Bronowski (1958-59) distinguishes among discovery, invention and creation by pointing out that Columbus discovered the West. Bell invented the telephone and Shakespeare created Othello. A fact is discovered, and a theory is invented, but only a masterpiece is created for creation must engage the whole mind.

- George Demos & John Gowen

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CHAPTER II
CONCEPT OF CREATIVITY

This chapter deals with the concept of creativity in detail. For its full understanding the discussion has been started from the ancient era as under:

2.1 Creativity in Ancient Era

The span of our old literature is very large and wide spread. Starting from the Vedas (2000 B.C.) upto Purans (1500 A.D.) all the scriptures are included in our old literature. At that time the persons who revealed the truths of life were known as 'Rishies'. Those Rishes imposed their such ideas on the public for the betterment of the humanity. In some of those ideas they have explained that different abilities are lying dormant in a child and could be increased by regular prayer or practice. Those abilities i.e. Dhih, Medhā, Pragnā and Pratībhā are similar to the abilities having psychological terms intellect and thinking ability or creativity. Our old Rishies or the seers were not only intelligent but creative too. They have used different terms for subtle distinction between the mental abilities e.g. Intellect in general term is called Budhi. Being a mental ability, Budhi could be developed by regular prayer. One of the stotra as a prayer
The intellect of higher level, useful to adjust in the society with sharp memory, which can guide others is called 'Medhā'. This 'Medhā' is divided in so many variants of talent. To get the stotra for Medhā, in Markandey purāṇ. The meaning of this stotra is, "Oh Medhā! you are the gist of all the different aspects of knowledge."

When an intelligent person having polite manners, tackles a problem by the method of analysis or synthesis, whichever is applicable, his mental level is higher than that of 'Medhā'. This type of mental level is known as 'Praṇā'. So it is obvious that memory, thinking ability, linking power and concentration all such factors are important for 'Praṇā'. As for 'Dhiḥ' i.e. 'Buddhi' similar stotra is there for memory i.e. 'Sruti' as a

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1. CHANDI PĀṬH  5/14
2. CHANDI PĀṬH  4/11
prayer in the same Adhyāy of the scripture.

'या देवी स्वाभूमिकृतिहृदया ईश्विकः । ३
नमस्तर्थे नमस्तर्थे नमस्तर्थे नमोऽनमः ॥'

It shows that different mental abilities are treated as Goddesses and by regular worship, one can develop the desired ability. Due to this belief of Goddess for mental ability some persons used to pray Pragnā also as under:

'या देवी स्वाभूमिकृतिस्वास्थ्या ईश्विकः ।
नमस्तर्थे नमस्तर्थे नमस्तर्थे नमोऽनमः ॥'

Our most authentic śāstra called 'Pātanjal Yoga Darshan' deals with the total development of a person. The author 'Pātanjali Rishi vividly describes different mental levels of a man in the śāstra. He believes that all the abilities are partly inherent and partly environmental. Intelligence is the first level of all others. Through training of body and mind, a man can rise up to the second, third or even the seventh level. That seventh level is total pragnā. Here are the original words.

"तद्व विश्वात्य प्रान्तोपरि प्रपाल थ॥"

He has written many other sutras to explain 'Pragnā' as well as 'Pratibhā' of a person and to show the ways and

3. CHANDI PĀTH 5/28
means to attain them. A few important sutras are reproduced here with their translation.

"अन्तर्वक्तं विद्या महामहानं दीर्घं जापम्।"

Faith, enthusiasm, meditation, deep concentration and intensive practice will lead to the manifestation of pragnā and ultimately eternal peace.

Here is another sutra to show the development of pragnā. For this stage of pragnā sacredness of mind is most essential. The words are here."
"
"तत्र क्रमम् लघु।"

It conveys the message, "Mind is controlled by constant practice and meditation. With the help of the controlled mind, man can develop his mental level to reveal the truth, and it is one type of creativity. Similar to the above sutra, one more sutra is cited here to understand the different levels of Pragnā clearly.
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"
"ज्ञानयात्रायस्तः।"

It means in a complete controlled mind there is a flash of Pragnā and gradually such person attains the last stage of Pragnā.

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6. Ibid, Sutra 41.
Furthermore he believes, "If a person's Pragnā flashes out continuously, then it is called the 'Pratibhā'." Thus Pratibhā differs slightly from Pragnā. Our ancient education lays stress on holiness and deep meditation for Pratibhā. In the state of Pratibhā, thinking ability is fully developed.

"पुरुषाद्वारा जनम "

This sutra explains that Pratibhā is a full flash of mind, which gives all the types of knowledge. Such person is called "Dārshanik". In modern science the term "creative person" is used for the same. A well known rhetorician in Sanskrit literature 'Bhatt Taut' has used the following words for Pratibhā.

"प्रजा नान्दोप्यथ शालिरि प्रतिभा फूल "

It explains that intelligence, which flashes forth newer reflections is called 'Pratibhā'. Thus from our old literature we can conclude that different words like Rodhā, Pragnā and Pratibhā collectively give clear idea of creativity. Hence no sin be fixed definition of creativity is available here.

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6. Ibid, Sutra 73.
9. Identical definition of Pratibhā is available in 'Rudra Kosh'.
2.2 Creativity in Modern Science

Up to the beginning of this century, modern scientists also were under the impression that creativity is a unique gift of God, which is rarely found. They also believed that any change of degree in creativity was not possible. Persons having this natural gift are known as geniuses. For example Albert Einstein, Madam Montessori, Shakespeare and Rabindranath Tagore all such persons are geniuses. Their contribution is unique in fields like science, education and literature respectively. Their work inspired psychologists to analyse and understand the way of thinking adopted by them. As a result of this deep and analytical study, psychologists arrived at the conclusion that the concept of creativity should be considered scientifically rather than religiously. Moreover it is proved now that creativity is a mental ability which can be fluctuated by environments.

Of course human creativity cannot be compared with the creativity of the All-Mighty. Here below is given an abstract showing eloquent distinction between the Creator's creativity and human creativity by modern thinker R.J. Hallman.
"It is implied by the most fundamental characteristic of human creativity, namely, the requirement that man works with materials, which he himself has not created. Lacking the Omnipotence and Omniscience of God, man cannot create out of nothing. He cannot create in the sense of bringing something into being from what previously had no existence". 10

These words prove that human creativity is an inspired trait, which is as important as any human quality in changing history and in reshaping the world.

Creativity is a term derived from the word 'create', which means to find out and set something strange and at once useful to bring about a change in the society. Creativity is one type of energy of a man to contribute artistically or scientifically to the society. From this meaning it is obvious that the process of creativity is substantially identical in art or science. This is the fundamental hypothesis for the process of creativity accepted by the psychologist H.A. Simon, 11 that the process of creativity is identical.


11. H.A. Simon, Understanding Creativity, Ibid, p. 44.
The phenomenon of creativity is very complex and multi-dimensional too. That is why the problem of defining the creativity in clear terms is the same now as it was in the old science. There is no universal definition of creativity available in modern science too.

2.3 Definitions of Creativity

Psychologists view the creativity from different dimensions. Hence it will be better to discuss the term creativity from different point of view, namely, from psychological traits of a person, process, press and product.

Creativity and person

The psychologist, the clinician and the factor analyst have shown much interest in defining creativity in terms of traits. Some of them will be discussed here. J.P. Guilford's psychometric method has identified in the creative personality such traits like sensitivity to problems, fluency, flexibility, originality, ability to transform meaning and ability to elaborate. A.H. Maslow believes that the healthy and self actualizing persons will be

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13. Ibid.
creative. And he adds that creative personality is spontaneous, expressive, effortless, innocent, unfrightened by the unknown or the ambiguous, able to accept tentativeness and uncertainty, able to tolerate bipolarity and able to integrate opposites. Fromm\(^{14}\) speaks of only four traits: capacity to be puzzled, ability to concentrate, capacity to accept conflict and willingness to be reborn everyday. These are the traits similar to those of Pratibha given by the poet 'Bhatt Taut' in old literature. Rogers\(^{15}\) has a similar list: openness to experience, internal locus of evaluation and ability to toy with elements.

Creativity and Process

It was John Dewey\(^{16}\) (1910), who first thought of creativity as a process. He emphasized only mental functioning and pointed out the following steps in typical problem solving.

\[\text{References}\]

14. Ibid.
15. Ibid.
defined creativity as "a compensatory product of the inferiority drive". In the fourth decade Sharpe defined it as, "a product of distinctive drives and unconscious wishes that aspire to become immortal". Psychologists Westheimer and Maslow also thought of creativity in terms of product. Guilford's exploration of indicators of creativity through factor analytical studies showed fluency, flexibility and originality as measurable units and it is only through these that we talk of creativity in psychological measurement.

2.4 **Components of Creativity**

Some investigators appear to regard the phenomenon of creativity as a single dimension of personality. Guilford thinks that the creative disposition is made up of many components and that its composition depends upon where you find it. The definition of creativity as a product supports above assumption. In the field of psychology any multi-dimensional aspect can be measured by the most scientific technique of factor analysis. Being a multi-dimensional aspect, creativity too can be measured by factor analysis. On the basis of an aptitude project of Guilford and his associates the components of creativity are available.

24. Ibid.

Those factors are further subdivided into groups. This can be very well understood by the chart mentioned here.

![Creativity Flow Chart]

**Figure 4: Flow chart of Creativity Components**

Each of the factors will be explained in detail now.

**Fluency:** It refers to a fast flow of ideas and tendencies to change directions and modify information. It is a quantitative representation of an individual. It is subdivided into the following types:

(c) **Ideational fluency**

It is a production of ideas where free expression is encountered and quality is not evaluated. The idea produced may be as simple as a word, as complex as the title for a picture or story, or as phrases and short sentences that convey unitary thoughts.
(b) **Associational Fluency**

It pertains to the completion of relationships, in distinction from the above factor of fluency, which involves giving ideas that fit a class. This ability is obviously of use to the creative writer, who wants to find quickly a variety of verbal expressions without the use of dictionary.

(c) **Expressional Fluency**

It refers to the spontaneous production of new ideas to fit a system or a logical theory. Thus this factor of fluency also restricts the area of new ideas like associational fluency.

(d) **Word Fluency**

It is concerned only with words. It is the generation of words which is required specially.

**Flexibility**

It is one type of readiness to change behaviour to meet changing circumstances. It shows in how many different ways a person can respond to a stimulus. It identifies the produced ideas in number of classes of objects, which are presented as responses of a stimulus. It is subdivided further into two types.

(e) **Spontaneous Flexibility**

It shows how fast a person can change the group or how divergently one can think. For the scoring of the
flexibility a performance in terms of the number of times one changes the category of the uses of the given thing is encountered.

(b) **Adaptive Flexibility**

It is some divergent transformation quality which involves changes.

**Originality**: It is related to the uncommon responses or unusual suggestions which can link the different things in a strange way. Thus newness along with usefulness is necessary for originality factor.

**Elaboration**: It is related to the variety of implications. The expanding and combining activities of higher thought is necessary here which shows a production of detailed steps, variety of implications and consequences.

Recent investigation of creativity factors by Indian scientists Chauhan and Tiwari gives eight factors of creativity. From those eight components four are as above. They have listed the factors as under:

2.5 Creativity in Education

Education means a special training to a person, which helps to bring out his abilities that are lying dormant. All kinds of abilities including intelligence and creativity also can be developed by education. A.H. Maslow believes that education can provide 'Creative Calisthenics' to counteract this atrophying of talents.

In the beginning of this century Madam Montessori was the first educationist who tried to develop creativity of a child in her own way. She was firm in her conviction that only the creative persons can reshape the world in a better way. Moreover she believed that God's blessings are instrumental in the development of our abilities. So she formed a poem to that effect and insisted that all the teachers should sing it as a prayer regularly. The gist of the poem runs as under:

"Oh God! Give us the strength to understand the talents of the child."

Its Sanskrit version was done in 1945 by Acharya Vishnuday Pandit. The Sanskrit words are given below:

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पितानु रक्षय वालसह, वालसह प्रेम सह।
बलुः पुष्पयु प्रेमस्य न, कथा ये हेश स्स्सर॥
````
Other educationists like Torrance and Pasei also now realise the importance of creativity. From this we can infer that in modern education also the role of creativity is the most significant. Its importance is proved within a short period of time. Creativity is a mental trait which can be undermined by adverse environments and nourished by proper environments. For this reason we must see the factors which hinder the creativity.

2.6 Hurdles of Creativity

Mainly four types of psychological blocks as hurdles can be thought of in the field of creativity. They can be listed and explained as under:

1. Feelings of Insecurity

There are manifested in lack of confidence, fear of chastisement, fear of failure and of making errors, worry over personal esteem, fear of authority and feeling of dependency upon others.

2. Need for Conformity

They are manifested in a security based on order and norms, a need for repetitive familiar, environmental surroundings and conditions, fear of being different or of not fitting into psychological and cultural patterns.
3. **In capacity to use unconscious perception and evaluation freely**

This shows an unwillingness to try anything new, a general lack of zeal and drive and a weakness of sensitivity to problems.

4. **Occupationalism**

There are barriers related to the job specialty or occupation and involved stereotyped patterns of habit, perception, judgement, motivation and other factors related to choice of occupation and the ways the occupation is practised.

If hindrances are removed, the creativity of a child can be developed smoothly. It is a popular notion that absence of hurdles means encouragement to creativity. But it is not wholly true. It can be understood clearly from the discussion given in (2.7).

2.7 **Encouragement to Creativity**

For the encouragement to creativity one has to turn to school experiences. Torrance is perhaps the most active worker or in designing programmes for encouraging creativity. Sparnes and Harding have listed twenty principles for developing creative thinking through school experiences which
are worth to be noted for this study. Behler\textsuperscript{26} has quoted in his book as below:

i. Be on the alert for new ideas and encourage the pupils to develop all their creative talents.

ii. Make children more sensitive to environmental stimuli.

iii. Encourage manipulation of objects and ideas.

iv. Teach how to test systematically each idea. Starting as early as third grade, show pupils how to define a problem and keep testing each idea. The heuristics described by Polya might be used as a guide.

v. Develop tolerance of new ideas.

vi. Beware of forcing a set pattern.

vii. Develop creative classroom atmosphere, a free, relaxed and unharried one.

viii. Teach the child to value his creative thinking. Encourage students to note their ideas in concrete form whenever possible, perhaps in special note book set aside for that purpose.

ix. Teach skills for avoiding peer sanctions. If a highly creative pupil rubs too many classmates the wrong way, help him to become more aware of the feelings of others.

\textsuperscript{26}R.F. Behler, \textit{Psychology Applied to Teaching}, (Boston: Houghton Mifflin Co., 2nd Ed. 197\textsuperscript{2}), pp. 31-32.
X. Give information about the creative process. You might do this by acquainting students with Wallas's four steps in problem solving and by noting some of the heuristics.

XI. Dispel the sense of awe of masterpieces. Indicate some of the methods and difficulties experienced by famous creative people to dispel the notion that only a gifted few experience brilliant and perfect insight at the first try.

XII. Encourage and evaluate self-learning. Avoid over-structuring the curriculum.

XIII. Create 'thorn in the flesh'! Ask controversial questions and call attention to disturbing data.

XIV. Create necessities for creative thinking. Confront your students with provocative problems. You might use the suggestions of Bruner and Biggs as guide.

XV. Provide for active and quiet periods. Remember the impact of habitual set and functional fixedness.

XVI. Make available resources for working out ideas.

XVII. Encourage the habits of working out the full implications of ideas.

XVIII. Develop constructive criticism not just criticism.

XIX. Encourage the acquisition of knowledge in a variety of fields.

XX. Develop adventurous, spiritual teachers.