this process could lay on the notion of creativity, which should be understood as a process that involves a dialectical motion created by a cognitive conflict within the Zone of Proximal Development (ZPD), enabling thus the emergence of novel ideas from an old schema. Considering the literature review, the act of learning might be always an act of creativity since it involves dialogue, conflict and ambiguity, three main features of the creative process.

It is important to point out that the literature review is just my first approach to this topic. I had consulted some 'classical' works as I want to overview on how creativity works and relate this process to some topics discussed in classes along this quarter. For this reason I had decided to consult the most cited and 'famous' studies about creativity such as the works mentioned previously in this introduction. These core works<sup>1</sup> was found using the key words 'creativity', 'process', and 'learning'. I had also extracted some ideas from the text books read in class *How People Learn* (2000) and *The Culture of Education* (1996).

This paper is organized as follows: First, I will describe some different concepts and ideas from historical, psychological and anthropological views. Even though these studies do not focus on the process itself, this overview could give some important key words to elucidate the conditions where creativity might occur. Second, I will discuss how creativity and learning could be connected with the dialogical perspectives of two well-known Russian scholars Lev Vygostky and Mikhail Bakhtin. This paper will focus on the Zone of Proximal Development (ZPD) as the space where conflict, ambiguity, and dialogue take place only for 'producing' new understandings or meanings about the world. Finally, I will draw some reflections on viewing creativity as an act of learning.

## Creativity in the history: from Divine Inspiration to Conflict

Since this paper is not about what creativity is, a 'simple definition' of creativity will be given as a result of reading several works quoted in this article. In general terms, creativity is the ability to generate *novel ideas* to solve problems. However, creativity could have many meanings among people. One could think in a creative person as somebody who is able to bring about novel things, break rules or challenge the normal establishment. Also, one could picture a creative person as a very smart or bright expert in a certain domain. Freud, for instance, was a creative psychologist for his time and his idea of the *unconscious* was a very innovative discovery. This core idea allowed clinical scholars to understand better and treat people with some degree of mental illness. Louis Pasteur in the 19th century was also considered a very creative person at that time because he found a novel solution: vaccines to treat several diseases such as anthrax, cholera and rabies. At present, these two outstanding scientists are considered as contributors to human knowledge and development, but some people could not think about them as creative people because the notions of 'vaccines' and the 'unconscious' are no longer novel ideas. The change of perception about creativity sets up the idea that creativity is a relative concept with important changes throughout human history.

Analyzing in depth it can be sustained that creativity in the human history means, as a whole, consequently the history of creativity. Different ages or stages in human development from the *homo sapiens*, *homo habilis*, *homo loquens* to this globalized world (*'homo stressed'*) are the product of creative processes, discoveries and innovations that have allowed

humans to develop new technologies and ideologies. Nevertheless, the word 'creativity' only arose approximately two centuries ago. Actually, it is a term that started to be used from 1950 in the early work of Guilford (1957) along the 20th century (Weiner, 2000). An outline on how creativity has been understood in different epochs will enable us to understand certain similarities across history. This historical review will then show that creativity has been understood as a process rather than as a product.

According to Dacey and Lennon (1998), the 'creativity chamber' was one of the first ideas about creativity used by Plato and Aristotle. Dacey and Lemon (1998) claim this 'chamber' was the picture of the mind that Homer and also Bible authors had about how the mind was built. The so-called 'bicameral mind' was a concept posed by the psychologist Julian Jaynes as follows:

Thought in the early human history, Jaynes posits people uniformly believed that the Gods controlled the chamber of the mind in which new thoughts occur. Thus, they thought that all creative ideas come from the gods, usually through the mediation of a muse, a sort of intermediary from the gods" (as cited in Dacey and Lennon 1999, 16).

Thus, the novel ideas or thoughts were not a product of the mind of a certain person, but they came from gods. They were the entities that really did, created and helped humans to accomplish the difficult and hard tasks entrusted on them as we can see in the features of heroes such as Ulysses or Hercules.

According to Weiner, the Bible also shows the idea of a God who created everything on earth; therefore, all creation would be the work of God. One of the first views about creativity in the Bible was not a complex issue. God made the human to or as his image, therefore they should procreate: "The word creativity [...] would first and foremost relate to God's creation of the material world, and second, as in many of the other cultures of the ancient Near East, to the biological fertility of that world, including human fertility" (2000, 26).

Following to Dawson (1954), the medieval age, a period that is usually seen as a dark and unproductive time, had a couple of creative products. Besides Dacey and Lennon (1998) argues that the monks in this period preserved and kept in hidden places the writings of Christians: "Nor only did the monks preserve these works but they also painstaking and artistically copied the writings by hand in an attempt to perpetuate these obscure pockets of intellectualism" (1998, 21). Furthermore Dawson (1954) states that the Muslims, a strict fundamentalist population, were indeed creative in the fields of astronomy, music, geometry and arithmetic.

The Renaissance, as Paul Weiner (2000) claims, was the period where the invention of the 'creative ideal' or the 'Age of Discovery' took place. During this age, people wanted to follow the Greeks ideals of perfection where discoveries in many fields allow geographic explorations. Copernicus, as an

astronomer, stated a new paradigm locating the Human Being at the periphery of the Universe. Columbus had the outstanding and challenging idea that the earth was a sphere. Testing his hypothesis, he decided to go to India through a new route in this course of action, discovering a new continent!

In our so called Modern Age, after the World War II, the creativity notion or idea became a common word where the 'creativity movement' took place. Furthermore, the idea of progress and reconstruction of a broken society has also implied notions about innovation, especially in the field of business, military and political fields, as Weiner (2000) suggests. Many educational and economic institutions that launch programs and research in creativity started as follows:

Already in 1937 the first 'creative training' programs were introduced by General Electrics, and in the mid-1940, businessman Alex F. Osborn's popular *Your creative Power* was published, and creative problem solving emerged as a common expression [...] the University of California's Institute of Personality Assessment found creativity to be an important component to healthy personalities (2000, 5).

On the basis of this brief overview on the history of creativity, it is possible to make stand out a pattern: creativity is related to bringing something new within a certain domain. The history of the world is the history of creativity as Weiner understands it. It seems that creativity is, in my view, understood as novel products that several people have 'created' in different epochs. Consequently, the following question arises: how does creativity really work? This implies to think that creativity is more a process rather than a product.

However, the process of creativity itself seems to be absent from the history where we can find instead facts and products (a theory, a painting, a medication, a discovery, etc.). It is also possible to highlight some ideas associated with bringing something new within certain domains. This approach can be witnessed even when somebody, being creative in the last century, would not possibly be anymore in the next century. So the idea of breaking with the establishment and finding solutions emerges in all ages. The concept of 'breaking' allows the development of the idea of conflict between the 'traditional knowledge' and the 'new idea'. For example, Columbus struggled with the concept of a 'flat world'. Martin Luther also struggled with the knowledge and rules belonged to the Catholic Church. Both enterprisers brought their new views only after a deep reflection about the rules that everybody accepted without any critical thinking. Therefore, it is possible to think about creativity as a process where the constant conflict seems to be a rule. I claim that this same norm can also be found in the literature review within the field of psychology.

### **Flowing from one idea to another: psychological studies on creativity**

According to the literature review (Kaufman and Sternberg,

2006; Rudowicz, 2003; Weiner, 2000) creativity has often been the concern of psychologists. According to Kaufman and Sternberg the main questions about this topic in the late 50's were: How should creativity be defined?; who is creative? What are the characteristics of creative people? and What are the appropriate uses of creativity?" (2006, 12). These questions were addressed by Guilford (1957) who understands creativity as divergent thinking. According to his studies, a creative person must have some traits such as sensitivity to problems, fluency, flexibility, novelty, synthesis, reorganization of redefinition, complexity, and evaluation. Guilford's studies drew a new way of researching on creativity by focusing on creative person's characteristics.

As Treffinger et. al. describe in *Assessing Creativity: a Guide for Educators*, several scholars provide different definitions on creativity. They could focus on "person, cognitive process, personal development, product, interaction between person and environment" (2000, 9). Related to these ideas, Erich Fromm (1941, 1959) was interested in the traits of people who are highly creative. For him there are four relevant traits such as: (i) the capability of being puzzled or surprised, (ii) the ability of concentrating on an objective knowledge as such, (iii) the aptitude of accepting conflict and tension resulting from polarity and (iv) the willingness of abandoning security, such as parental support" (Dacey & Lennon 1998, 42).

Carl Rogers also looks for individual traits such as: "being open to experiences that seem to be ambiguous, or the ability to evaluate situations according to one's standards, and the ability to experiment unstable situations and the ability to accept the unstable and to experiment with many possibilities" (1959). These traits are similar to those proposed by Csikszentmihalyi (1996) who also studies the characteristics of a creativity person. He claims that creativity takes place when a certain domain is modified by and act, idea or product. The domain then, becomes into a new one. In the chapter three of his book *Creativity: flow and the psychology of discovery and invention* (1996) we find a description of a creative person as "somebody who moves from one extreme to another, exploring new possibilities" (1996, 28). Furthermore it is a motion understood as a flow between two poles. For example, creative people could have a lot of energy, but they know when to stop and take rest. Apart from this we can add that being smart and ingenious, at the same time, is a trait that can be combined with a sense of being idle and very disciplined. Creative people can also move –without much endeavor– from imagination to reality, from extroversion to introversion states, from being humble but also being proud of themselves.

Guilford, Rogers, Fromm, and Csikszentmihalyi are only some examples of studies about creativity in the field of psychology. Their works represent main concerns in this field searching especially for answering the following question: how can we know when a person is creative? Even though their purpose is to describe the process, it seems to me that they only describe personality, but the process of creativity itself seems to be absent. Only one of the classical studies conducted in

the early past century by Wallas (1926) attempts to describe stages in creativity as a process as such. He proposed that creativity has four stages: preparation where the person acquires the knowledge of certain domain; incubation, where the knowledge is organized; illumination, the person finds a solution or novel idea. The last stage is verification where the product or idea is implemented or created. Even though this study is concerned about the creative process, it does not refer to anything about how this process works.

Most of the studies about creativity might have something in common: the idea of movement from one pole to another. This has a 'dialectical characteristic' (process whereby contradictions are disclosed and resolved) that I refer to in the previous overview of the history of creativity. In my view, the notion of conflict implies two opposite forces: the first one is the old knowledge about a certain domain and the next one is concerned about the new or emerging understanding or idea. The willingness of exploring and accepting the ambiguity of two or more forces (also being flexible) are important processes that place a space or zone where the creative person can go from one idea (or force) to another.

### **Anthropology and Creativity: the Ambiguity and the Interstitial Zones**

Even though the studies of creativity in different cultures explore how people perceive and understand creativity, they do not seem to explore the process of creativity in depth. There is a general thought that claims culture influences impacting upon creativity (Csikszentmihalyi 1996, Barron 1998, Sternberg and Lubart 1992).

The conceptualization of creativity does not help to understand the nature of creativity at all, nevertheless some scholars (Rosaldo, Lavie and Narayan, 1993; Liep, 2001) in the field of anthropology state that the conditions of creativity could give us a clue. Rosaldo et. al., for example, suggests that creativity involves a new combination of old ideas: "a view of creativity as an emerging in open spaces, gaps, interstitial zones" (1993, 2). He works on the ideas of Victor Turner, an anthropologist who studied the spaces where creativity can take place. These spaces may be characterized by margins, or 'in between'. These 'interstitial zones', as he calls them, are the key components to enhance the creativity process. The most creative human spaces are located on the margins or along these interstitial zones. In Rosaldo's terms these were sites frolicking (gaiety), playing and joking sites, as opposed to those of earnest workday routines. Turner's theory of rites of passage is described in *The Forest of Symbols* published (1967), where he analyzes how creativity could take place under the following terms: *Communitas and liminality and incorporation*.

*Communitas* refers to the possibility of sharing a space between two or more people. Within it we can find different domains of knowledge that, as Rosaldo argues it could be at once cognitive, affective and ethical spaces. In other words, this space is a rich zone where not only one domain could be

found, but also the boundaries of those domains. It is important to point out the affective component which is associated with the idea of meaningful knowledge. If some knowledge is related to culture, experiences, affections and knowledge will be learned only through 'understanding'. So we can call this the creative process. As an early conclusion we can claim that a creative person behaves as such if only the domains, the old schemata, are meaningful for that person.

Liminality is described as a space where ideas are flowing from different domain margins. In this zone 'contradiction' is the cornerstone for the emergence of new or novel ideas. Rosaldo suggests that this is stage of reflection where ideas can be organized or 'disorganized'. I claim that this could be a stage where we can find an internal or external dialogue between the person who is organizing new ideas as a whole with meanings for his or her own voice and another person background. Finally, incorporation comes as the last stage where the idea or the new product arises from the conflict. In simple terms, the final product of this process is the mutual understanding after the 'storm' or conflict and disruption.

Shortly, ideas proposed by Rosaldo show an important component in the creative process related with the conditions where creativity can take place. The zones of ambiguity or border between domains may be an area of interactions and conflict. It also may be a place where dialectic forces take place between the previous knowledge and emerging ideas in order to shape a new product: in my view, this can be explored as a cognitive conflict. The literature review suggests, so far, that creativity may often be an individual process. Nevertheless ideas of being inspired by gods in the Greek history and the dialectical process in zones of conflict suggest an interaction, not only inside the mind but also an interaction between at least two people sharing a dialogue.

The history of creativity, psychology and anthropology could maybe be a process defined by the willingness of experiencing the ambiguity, and the ability to experience conflict in a space of interaction or dialogue. This idea could be also found within the theory of learning from the constructivist perspective. The notion of expertise and novice makes sense in a place that entails interaction between two forces: the previous knowledge and the new one. According to this, is it possible to think of creativity as a process of learning?

### **Voices and Conflict in the Zone of Proximal Development**

From the previous overviews we can highlight three characteristics that will help to analyze how creativity works. Conflict, ambiguity and dialogue are fundamental parts of creativity. It is interesting to note that from the classical studies reviewed for this paper many experts do not mention the work of Vygostky (1962, 1978) and his contribution to the understanding of the process of learning and creativity. Moran and Steiner (2002) wrote about the ideas of Vygostky and the Zone of Proximal Development (ZPD), which will be briefly outlined.

Additionally to the ideas of Vygostky about the ZPD, Bakhtin (1981) also has important studies about the polyphonic discourse within the narrative text, where there is no a one omnipresent voice but several ones, which compete each other in order to express themselves. As well as Vygostky refers to a 'zone', Bakhtin also talks about a 'zone' or 'narrative zone'. Both spaces could define and favor the presence of novel or innovative ideas. In order to link Bakhtin ideas about polyphony with the understanding of how creativity works, it will be important to identify some issues on Vygostky theory about ZPD and creativity.

### **Vygostky and Creativity**

Vygostky (1896-1934) was a Russian psychologist who, according to Wink (1997), stated - in general terms - the importance of interactions within the learning process. He was focused on understanding how people represent knowledge in their minds. From a socio-historical perspective, Vygostkian approach gives importance to social activities of children with adults mediated by language, a practice that he called 'socio genetic' process. In contrast, Piaget (1896-1980) argued that maturational development precedes learning, and a child can independently construct his or her knowledge of the world without an adult intervention. Vygostky theorized that jump-started mental development and knowledge construction are, therefore, a social and cooperative adventure (Moran & Steiner 2002).

According to Lev S. Vygostky's theory, knowledge construction is based on four main ideas. The first one states that the knowledge of the world is constructed by children; they are not passive agents in the learning process. Second, social and cultural context are fundamental parts in the development process. Third, the development process is led by the learning process where language is fundamental in the cognitive development. From this social perspective in accounting for human learning, this Russian scholar developed the concept of Zone of Proximal Development conceived as the condition where learning occurs. He defines this concept as:

The ZPD is the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under guidance or in collaboration with more capable peers (Vygostky 1978, 86).

In other words, this zone is where children can perform their activities with the assistance of an adult in order to extent what is possible to know and when this learning process is becoming successful or unsuccessful. The result of the learning process occurs only when the children can solve a problem without assistance, but through the interaction with adults. Naturally this process is not too simple as Brandsford et. al. (2000, 81) describes: there must be a cognitive conflict, between the previous knowledge or ideas that children have about a certain topic. The nature of this conflict is not only between the previous knowledge and the new one, but between 'voices' or 'speeches'. Moran and Steiner (2002) believe that

Vygostky understood creativity as a type of 'problem solving' and 'symbolic representation', which can be taught and learned.

Even though Vygostky does not mention directly creativity within the learning process, he claims that creativity could create a zone of proximal development to learn through life. In fact, creativity could be postulated as a resource for sustained lifetime development by making the developing open-ended processes or a 'self-propelled zone of proximal development for the person'. Besides, the ZPD allows people to adapt to certain environment and modify it. However, this idea does not describe the process that happens within ZPD. It suggests that creativity may help and favor a long-life ZPD, but it does not explain the role of this zone to promote creativity at all.

The reading of Vygostky's ideas in Moran and Steiner makes me reconsider the notions of borderlines, dialogue and conflict attributed to creativity from psychological and anthropological perspectives. I think that these three characteristics are also constitutive parts of the ZPD. Therefore, it is possible to understand creativity as a learning process. Furthermore, the ideas of Bakhtin could illuminate the notion of 'observing creativity' as an act of learning since he highlights the idea of a dialogical nature of speeches, a core foundation to understand the process of creativity within the ZPD.

Mikhail Bakhtin (1895-1975) was a Russian philosopher of language and literature and his most famous work associates concepts of 'dialogue' and 'heteroglossia'. Paraphrasing his idea of concepts, an utterance is the main linguistic act, but this utterance can only be understood if a dialogue is placed within a socio-cultural context. Starting from this idea, a conception of personhood emerges where we can express ourselves "in a dialogue with others and subject to the reinterpretations they give us" (Honderich 2005, 78).

The concept of dialogue also deserves some consideration, because it could be understood as "an active process of serious continuing discussion which allows people's voices to develop and be heard" (Khol 1984, 111). Bakhtin claims that a 'text' does not only content one voice but many; it is what he calls heteroglossia, a dialogue or interaction between more than two voices. So how can we link this notion of dialogue to the ZPD and the process of creativity? Some preliminary answers can be found within the work of Allan Cheyne and Donato Tarulli, specifically in their paper called "Dialogue, Difference and the Third Voice in the Zone of Proximal Development" (1999). Even though they did not work or mention anything about creativity, it is possible to have an idea about the role of dialogue and conflict in the ZPD. They analyze, as well as Vygostky and Bakhtin, the existence of a dialogue given in certain spaces. But Vygostky was interested in what he called the 'inner speech' (egocentric) and 'external speech'. Inner speech occurs when somebody is talking with her/his self and the external one is referred to speeches given by/for others. He stated that the nature of the inner speech was monological and not dialogical. Only the external speech was

considered a dialogical (speech for others).

Bakhtin was also interested in dialogue and for him the nature of life itself was a dialogue; he argues that "to live means to participate in dialogue: to ask questions, to heed, to respond and to agree and so forth" (cf. Cheyne and Tarulli 1999, 5). Even though when a certain text seems to have only one voice (author's voice), Bakhtin claims that this single text is composed by many voices from different characters. It is very interesting to consider a mind as a text and to observe that maybe the Vygostkian inner speech is also dialogical and even a polyphonic zone. Considering the dialogue of the mind with itself, it is important to situate the interchange, or I would say 'conflict' between dialogues. As Cheyne and Tarulli (1999) suggest, the ZPD is itself a dialogical structure where voices are always in conflict, something that we can place or visualize in any teaching-learning situation:

One in which the tutor and the learner are engaged in a exchange [conflict] that aims at creating consensus regarding, among other things, the goal structure of the problem at hand and the actions most apposite to the problem solution[...] ZPD provided and modified, the means, on other words, by which children are provided with scaffolding instruction (1999, 10).

In the chapter "Learning and transfer" of the book *How people Learn* (2000), authors describe the learning process as a transfer from previous experiences that builds on existing knowledge. This means that teachers need to discover the preexisting ideas, which novices have in some topic. When these previous ideas arise, teacher can teach or present new knowledge. I argue that this may be a cognitive conflict between two voices or 'speeches' which create a zone where boundaries between the previous knowledge or experience and the new knowledge are placed. This same process could take place in one's mind, and inner speech triggered by a book, a picture, a song. Therefore is it possible to call this 'a process of creativity'?

Since the literature review shows features of the creative process such as ambiguity, conflict and dialogue, I can claim that every act of learning may be an act of creativity. This idea may sound simplistic if one has in mind the idea of a creative person as a genius, a 'gifted' or someone who receives reward and public recognition. But this stereotype is what I would like to dispel. Creativity is usually something related to outstanding people who are very intelligent and achieve high levels of discoveries rather than an everyday process that help us to solve problems and share meanings.

## Conclusions

I consider this paper as a first approach about the concept of creativity. I chose this topic because of my previous experience on conducting an ethnographic study (2006) in a community of Chilean scientists in my home city, Valdivia (Center for Scientific Studies). I interviewed several people working within the fields of Biology, Geology and Physical Sciences.

Their life stories showed me people who were trained during their childhood with the purpose of developing interests and motivations in scientific research. I was interested in whether or not scientists really are 'very logical, organized' people and how they use the scientific method. This was a personal concern when I was looking for dispelling some stereotypes about children and their knowledge of science.

When I analyzed the interviews, I could see that most of the scientists were very critical about the scientific method. Some of them told me that the scientific method should not be taught (thought) in schools because it limits the know-how of science. Others told me that science is an enterprise where people need to develop or believe in their intuitions about how to proceed in one way or another. Making mistakes was another feature to develop:

How can you teach students to make mistakes? At the end, there are many ways that you have in order to make progresses...but, that Cartesian stereotypical method [scientific method], that people teach in somewhere... I think it is a swindle [...] If one wants to teach something to future scientists, one would advise: move forward, follow your feelings, follow your instinct and work hard. More than that, I do not think there must be a unique or exclusive method (Peter, Biologist).

This quotation above was part of one of the interviews taken for my undergraduate dissertation in the degree of Anthropology. Peter's words illustrated how important is to have a 'place' where one can think, but not only think but being an active agent to find solutions. As he said, there is no method but instincts. I think that those 'instincts and feelings' are themselves processes of creativity: therefore, acts of learning.

By creativity as an act of learning I do not refer to the 'current' notion of learning that most of the Chilean educators have. As we discussed in class, learning is no longer 'acquiring data' or 'memorizing facts'. I think that creativity as learning process can be understood as many-folded processes involving dialogue, conflicts and borderline domains. Thus the fact of seeing creativity as an act of learning could not be only taken in its theoretical implications, but also it might have some practical consequences in ideas of educators and students concerned with the meaning of learning.

According to my personal experience, Chilean school teachers do not teach explicitly process of 'learning something'. I mean, for example, when they ask for a historical essay of 6 pages related to "How do you think that Balmaceda President in 1920 could solve the economical crises in Chile?", they do not make explicit some meta-cognitive processes, that students should not know explicitly. Instead they could explain that an essay is a creative process that involves a conflict procedure within their minds. Teachers could also explain that students read a lot, they produce more emerging ideas. I would like to add: "But this does not mean that everything is going to be easy because sometimes you do not know what to write, or how to organize your ideas. You should start understanding

few things, but others are confused. But that is, anyway, *completely normal because you are creating something, you are learning with meaning*".

How a novice becomes an expert? I would like to conclude: we should have several cognitive crises, dialogues with ourselves and with other 'texts' in blurred spaces where the boundaries of domains became confused. Maybe that is the purpose of some narrative texts (Bruner 1996) such as myths or tales, they illustrate the 'creativity process or learning with meaning'. The hero is always a person who must experience several 'tests' and internal conflicts. For instance, in The Lord of the Rings books, Frodo (the main character) is a hero who suffers the destiny of being the carrier of the Ring in order to accomplish the mission: destroy the Ring. During the three books, he learns with meaning. In the process of looking, struggling, even doubting (learning with meaning), he discovers something new, he learns something new about the world, therefore about himself.

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### End Note

1 Books and articles were found in the UCSB Main Library and in the ERIC database.