

Feature Article



What an Idea!

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Abstract

An idea has the power to change human life. Idea is the starting point for any invention / discovery / historical event / innovation. It is the responsibility of Research and Development institutions/ industries to make those ideas useful for human being.

Key Words: Idea, invention, discovery, historical event, innovation.

Introduction

“George de Mestral was a boy living in Switzerland. He loved the outdoors and he also loved inventing. As George grew up, he was often in the forest areas for hunting and walking. He would be annoyed by the burrs that stuck to his pants and his dog’s fur. He wondered why the burrs stuck so well. By examining the burrs, he discovered that burrs had hundreds of tiny hooks that grabbed into loops of thread or fur. George worked on the idea on how the concept of the burrs could be used. George took this idea to create what we know today as Velcro” [1].

“The idea for Post it Notes came about when Arthur Fry, an engineer at 3M Company, was day dreaming in the Church, thinking how annoying it was that the bookmarks he had placed in his hymnal so frequently fell out. He then remembered one of his colleague’s talks about the new glue he had developed: a paste so feeble that it could barely hold two pieces of paper together. That weak glue, Fry suddenly thought, that it might have help him to create the perfect bookmark, consequencing the development of Post it Notes” [2].

Very few of us remember a time when there were no ATMs and withdrawing money was a monthly affair involving writing cheques and filling up forms. John Shepherd Barron – born in Shillong, raised in Britain and employed with a banknote printing specialist – was lying in his bathtub after failing to deposit a cheque at the bank. It was too late for the day. When he began wondering, why not have a cash machine on the lines of a chocolate machine? He sold the idea to Barclays Bank and the first ATM started on June 27, 1967 in Enfield of London [3].

The new symbol for the Indian rupee was designed by an architect D. Udaya Kumar of Tamil Nadu. His moment of fame came in 2010 when the Reserve Bank of India accepted the symbol made by him having the idea – “integrating the best of International design creativity with a distinctive Indian flavor.” [4].

The Big Bang of Ideas

Some child in ancient times must have said, as he watched a bird soar up in the sky, “If only I could fly like that!” Obviously his elders would have laughed, hearing this. But it was the birth

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of an idea that inspired generations to come, through the efforts of the Wright brothers.

An idea is invisible and weightless, having no material substance. And yet it has the power to change your life or even the course of history.

Any invention, discovery or historical event had its origin in a spark of thought that developed into an idea. There are some path-breaking ideas that changed the way we live.

Some Path Breaking Ideas That Changed the Way Humans Live [5]

Sl. No.	Ideas	Who discovered/invented	Remarks
1	Invention of tool	Earliest ancestors	Life of earliest man changed.
2	Discovery of fire	Early man	It is an important milestone.
3	Wheel	Early man	One of man's greatest inventions.
4	Agriculture	Early man	It changed man's way of life many ways.
5	Weapons	Early man	Initially, it is used for hunting.
6	Recording time	The ancient Sumerians and Egyptians	—
7	Herbal medicines	Early man	Ayurveda is the most ancient of all healing system.
8	Phoenician alphabet (Symbols impressed on clay)	The ancient Sumerians and Egyptians	It is called the ancestor of all modern western alphabets.
9	Writing on papyrus	The ancient Egyptians	Papyrus is a type of paper made from reeds.
10	Language	Early man	It was important step in human development.
11	Geometry	Egyptian	Geometry fired man's imagination to a new height of creativity.
12	Calendar development	Egyptian	It helped the development of civilization.
13	Democracy	Athens	In 508-338 BC, Athens formed a government called demokratia.
14	Irrigation	Ancient Egyptians	Egyptians trapped Nile river water for this purpose.
15	Bricks	Middle East	Around 3500 BC, the bricks were made heating clay in a kiln.
16	Theory of planetary system	Greek philosopher Pythagoras	The Pythagoras theory was stepping stone that space went on forever and was infinite.
17	Zero (nothing)	Ancient Indian mathematician	It is India's great contribution to civilization.
18	Glass	—	Glass was probably invented around 3000 BC.
19	Cotton	Indus valley civilization	It is fabrics from plants.
20	Gunpowder	China	The discovery of gunpowder changed warfare.
21	Lamps	Ancient Greek	It was light for the night.
22	Anatomy	Greek doctor Herophilus	It is study of our body structure.
23	Printing press	Gutenberg	Invention of printing press had spread knowledge and education.

Sl. No.	Ideas	Who discovered/invented	Remarks
24	Telescope	Galileo	It opened a new way of thinking about the solar system.
25	Microscope	—	It was a path-breaking invention.
26	Newspapers	Ancient Rome	'London Gazette' is first true newspaper.
27	Electricity	Benjamin Franklin	Franklin gave idea that electricity had positive and negative elements.
28	Basic laws of motion	Issac Newton	Newton is considered one of the most influential scientists of all time.
29	Industrial revolution	England	The Industrial revolution changed the world rapidly.
30	The Wealth of Nations	Adam Smith	Adam Smith is called "the father of modern economics".
31	Rubber	South America people	It has much affect on human development.
32	Steam engine	George Stephenson	It is considered to be engine that drove the Industrial Revolution.
33	Genetics	Gregor Mendal	The discovery of scientific method opened the way of work in Genetic.
34	Origin of Species	Charles Darwin	It is a blueprint of how the present life came.
35	Radio	Marconi	Radio has proved to be a historical and social landmark!
36	Gramophone	Emile Berliner	This idea paved the way for multimillion dollar based recording industry.
37	Germ theory	Anton Van Leeuwenhoek	The discovery was a path breaking one for medicine.
38	Electric bulb	Thomas Edison	It had one of the greatest impacts of any invention ever created.
39	Airplane	Wright brothers	Human's dream of flight came true.
40	Diesel engine	Rudolf Diesel	It had multifarious applications.
41	Atomic energy	Enrico Fermi	The constructive purpose of its use is very much helpful for humankind.
42	Artificial refrigeration	William Cullen	It has drastically changed the food production industry.
43	Theory of relativity	Albert Einstein	It paved the way for the production of atomic energy and the atomic bomb.
44	Plastic	Alexander Parkes	Plastics have truly changed the world.
45	Vaccines	Dr. Edward Jenner	It saved the world by eradicating many deadly diseases.

Sl. No.	Ideas	Who discovered/invented	Remarks
46	Telephone	Alexander Graham Bell	It has made distances seem less and the world seems smaller!
47	Television	John Baird	It has sparked revolutions in entertainment.
48	Computer	Charles Babbage	It is useful in all walk of human life.
49	Genetic engineering	Stanley Cohen and Herbert Boyer	It has given us the power to alter the very basis of life on earth.
50	Non-violence	Mahatma Gandhi	It is an inspiring philosophy.
51	SMS	Neil Papworth	'Merry Christmas' was first text in SMS.
52	WWW	Sir Tim Berner	It contributes greatly to the creation of an ever-increasing global information database.
53	Mobile phone	ATT and Bell Labs	It is only one item without which modern human being can not live.
54	Artificial Intelligence	—	It is a branch of science which is making machines thinks like humans.
55	Human Genome Project	—	It is an awesome endeavour.

Characters of Idea Generating Person

The capacity to generate clever or ingenious products, solutions and techniques exist in all human beings. Creative people try to perceive problems and solutions in a different way. Before doing so, they examine alternative possibilities from many angles. Creative people take risks and frequently push the boundaries of their perceived limitations. Furthermore, they are open to criticism as well as to the judgement of others to refine their techniques.

Idea is all around us. However, we have to be conditioned to think that unless we have developed mind-boggling creative ideas, we are not creative.

Characters of idea generating person [1]:

- Is willing to take risks.
- Has a broad range of interests.
- Questions frequently.
- Is curious and inquisitive.
- Can combine ideas from different domains.
- Is not afraid to deviate from popular thinking.
- Is playful.
- Displays fluency of ideas.
- Tolerates ambiguity.

- Is open to continuous learning.
- Engages in problems-finding.

Characteristics of Creative individuals [6], [7]:

- They can think differently.
- They have confidence in themselves and the system.
- They are persistent.
- They are curious by nature.
- They love to experiment.
- They have the ability to connect with other peoples and other ideas.
- They are open to new ideas.
- They look forward to change.
- They have wide ranging interests.

Anyone can Innovate

Ideas and imagination are the starting point for innovation. Idea starts with asking new WHAT, new WHO, new HOW, new WHERE, new WHEN, new WHY. Look at the existing obstacles and problems for successful ideas. All great ideas begin with obstacles and problems. Think of resolving the problems in an unconventional manner.

Dabholkar & Krsihnan [4] have mentioned

that anyone can innovate, everyone can give ideas. They have mentioned in their book some path breaking ideas which changed India as follows:

Sl. No.	Name of the idea	Who gave the idea
1	India's new symbol for the rupee	D. Udaya Kumar, Tamil Nadu
2	Re-design of wet-grinders (used to make batter for idilis)	Thiyagarajan Ramaswamy
3	Rail track inspections using ultrasound transducers	Anandraj Sengupta
4	Super 30	Anand Kumar, Bihar
5	Replacing gold-headed transistors with nickel headed one	Nagaraj
6	Deskilling of the mould setting process	Titan Industries Jewellery Manufacturing Division.
7	Shaadi.com	Anupam Mittal
8	Red Bus (Online Bus Ticketing Platform)	Phanindra Samma, Karnataka
9	Husk Power System (HPS)	Gyanesh Pandey, Bihar
10	Nano	Tata Motors
11	Aravind Eye Hospital	Dr. Venkatswamy
12	Reva Electric Car	Chetan Maini

Radjou, Prabhu & Ahuja [8], in their book 'Jugaad Innovation' have mentioned some ideas like those:

Sl. No.	Name of Idea	Who gave the idea
1	Big Bazaar	Kishore Biyani
2	Suzlon (Wind energy solution)	Tulsi Tanti
3	Bicycle for bumpy road	Kanak Das, Assam
4	SELCO (Solar Energy)	Harish Hande
5	Adopting contact farming	Anil Jain, Jain Irrigation Systems Ltd.
6	Narayana Hrudayalaya	Dr. Devi Shetty
7	Khan Academy	Sal Khan

Big Ideas by Women

Sunday Times on its edition on International Women's Day [9] had mentioned some ideas invented by women (excluding famous name

of Madam Curie – radium, Dorothy Crowfoot Hodgkin – Vitamin B₁₂, Getrude Eliot – *E. leukemia* fighting drug 6–mercapto). The following everyday things have been invented by women:

Sl. No.	Product	Invented by	Remarks
1	Disposable diapers	Marion Donovan	In 1951, she sold first diaper in New York. Pampers was born in 1961.
2	Square bottom paper bags	Margaret Knight	Shopping concept changed forever.
3	Liquid whitener	Bette Nasmith Graham	She spent hours in the kitchen perfecting the formula.
4	Foot-pedal trash can	Lillian Gilbreth	She also invented shelves inside a refrigerator in the early 1900.
5	Windshield wiper	Mary Anderson	There weren't many takers initially. People thought it was safer to drive on in rain than pull a lever.

Sl. No.	Product	Invented by	Remarks
6	Scotchguard	Patsy Sherman	It was happened in an accident. Patsy noticed that fluorochemical rubber spilled on a Lab Assistant's shoe would not come off. But the stain repelled water, oil and other liquid without changing the color of shoe.
7	Retractable dog leash	Mary A. Delaney, New York	Patented in 1908.
8	The Dishwasher	Josephine Cochrane	Patented in 1886.
9	Circular saw	Tabitha Babbitt, New York	Not patented.
10	Folding cabinet bed	Sarah Elizabeth Goode	—
11	Alphabet blocks	Adeline DT Whitney	Patented in 1882.
12	Submarine telescope and lamp	Sarah Mather	—

Idea Management Process

One of the key components of the innovation programme is the “idea management process”. Mentioned below [4] are six levers of idea management systems.

- (1) **Source** of ideas.
- (2) **Scope** of ideas.
- (3) Different **stages** an idea has to go through before it is implemented.
- (4) **Technology** involved in collecting, storing, searching and presenting ideas.
- (5) **Selection** of ideas.
- (6) **Sponsorship** for the selected ideas.

The minds of idea giving persons should have associated with the following interlinked elements [6]:

- A clear and deep understanding of customer value.
- Superior technical skills.
- Strategic networks.
- An innovative entrepreneurial business environment.

The main driving forces, however, are scientific curiosity and the urge to achieve or create something new.

Idea Barriers

Initially, there was anxiety in the minds of people. A person asked himself – “Will my idea

be worthy of an innovation? What will others say if my idea is not selected? What will my boss say? Should I focus on the big idea or emphasize on small idea?” Every idea thinking person faces the challenge of getting support for his idea.

This challenge can be overcome by low cost experimentation and demonstration. Every idea carries a risk with it. But, if we are afraid of going to encounter failure then we cannot succeed in creating new ideas.

The idea sometimes has to face much adversity ahead like

- (a) **A worsening global economy:** Due to this factor, demand of ideas fails to pick up.
- (b) **An avalanche of new regulations to come:** These regulations place further constraints on business.
- (c) **Tectonic shifts in demographics:** Firms come under pressure to meet the various requirements of heterogeneous customer base having low disposable income.
- (d) **The social computing revolution:** The explosive growth of social media networks which enable informal grassroots interactions among crores of users worldwide is challenging the corporate world's own approaches to ideas.
- (e) **Unforgiving competition from emerging markets:** One large cost-based idea faces

stiff competition from low-cost rivals in emerging markets.

- (f) **Scarcity of capital:** As the financial resources in emerging markets are limited, banks are conservative and investor networks are under-developed, the idea giving persons cannot afford to invest in capital intensive R & D equipment.
- (g) **Idea entrepreneurs face a scarcity of qualified talent:** Only a small percentage of huge population-based countries have qualified professionals who can deploy as emerging market entrepreneurs.
- (h) **Idea innovation face a scarcity of infrastructure:** It becomes difficult to get goods and services from distant places in a time bound fashion due to limited transportation facilities.

Beneficial Aspects of Idea

- To improve human-being.
- To sustain and push economic growth.
- To gain competitive advantage.
- To reduce cost of production.
- To exploit opportunities.
- To improve past performance.
- To improve convenience.
- To ensure business survival.

Sources of Idea

Henry Ford hired an efficiency expert to go through his plant. He said, “Find the non-productive people and I will fire them!” The expert made the round and returned to Henry Ford’s office with his report. “I’ve found a problem with one of your administrators” he said. “Everytime I walked by, he was sitting with his feet propped up on the desk. The man never does a thing. I definitely think you should consider getting ride of him.” When Henry Ford learned the name of the man in question, Ford shook his head and said, “I can’t fire him. I pay that man to do nothing but think and give ideas.”

Ideas mainly come from either individuals or groups. A progressive organization actively seeks ideas for change through group discussions and brainstorming sessions. But there may be other sources too. According to a study, the relative

percent contributions are as follows:

Specialists	—	11
R & D teams	—	9
Competitors	—	5
Employees	—	30
Customers and market intelligence	—	45

Overall, individuals remain a prime source of creative ideas. It is observed that most creative people are not cleverer than their colleagues in any field. They just have the capability of choosing the right ideas and working on them.

The creative process consists of the following six phases (i.e. called ICEDIP phases) [10]:

Inspiration: This phase enables you to generate a large number of ideas.

Clarification: In this phase, you focus on your goals. The purpose or objective of the work is clarified. In this phase, you are being strategic and logical and focusing on how the finished work will look.

Distillation: It is a self critical phase, in which you look through the ideas you have generated and try to determine which ones to work on.

Perspiration: This is the phase in which you work determinedly on your best ideas.

Evaluation: In the evaluation phase, you examine your work for strengths and weaknesses.

Incubation: In which you leave the work alone, though you still ponder about it occasionally, leaving it “on the surface of your mind”.

For this, you have to follow top 3 things [11]:

- (a) **Follow you heart** - Do what you have idea for you will strive to do your very best.
- (b) **Do your very best** - No matter what your current situation is, strive to do your best as that will take you places that you never imagined.
- (c) **Have relentless curiosity and excitement for learning** - That’s the best way for you to stay ahead and reach your full potential.

Documentation of Idea

Ideas fly because it is the nature of idea to fly. In every organization there are ideas that fly around, needs to be captured. An efficient

organization should have a method of keeping a record of what is useful. Some may hide their knowledge regarding it as something of special value. Others may be reluctant to share their knowledge because either they are not sure about what they know or they may not be capable of expressing their knowledge. In many organizations, some knowledge disappears when an employee leaves the organization or retires. Therefore, documentation has great practical utility in almost every activity of human life.

Therefore, we need to accept that not all good ideas end up as success stories. According to [12] – some initial 3000 research ideas may ultimately lead to only one commercial success. Raw ideas (3000) – Submitted ideas (300) – Projects initiated (125) – Large Developments (9) – Major developments (4) – Commercial launches (1.7) – Commercial success (1). This is the figure from Ideas to Commercial Success.

The Research and Development Division of an Industry or Laboratory dedicated to R & D are supposed to be the main source of new ideas to be developed into innovation. Therefore, these need to be nurtured carefully.

Catchy Slogans of Brands are Brainchild of Ideas

A brand is a name or trademark connected with a product to make consumers trust the product. After the industrial revolution, factories generated mass produced goods and needed to sell them to wider markets. These packaged goods found it difficult to compete with the local products. The manufacturers wanted to convince the customers that the mass-produced goods could be trusted as well. The idea of catchy slogan of brand came out to increase the consumer's familiarity with the products.

Popular Advertisement Slogans of Products

Sl. No.	Product	Advertisement slogan
1	Amway	Better ideas better life
2	IBM	Solutions for a small planet
3	DHL	We keep your promise
4	BMW	The ultimate driving machine
5	Canon	See what we mean
6	Haier	Inspired Living
7	Nike	Just do it
8	GE	We bring good things to life
9	Apple	Think different
10	Toshiba	Choose freedom
11	Sony	Like. No. Other.
12	Fiat	Driven by Passion
13	Ford	Build for the road ahead
14	LG	Life's Good
15	Philips	Sense and simplicity
16	Walmart	Always. Low prices. Always
17	Peter England	Beginning of Good Things
18	KFC	It is finger lickin' good
19	Nestle	Good food, good life
20	Symphony	India ko RakheCooler
21	NIKON	At the heart of the image
22	Haldiram	Great food Great time
23	Taj Holidays	It stays with you
24	Prestige	Jo Biwi se Kare Pyaar, Wo Prestige Se Kaise Kare Inkaar

Sl. No.	Product	Advertisement slogan
25	Mother Dairy icecreams	Real good
26	IBM	Striving for Excellence
27	Peter England	More is less
28	McDonalds	i'mlovin, it
29	PARAS Milk	Jine ka Swad
30	Hamdard medicines	Health, Happiness, Hope
31	Dollar thermal wear	Hot Hai Boss
32	Reebok	Live with Fire
33	HCL	We touch lives
34	Aakash Tutorial	i can and i will

Start Up: Outcome of India

Do you have an idea? Do you want to innovate? Do you think you can use technology in a novel way and set up an enterprise of your own? Government of India has launched comprehensive mechanism to help all those wanting to set up their own start up and not look for jobs endlessly.

A start up relates to “working towards innovation, development or commercialization of a new products, processes or services driven by technology”. The “Start Up India Campaign” is a long-awaited dream of a youthful nation to realize its potential of creativity, ideas and innovation [13].

The P.M. of India, Shri Narendra Modi had in his Independence Day speech for 2015 announced the ‘Start up India’ initiative. Dr. Edward de Bono, global guru on creative thinking, when he visited India, had said “The intelligence level of Indians is high but that is not enough. What does matter is how you use it. You do not need to be a genius to think creatively..... From the information age we are moving to the idea age. So, what we need is creative thinking to look beyond the future” [14].

Some companies are increasingly trying to generate cutting-edge ideas. Government of India has launched a new idea platform for Indians – mygov.nic.in, a place where Indian citizens can share ideas and act upon them.

What They Have Said About Idea

“The most exciting phrase to hear in science, the one that heralds new discoveries, is not ‘Eureka!’, but ‘that’s funny.....’

—Issac Asimov

“I am grateful to the innovative thinkers who came before me, and I admire the innovators who have followed.”

—Issac Newton

“Invasion of thousand armies can be halted, but not an idea whose time has come.”

—Victor Hugo

“Big ideas come from forward thinking people who challenge the norm, think outside the box, and invent the world they see inside..... rather than submitting to the limitations of current dilemmas.”

—Arthur C. Clarke

“The world is moving so fast these days that the man who says it can’t be done is generally interrupted by someone doing it.”

—Elbert Hubbard

“Invention was often an act of recombination, of compounding an idea or transposing it from one field to another.”

—Philosopher David Hume

“People who are crazy enough to think that they can change the world are the ones who do.”

—Steve Job

“Screw it, let’s do it! Do not let your ideas remain ideas. Try them out without bothering about the consequences. Do not care about the naysayers; they will eventually be proved wrong when you are proved right.”

—Richard Branson

“The new idea either finds a champion or dies.”

—Professor Donald Schon, MIT

“If you can imagine it, you can do it.”

—Walt Disney

“The nurture of creativity has become a matter of life and death for any society.”

—Arnold Toynbee

“A good idea is worth one dollar. The plan for implementing that idea is worth a million dollar.”

—Laurie Berth Jones

“Every great idea in science has issued from a new audacity of imagination.”

—John Dewey

“I want to see the idea and the spirit of startups light up the economies and the fortunes of people in India.”

—Narendra Modi

“Great ideas will visit you only once. You’d better capture them or you’ll lose them forever.”

—Author Unknown

“When the idea for the Laser came to me, I was sitting on a park bench thinking....Why haven’t been able to do this? Suddenly, I got this new idea.”

—Nobel laureate Charles Townes

“If you have an apple and I have an apple and we exchange these apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.”

—George Benard Shaw

CONCLUSION

A country can experience sustainable growth on the basis of scientific and technological progress. Technologists and scientists are by no means the sole source of ideas. Even, when the mass

of innovative ideas possessed by country’s many countless grassroots innovators are harnessed, improved and given shape so as to produce tangible outcomes, the country begins to progress. It is the task of institutions of modern science and technology, university, the industry to mould the ideas and make them relevant and meaningful to today’s and tomorrow’s world.

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