Editorial

The Ramayana Bridge

*NASA has pictured the bridge from India to Sri Lanka over the sea which was built by human being in 170000 years ago. According to Indian mythology Rama, incarnation of Lord Bishnu built a bridge from India to Sri Lanka to fight against Ravana, the King of Lanka. This bridge was built by the monkey soldiers with the help of stone, wood, weeds etc,. King **Nal** was the architect of this bridge. In Ramayana it is explained that Rama worshiped the King of sea to give the way to Lanka to rescue her wife Sita from the hand of Ravana. But the sea King did not response him. Then Rama was angered and used fire weapons which dried the sea. Then King of the sea came out and expressed his limitations. He committed to provide helping hand in building a bridge over the sea. Accordingly the bridge was built. In the picture of NASA the scene of the bridge is very prominent. Best on the Indian mythology it is explained that Rama was incarnated in 'Treta Yuga'. There are four Yuga in **Sanatan** philosophy. Those are **Satya, Treta, Dwapar, Kali.** These four era covers 4,30,000,0000 years. According to modern science the Earth is 6,000,000,000 years old. So there is some similarities with the mythological theory and modern science. The Treta Yuga was about 2 lacks years old. If it is so the reality of Ramayana can be accepted. The evolution theory from monkey to human being also can be explained with this evidence. Worth mentioning is that there was an aeroplane of Ravana named as **Puspaka vimana**. It reflects that there was hi-tech engineering existed in that Treta Yuga. The modern scientist may search such subjects to unearth many unknown information of ancient civilization.*

Dr. HariCharan Das
Chief Editor,
E-mail: editorharicharan@gmail.com

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Management of Satra Libraries of Assam

(Sri Sri Pukhuripara Satra -- a case studied.)

Biswajit Goswami,
Dept. Of Botany, Bilasipara College,
e mail. - goswami_bilasipara@rediffmail.com

Abstact:

Satras of Assam have a very glorious past. From the very beginning of the journey, at early days of 'Neo-Vaishnaviism' in Assam, they have flourished up to their highest level. Satras of Assam have a direct influence on the Socio-Cultural activity of Assam. The four Gurus of Assam, Mahapurus Srimanta Sankardev, Mahapurus Sri Madhavdev, Mahapurus Sri Sri Damodardev and Mahapurus Sri SriHaridev, had done all their religious and social activity from these Satras. At that time, these Satras were considered as the highest religious authority and institute for learning, both religious subjects and Social subjects, PukhuriparaSatra, situated at Pukhuripara (Salkocha) under Dhubri district of Assam, is a follower of Mahapurus Sri Damodardev's philosophy of 'Nav-Vaishnaviism. The ethno library of this Satra has a good number of books and now, nominated by National Manuscript Mission as a Manuscript Conservation Partner Center of the mission. This paper intended to study the management system of the ethno library of the Satra.
Key words: ethno library, manuscript.

Introduction:

Satras of Assam have a very glorious past. From the very beginning of the journey, at early days of 'Neo-Vaishnaviism' in Assam, they have flourished up to their highest level. Satras of Assam have a direct influence on the Socio-Cultural activity of Assam. To be more précised, one can say that Assamese culture can be named as ' Satra Culture'. Though, modern age has changed the scenario to some extent, one can feel the influence of Satras till now. The four Gurus of Assam, Mahapurus Srimanta Sankardev, Mahapurus Sri Madhavdev, Mahapurus Sri Sri Damodardev and Mahapurus Sri Sri Haridev, had done all their religious and social activity from these Satras. At that time, these Satras were considered as the highest religious authority and institute for learning, both religious subjects and Social subjects, (which includes Literature also).). SatraiNrittya, Borgeet, Bhawna are some of the example of Satra culture. At that time, the Satras were the main center of knowledge

distribution. They are the center of writing and reading of books. So, almost each and every Satra had a library in its premises. To summarise the topic, that is importance of Satras on establishment of Ethno libraries of Assam, it may be added that, out of around 40 M.C.P.C. of N.M.M in Brahmaputra valley more than 30 are Ethno library of Satras.

Aim:

This paper tries to find put the management system of the Ethno library of Sri Sri Pukhuripara Satra.

Methodology:

Field survey along with interview of the Satradhikar and other Satria persons.

Discussion:

PukhuriparaSatra, a follower of Mahapurus Sri Damodardev's philosophy of 'Neo-Vaishnaviism, is a "AgyanparSatra". The main Satra is Baikunthapur Satra, Coochbehar, West Bengal. Though it is an 'Agynapar' one, it is covering a very wide area. Earlier it had covered up to Alipur Dowar (W.B.) in the west and Bijni (Assam) in the east. Brahmaputra river stands as its south border and Bhutan Border draw the line of the north. Apart from doing its duty as a religious center, like any other Satra of Assam, it is also performing its duty as a center for social and traditional knowledge distribution institution. For this purpose the Satra has to maintain a library of manuscripts and printed books also. It may be added that, they have placed the book selves far away from the manuscripts (in another room under different roof). But, in this paper, we will discuss about the manuscripts as Ethno library resource. The Satra, at present, trying its best to conserve the folk culture of the area, specially those, which have some connection with religious festival.The Satra, as told by the Satradhikar, celebrates three festivals in its premises. These are DolYatra (i.e. Holi), Janmastami and Guru Damodarbebar Tirobhab Tithi (populary known as 'Mahotshava'). Another one festival is celebrated as an ex-campus one at Bhotgaon under Kokrajhar district. That is Guru Damodar devar Abirvab Tithi.

Collection of manuscripts:

All manuscripts of the repository of Pukhuripara Satra are written by themselves. Satradhikars and their disciples had written them for their library. Each and every Satradhikar

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of this Satra had wrote (or copied) at least a few manuscripts for the repository. This practice continued up to around 1950, after which availability of printed books has changed the habit from writing to purchasing. The "Guru Parmpara of the Satra is (last 150-200 years):- Ganapati - Chandiprashad - Bhabendranath – Narendranath- Ramanath - Birendranath - Girindranath - Paresh - Hironmoy (recent). To reproduce or write a manuscript, they had prepared the writing materials, i.e. Sanchipat, Tulapat etc. or purchased plain paper and wrote on these with local pen (normally Khagari, or feather pen,) with homemade ink. Some worth mentioning books are - several copies of Srimat Bhagawat Gita, Krishna Stotra, Ratnamala Vayakaranar Prokirna Nirnoy, Prayachitta Nirnoy, Bristi Nirnoy, Jarar Aushadh, etc. It may be mention here that, this library is now nominated by National Manuscript Mission as a Manuscript Conservation Partner Center of the mission.

As one of the Satradhikar, viz. Ramanath Vidyalankar, was the Principal of then famous "Tarinipriya Chattuspathi i.e. Gauripur Tol in common name". He had written many manuscripts for them also. But most of those were damaged by the devastating flood in the year 1988.

Accession no.:

Earlier all books are kept on a rack without any number or special marking. But, at present, under the guidance of N.M.M. a scientific way of accession number is adopted by the library.

Librarian:

As it is an Ethno Library, no formal librarian is appointed for the purpose. Principal 'Pathak' (the "reader") is supposed to perform the role of the librarian of the library. However, at any case, decision given by the Satradhikar is final. As per his verbal instruction, he has been taking care of the library. Hence, he may be regarded as the Ethno librarian of the library.

Issue of books to reader:

No book is allowed to take out from the Satra premises. Issue of books to reader: Neither any book can be hired from this library nor any book is allowed to take out from the Satra area. Normally none, except the designated readers of the Satras & Satradhikar himself, is allowed to read a manuscript. But, now a day, with special permission from the Satradhikar

or from the N.M.M one can go through any of these manuscripts. But in no case he or she will be allowed to take the manuscripts. It is for use within the Satra premises only. It follows the law of the Government.

Reading of books and knowledge distribution system:

The Satra had a very glorious past as far as knowledge distribution is concerned. It is trying its best in present days also. Satradhikars of this Satra often arranged scholar meet to discuss any special topic of reasonable value at the time concerned. Many ruled of this western part of Assam had asked for some suggestions at different time from the Adhikar of this Satra. One of such requesting letter is still present in the repository of the Satra. For the common people, at present, there is a monthly (Lunar Month) seating of knowledge distribution. Principal reader or any other reader deputed for the purpose has to go through a chapter of any predetermined book, and discuss its various aspects in present day's conditions. It may be mentioned that, normally the reader selects a printed book for regular use, but if any confusion appears he may seek the help of manuscript of the Satra. Another monthly seating (lunar month) is also going on but that is outside the Satra and normally no manuscript is taken to that seating. Some special days, other than the fixed monthly one may be selected by the Satradhikar for discussion. Normally he does it on the request of "Vakata"s of the Satra. One of its Satradhikar was Principal of ten famous "Taripriya Chatuspathi" commonly know as 'Gauripurtol'. He had wrote many manuscripts for the institution also.

Conservation process adopted:

The Satra, few years earlier, strictly adhere to the traditional process only. Some of these are like -- rapping of books by red or yellow cloths, use of Neem leaf, keeping them in diffuse sunlight twice in a year etc. Now a day, it has adopted modern scientific process of preventive and curative conservation. So the books are now rapped by acid free handmade paper, the books are supported with acid free mount-board for physical strength along with the earlier wooden hard board, use of Naphthalene (wrapped in cotton ball), Citronella oil etc. As far as curative conservation is concern, it is still in sunrise condition. The Satra has just tried its first tissue paper lamination (that too, on a printed book). Moreover, only a few are taken for Digital Photography (to make soft copy).

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Chief Editor: Dr. Hari Charan Das   **Email:** editorharicharan@gmail.com

Reproduction of manuscripts:

Before fifty years or so, there was a tradition to reproduce the manuscripts whenever the Satradhikar decided to do so. For this, they always kept some blank pages (Sanchipat, Tulapat or Paper) and ink (homemade) ready. There is a practice of keeping some of blank pages at the end of a manuscript which are for any further critical comment or if necessary it can be used in curative conservation of the manuscript. The Satra, as told by the Satradhikar, has planned to produce soft copies of all the manuscripts of their ethno library. But he also expresses that, as it is a time and money consuming matter the process is going very slow. Now a day, as most of the necessary reference books are available in the market, they have no any intention to reproduce it traditionally. Earlier, while reproducing a manuscript also during writing of a manuscript, a commonly rule was followed as far as possible. That is the rule of using less writing material. Because, it demands a lot of pain to produce a Sanchipat or Tulapat leafs. Here, an advice of Mahapurus Damodardev to his favourite disciple Bikuntha Prasad Bhattadev will probably explain the idea. He said -

"Kintu Etakhani   Bahu Katha Bhaile

        Puthio Haibe Bar;

Barhayakandar   Kathaka Likhite

        Lagibe Pat Bistar.

Eteke Ehak   Kahite Napari

        Nakoribakeho Yatna;

Sankhep Koria   Sar Matra Loia

        Kora Ktha Kabiratna. ---- Gurulila. Sloka No.606 (Dwija Ramraidas)

So, during reproduction of a deteriorated manuscript they keenly observed the folios of the original one and then they reproduce the necessary pages which became deteriorated.

Apart from the gurus, many students who wanted to become a scriber also, had to practice their best to develop the skill of writing on bark or leaf. This novice had copied a good number of manuscripts. Some of these are still in the repository of Satra.

Conclusion:

Form the above discussion, it can be concluded that Ethno libraries of Satras of Assam are well managed and serving the society to a great extent. Satra institute are major repository and major center for knowledge distribution, as well as they played the role of promoter of ethno culture. These libraries, though trying their best, may not be able to conserve the books, if not supported by any Govt. agencies. So, through this paper, we would like to draw the attention of National Manuscript Mission for assisting them either by cash or by kinds along with technical knowhow.

Reff.

1. Bhattacharya, Sirish Kumar –Asamar Satra Parichay –Auniati Satrar Santa Samaroh Udjapan Samiti.

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Chief Editor: Dr. Hari Charan Das   **Email:** editorharicharan@gmail.com

Importance of Ethno Library as Historical Resource and World Heritage

Dr. Sanghita Chakravarty
Asstt.Prof.
Dhubri Girls' College, Dhubri

Abstract:

A library is a place where books on different subjects, periodicals, manuscripts, records etc. are preserved for use. In ancient Indian civilisation libraries played very important role in providing knowledge towards the people who wished to have the essence of knowledge. For example, the universities of Nalanda, Takshasila, Shridhanyakuta etc. had libraries with very rich collection of books (manuscripts). In India, Sanchipat, Tulapat, Palm-leaf, Bhurja-patra etc. were used to write the manuscripts. Many manuscripts are still preserved in the ethno-libraries. The scholars can learn about the history, literature, politics, geography, science, mathematics etc. based on the documents preserved in these libraries. Though some of the manuscripts are edited and published, many remain unpublished and undiscovered. If these manuscripts are kept with proper care they can open a new door of knowledge towards mankind. Because of their contribution they are regarded as the world heritage.

Key words: Manuscripts, Ethno library.

A library is a place where books on different subjects, periodicals, manuscripts, records etc. are preserved for use and not for sale. Libraries are also regarded as cultural institutions or organisations that give access to knowledge and information towards the interested people. Libraries are also known as the preservers of the cultural heritage and identity of the communities they serve. Cultural heritage is based on the aspects of past that people cherish and want to pass to the future.

In ancient Indian civilisation libraries played very important role in providing knowledge towards the people who wished to have the essence of knowledge. For example, the universities of Nalanda, Takshasila, Shridhanyakuta etc. had libraries with very rich collection of books (manuscripts). These libraries were the source of information for the Acharyas and the disciples of the then society and they also contributed a lot towards the development of the subjects they concerned.

Traditional libraries are the collectors and conservers of the traditional knowledge system. From time immemorial they have been working to preserve the manuscripts written on

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different subjects. These libraries are the ethno-libraries. They provide the scholars adequate source of information about their concerned subjects which were preserved according to the traditional technology. So in order to know about the information preserved in the manuscripts one should know about the traditional conservation method of the manuscripts, for example it can be said that most of the manuscripts were kept very carefully so that moisture could not affect them. They were wrapped up with cotton-cloths. Many other preventive measures were also taken for this purpose.

In India, Sanchipat, Tulapat, Palm-leaf, Bhurja-patra etc. were used to write the manuscripts. Many manuscripts are still preserved in the ethno-libraries. Different kinds of manuscripts made up of Papyrus are conserved in different countries of the world. In China hand-made paper manuscripts are also preserved. All these are conserved using the traditional method because it is necessary to learn and apply the methods used in the then period to keep the originality of the document. Ethno-libraries are the sources of knowledge of the past society. The scholars can learn about the history, literature, politics, geography, science, mathematics etc. based on the documents preserved in these libraries. For example, it can be said that Bhasa, a renowned dramatist who was said to be flourished in the third century B.C. was mentioned by later poets like Kalidasa, Bana, Rajashekhara etc. But his works were not found for a long time. At last M.M. G. Shastri discovered these valuable manuscripts of the thirteen dramas of Bhasa in a temple (*math*) in South India. It can be said that the temples also serve as preservers of the manuscripts. These thirteen dramas of Bhasa are called Bhasanatakachakram where the evidences of the society and literature of the then period of time are reflected. In his *Harshacharitam*, Banabhatta describes the genealogy of the poet himself and the biography of Emperor Harshavrdhana. The work consists of eight chapters. In the seventh chapter of the work Bana has described about the friendly alliance between Harshavrdhana and Bhaskarvarman, king of Pragjyotishpur. Bhaskar Varman presented Harshavrdhana a white silk umbrella named Abhoga, which was an ancient heirloom   of   the   family   of   Bhaskarvarman- "chaturambhodhibhogabhutibhajanabhutasyadevasyasadbhavagarbhamapahayahridayameka manyadanurupamprabhritamevadurlabhamloke...

purvajoparjitamvarunatapatramabhogakhyamanurupasthananyasenakritarthikritametat"[1]

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[1]*Harshacharitam,* ed.by PathakaJagannatha,p. 383

He also presented different kinds of ornaments, gems, silken towels, soft loin-cloth smooth as birch – bark, carved boxes of panels for painting, with gourds, holding bamboo brushesetc. He also presented pustakas (books) with subhashitas written on them- *bhurjatvakkomalahsparshavatirjatipattikah,* *chitrapatanam* *cha bhradiyasamsamurukopadhanadinvikaran,priyanguprasavapinalatvanchichasanani... subhashitabhanjipustakani ... cha dantakandakundalani*[2]

The *Harshacharitam* of Bana is one of the earliest reliable references of the use of manuscripts in Assam. Thus it can be said that manuscripts of Assam acquired high esteem among the people of other states also. However in the later period also manuscripts on different subjects opened up newer sources of information for the people of different period of time.In the past these resources were kept as sacred *pustaka*in Satras, Namghars etc. These organisations also worked as publishers of the pustakas because the scribes used to copy the original manuscripts. The scribes were professionals who worked on this area. In the *Mahabharata* also mention of scribe is found. In Assam *Kalikapurana, Yoginitantra*, *Hastayurveda* etc. were composed and now a day's also the manuscripts can be seen though the printed form of these books are available. Manuscripts are the base of ancient knowledge. *Kalikapurana* and *Yoginitantra*are works on tantra. It is to be noted that Ahom king Rudrasingha composed a *Shivapurana* offering prayer towards Lord Shiva. The manuscript of this Purana is found. However it is different from the voluminous *Shivapurana* included in the eighteen Mahapuranas.

Though some of the manuscripts are edited and published, many remain unpublished and undiscovered. If these manuscripts are kept with proper care they can open a new door of knowledge towards mankind because of their contribution. They are regarded as the world heritage.

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[2]Ibid, pp. 386-388

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The Popular Binomial theorem

Apurba Kumar Roy[1] & Aktar Alom Ahmed[2]

1. Bilasipara Public H.S.School, Bilasipara- Dhubri-Assam-783348
2. Rokakhata H.S.School, Bilasipara- Dhubri-Assam-783348

Abstract:

The binomial theorem or binomial expansion describes the algebraic expansion of powers of a binomial. It is possible to expand the polynomial $(x + y)^n$ into a sum involving terms of the form $a\,x^b y^c$, where the exponents b and c are nonnegative integers with b + c = n, and the coefficient a of each term is a specific positive integer depending on n and b.

Keywords: binomial theorem, Pascal's triangle

Introduction:

There are several closely related results that are variously known as the binomial theorem depending on the source. Even more confusingly a number of these are variously known as the binomial formula, binomial expansion, and binomial identity, and the identity itself is sometimes simply called the "binomial series" rather than "binomial theorem."

The most general case of the binomial theorem is the binomial series identity

$$(x + a)^\nu = \sum_{k=0}^{\infty} \binom{\nu}{k} x^k \, a^{\nu-k},$$

where $\binom{\nu}{k}$ is a binomial coefficient and ν is a real number. This series converges for $\nu \geq 0$ an integer, or $|x/a| < 1$. This general form is calls the special case of this formula with $a = 1$ the binomial theorem.

This form of the identity is called the binomial theorem by Abramowitz and Stegun The differing terminologies are summarized in the following table.

"binomial theorem"	source
$(x + a)^y = \sum_{k=0}^{\infty} \binom{y}{k} x^k a^{y-k}$	Graham et al. (1994)
$(x + 1)^y = \sum_{k=0}^{\infty} \binom{y}{k} x^k$	Arfken (1985)
$(x + a)^n = \sum_{k=0}^{n} \binom{n}{k} x^k a^{n-k}$	Abramowitz and Stegun (1972)

The binomial theorem was known for the case $n = 2$ by Euclid around 300 BC, and stated in its modern form by Pascal in a posthumous pamphlet published in 1665. Pascal's pamphlet, together with his correspondence on the subject with Fermat beginning in 1654 is the basis for naming the arithmetical triangle in his honor.

Newton (1676) showed the formula also holds for negative integers $-n$,

$$(x + a)^{-n} = \sum_{k=0}^{\infty} \binom{-n}{k} x^k a^{-n-k},$$

which is the so-called negative binomial series and converges for $|x| < a$.

In fact, the generalization

$$(1 + z)^a = \sum_{k=0}^{\infty} \binom{a}{k} z^k$$

holds for all complex z with $|z| < 1$.

Among his many other talents, Major General Stanley in Gilbert and Sullivan's operetta *the* Pirates of Penzanceimpresses the pirates with his knowledge of the binomial theorem in "The Major General's Song" as follows: "I am the very model of a modern Major-General, I've information vegetable, animal, and mineral, I know the kings of England, and I quote the fights historical, From Marathon to Waterloo, in order categorical; I'm very well acquainted too with matters mathematical, I understand equations, both the simple and

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quadratical, About binomial theorem I'm teeming with a lot o' news-- With many cheerful facts about the square of the hypotenuse."

Objective of the Study:

- Create rows of Pascal's Triangle.
- Compute factorial values.
- Compute binomial coefficients by formula.
- Expand powers of a binomial by Pascal's Triangle and by binomial coefficients.
- Approximate numbers using binomial expansions.

Results and Discussion

A binomial is a polynomial with two terms Which is a shortcut method of raising a binomial to a power.

$(x+y)^0 = 1$

$(x+y)^1 = x+y$

$(x+y)^2 = x^2 + 2xy + y^2$

$(x+y)^3 = x^3 + 3x^2y + 3xy^2 + y^3$

$(x+y)^4 = x^4 + 4x^3y + 6x^2y^2 + 4xy^3 + y^4$

$(x+y)^5 = x^5 + 5x^4y + 10x^3y^2 + 10x^2y^3 + 5xy^4 + y^5$

The followong points are noticed after looking at the expansion

- There are n+1 terms in the expansion of $(x+y)^n$
- The degree of each term is n
- The powers on x begin with n and decrease to 0
- The powers on y begin with 0 and increase to n
- The coefficients are symmetric

Pascal's Triangle, named after the French mathematician Blaise Pascal is an easy way to find the coefficients of the expansion.

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Each row in the triangle begins and ends with 1. Each element in the triangle is the sum of the two elements immediately above it.

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                          1
                     1         1
                1         2         1
           1         3         3         1
       1        4         6         4        1
     1      5        10        10        5        1
   1     6       15       20       15       6       1
 1    7      21       35       35      21       7       1
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The coefficient a in the term of ax^by^c is known as the binomial coefficient or (the two have the same value). These coefficients for varying n and b can be arranged to form Pascal's triangle. These numbers also arise in combinatorics, where gives the number of different combinations of b elements that can be chosen from an n-element set.

Combinations are a brief summary to get the Binomial Expansion Theorem. A combination is an arrangement of objects, without repetition, and order not being important. Another definition of combination is the number of such arrangements that are possible.

$$_nC_r = C(n,r) = \binom{n}{r} = \frac{n!}{(n-r)! \cdot r!}$$

The n and r in the formula stand for the total number of objects to choose from and the number of objects in the arrangement, respectively.

Each element in Pascal's Triangle is a combination of n things. The value for r begins with zero and works its way up to n. Or, because of symmetry, you could say it begins with n and works its way down to 0.

Let's consider the n=4 row of the triangle.

$^4C_0 = 1$, $^4C_1 = 4$, $^4C_2 = 6$, $4C_3 = 4$, $^4C_4 = 1$

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Chief Editor: Dr. Hari Charan Das   **Email:** editorharicharan@gmail.com

Notice that the 3rd term is the term with the r=2. That is, we begin counting with 0. This will come into play later.

The Binomial Expansion Theorem can be written in summation notation

$$(x+y)^n = \sum_{k=0}^{n} \binom{n}{k} x^{n-k} y^k$$

Since the lower limit of the summation begins with 0, the 7th term of the sequence is actually the term when k=6.

Conclusion:

The binomial theorem describes the algebraic expansion of powers of a binomial. Pascal's Triangle method explained easily to find the coefficients of the expansion. This theorem is useful in algebra as well as for determining permutations and combinations, and probabilities.

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