

एक थी चिड़िया

THE UNTOLD STORY OF LOST LEGACY



POWERING INDIGENOUS INTELLECT

"समुत्कर्षनिःश्रेयस्यैकमुग्रं परं साधनं नाम वीरव्रतम्।
तदन्तः स्फुरत्वक्षया ध्येयनिष्ठा हृदन्तः प्रजागस्तु तीव्रानिशम्॥”

The only best means of attaining such high spiritual happiness and such great spiritual prosperity is to keep the spirit of fierce bravery burning in us forever. May the spirit of intense and unbroken devotion keep burning in our conscience.

असतो मा सद्गमय ।
तमसो मा ज्योतिर्गमय ।
मृत्योर्माऽमृतं गमय ॥

Lead me from unreal to real, from darkness to light and from death to immortality.

जननी जन्मभूमिस्त्वं स्वर्गादपि गरीयसि

Mother and Motherland are like heaven

INTELLECT: EVOLUTION OF MANKIND

Intellect is the only factor that keeps human on top level of ecosystem and pyramid of life. The creator of universe has given life to all creatures, however, only human has been able to develop the entire amenities to live and survive in a better manner on earth. Human civilization has witnessed sporadic growth from a nomadic life to a luxurious one just because of the "Intellect". The theories of law of dominance and survival of fittest couldn't have been inferred without human intellect. The human intellect has taken a major role during struggle for existence of the mankind.

India has been a land of sages, gurus, skills, art, rich knowledge, and cultural heritage. The royal courts have included these sages, gurus, and artisans, proudly as Jewels or Navratnas. This was the era of Glorious India. With time, this centre of knowledge, skills and innovations shifted to western part of the world. Our indigenous skills gradually got replaced by machines which are entirely of foreign origin. Eventually, the shine of Golden Sparrow started fading and got lost somewhere, and somehow, we too started undermining our own skills and rich cultural heritage.

To understand the knowledge shift from East to West and terrible loss of our Golden Sparrow, we can divide the development stage of mankind into series of historical events and correlate with role of intellect in such development. There was an era when man first discovered fire, and then invented the wheel. These two modules of nomadic life have played a major role in bringing us to the topmost position of pyramid. From Early Vedic age to epic age and thereafter from ancient age to medieval age to modern age, mankind has utilized all his intellect and survived from generations to generations and provided us the beautiful world to live in. India too achieved the Golden era and developed many technologies that laid the actual foundation of current era of civilization.

However, while the world was participating in development journey, somehow we lost the sheen of our golden bird and consequently, the contribution of Indian intellect towards growth of civilization and mankind did not find its due credit in the history narrated to us.

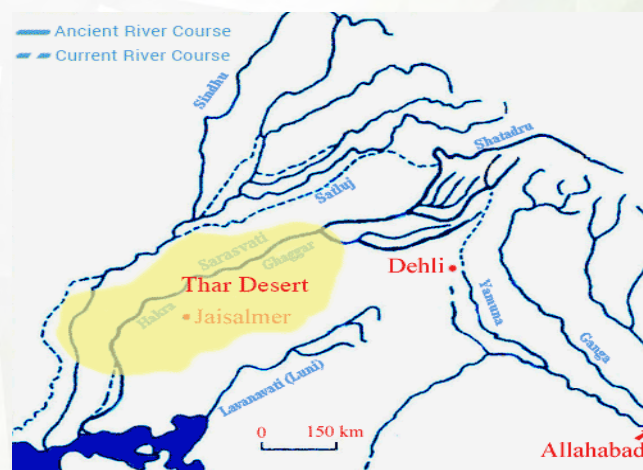
Pre Vedic	Vedic	Ancient Age	Medieval Age	Modern Age
4000-1500BCE	1500-600BCE	600 BCE to 476 AD	5 th -15 th AD	15th AD onwards

PRE VEDIC IMPACT

The major milestone achievement of this era was development of earliest civilizations, and initiation of establishment of localized colony formation from nomadic modalities which developed between 4000 and 3000 BCE, with the rise of agriculture and trade allowed people to have surplus food and economic stability. Due to surplus food and stability, people started working in diverse array of professions and interests to flourish in a relatively confined area. As per history, Civilizations first appeared in Mesopotamia (what is now Iraq) and later in Egypt. Civilizations thrived in the Indus Valley by about 2500 BCE, in China by about 1500 BCE and in Central America (what is now Mexico) by about 1200 BCE. Civilizations ultimately developed on every continent except Antarctica.

However, as per Hindu mythology and belief, the Mount Kailash, is the point of origin of life and

world's greatest stories and civilizations have their origin right here from Mount Kailash. We can not imagine a life without water and from this mountain four rivers- the Indus, the Sutlej, the Brahmaputra, and the Karnali (a tributary of the Ganga)- flow down and outwards and laid the very basis of development of all civilizations that grew on banks of these rivers and slowly spread to entire world. As a proof, the symbol Swastika is not merely a symbol; it represents origin of life and civilization through flow of four rivers from an elevated point. Even today, the Mount Kailash is considered a sacred place in four religions- Bon, Buddhism, Hinduism, and Jainism. However, these proofs were not considered worth mentioning by historians, and they have written the story that Aryans moved from Iran to India in 3400BCE and colonized Indus Valley Civilization.



VEDIC IMPACT

The value of human intellect was well recognized and appreciated by the rulers of Vedic time. They were fully aware that intellect has no limitation, intellect was truly independent of caste and creed, and equally valuable. Hence, they started recognizing the intellect and based on the ability certain people had great societal position and value in the period. We have many examples and India is known for valuing those intellect where sages, gurus, scholars, and Navratnas have had control or substantial influence on the decisions made by the then rulers of the dynasty. Some of the great intellects of Vedic and ancient time include Ved Vyas, Parshuram, Dronacharya, Valmiki, Vashishtha, Vishwamitra, Brihaspati, Shukracharya, Chanakya, Aryabhata, and many others who had great importance in the growth of ancient dynasties and civilization. It is worth considering that Intellectual Property Rights were existent during that time but not in the same sanity and modalities as we understand and recognize them in current era.

Though the origin of the concept of patents for

invention or overall intellectual property rights is ambiguous but the reasoning of such introduction is very evident. Many ancient civilizations have encountered with sudden destruction of entire civilizations, Mohenjo-Daro, Harappa, war of epic Mahabharata, Kalinga War, and destruction of Nalanda University are some of those events of mass destructions of intellect as well as civilizations. Thereafter, civilization had to re-invent the wheel again and again to regain the previous status. The reason is very evident, if we had a system of disclosure, documentation, and reward of intellect on that era, the current civilization would have grown much earlier with great thought and sanctity. Guru Dronacharya was bound with societal limitation of that era where he was to teach the great technologies only to certain clan/race and hence did not document the great intellect for the mankind to come. Maybe, Eklavya could have saved his thumb had there been a patent system available during that period! The result is very evident that the current era is still struggling to regain the same nature and stature of technology that they had developed and subsequently destroyed during the epic war of Mahabharata.



RISE OF EAST

The Vedic scripts mention many technologies from basic nature to advanced ones. They developed tools, means for transport, dyeing, clothing, ornament, smelting, weaving, embroidery, metallurgy, basic to divine weapons, and many more as per the need of the civilization. The holy books Rigveda, Samaveda, Yajurveda, Atharvaveda, Ramayana, Mahabharata and Upanishads have been written in this era which are representatives of rich knowledge and cultural heritage of India and still so far not achieved by any other civilization. Rishi Sushruta in 6th century BC mentioned about leprosy, cataract surgery, rhinoplasty etc. and is called the father of plastic surgery and general surgery. Rishi Charak contributed to Ayurveda system of Medicine and is author of Charaka Samhita. Rishi Panini made several discoveries in the field of phonetics, phonology, and morphology. Pingala, the great mathematician gave binary numbers very much similar to Morse code in current times. Pingala's work also contains the basic ideas of what we now know as Fibonacci numbers and a presentation of the Pascal's triangle.

In this era, many books were published in Sanskrit which have fundamentals of science and technology, like Yantra Sarvaswa, Samarangana Sutradhara, Silpitantra Rahasya, Yukti Kalpataru etc. Many terms can be found in Panchabuta and Suddha like- Gurutva (gravity), Dravatva (fluidity), Snigdhata (viscosity), Sthitishpakatva (elasticity), Samyoga – Viyoga (Conjunction and disjunction), Pluakava(Springing capacity), Vakrbhvanam

(Refraction or bending), Virpam (deformation), Draghanam (tension), and Pranam (compression). Baudhayana which contains examples of simple Pythagorean triples. The earliest text, Vedanga Jyotisa has connections with Indian astrology and details several important aspects of the time and seasons, including lunar months, solar months, and their adjustment by a lunar leap month. Ritus and Yugas are also described in detail in this book. Hindu calendar, Panchang, dating system has been used in India from about 1000 BCE and still being used to establish dates and celestial positions where NASA has spent billions of dollars to correct the same. The world's first University was established in Takshila or Taxila or Takshashila (now in Pakistan) in 700BC. It was an important Vedic/Hindu and Buddhist center of learning.

Though the basic technology in tangible form was easy to reproduce however the advance was not documented and process of making such technologies were not preserved due to lack of intellectual protection system and may be due to divine and highly confidential practice. But there is no doubt that the Vedic era too was ruled by the human intellect and especially by Indian civilization as we are witnessing in current era.



ANCIENT IMPACT

Ancient time impacted a lot in development of technology and proliferation of human intellect and IP system. There is reasonable evidence to suggest something similar to a patent system was used among some ancient Greek cities, although it is generally acknowledged by historians that the first informal patent system originated in medieval period. This period too ruled by human intellect where glorified India was documented in every instance. Takshila and Nalanda during Maurya period to Gupta dynasty rule, have explicitly displayed great intellect that contributed towards the proliferation of a civilized and knowledge based society.

Chinese experimented flying kites and Ancient Egyptians invented lighthouses, including the huge Lighthouse of Alexandria. This period has added clock, the concept of steam engine and turbines, paper, steel, concrete, and others. The great Archimedes invented the screw pump for moving water and other materials. In India, cotton was produced in great quantity while woolen clothes and blankets were produced during Mauryan Period. Silken clothes were imported from China. Gold, silver and iron were heavily utilized by the people during this civilization. The carpentry was a very common industry where

the carpenters were engaged in building boats, canoes, ships and chariots. The trade was on peak with all agriculture, mining, textile, and handicraft items locally produced in India and traded with other civilizations like Hebrews, Greece, Rome, and Egyptians.

The concept of hospital has been given this era. Innovation was on peak in each and every industry where human intellect developed many household items, luxurious jewelry items viz. kuntalam, kandikai, rings, bangles, anklets have been invented and traded. Metal currency started minting in India before the 500 BCE, being made of silver and copper, bearing animal and plant symbols on them. Zinc mines of Zawar, near Udaipur, Rajasthan, were active during 400 BCE. The Iron pillar of Delhi was erected at the times of Chandragupta II Vikramaditya (375–413), which still stands without rusting. This period is known as “Golden Age” in the history of India and the tag “Golden Sparrow” was adhered with glorified India for their intellect.



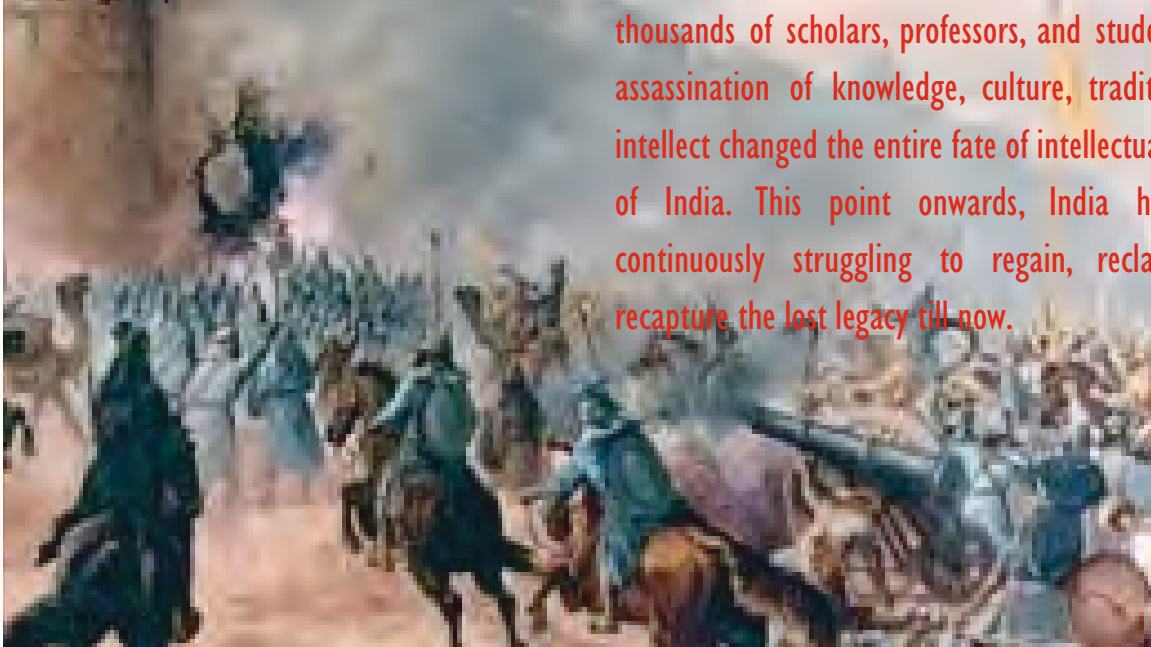
MEDIEVAL IMPACT

The early medieval period carried forward the legacy of glorified India. Nalanda was founded by the Gupta emperors in the early 5th century and then expanded over the next 7 centuries. In this period (5th century AD, Gupta Era) Aryabhata developed the algebraic theories and other mathematical concepts including the value of pi and calculated the length of the solar year to 365.8586805 days. The Ajanta Caves yield evidence of a single roller cotton gin in use during the 5th century. With this legacy, and great pillar of knowledge of Taxila, Nalanda, and Vikramashila, Indian intellect reached heights unscalable by many. Nalanda flourished under the patronage of the Gupta.

Courtesy visiting Scholars, the shine and luster of “Golden Sparrow”, India, was on radar of many foreign rulers. India established well itself as knowledge center for entire world and Nalanda was spreading the intellect and knowledge of glorified India. Buddhism was also flourishing, teaching the new way of living the life to entire world. The foreign trade of India was on peak and Indian contribution

to the world's income was 30% and the Golden Sparrow was chirping at her peak. All these attracted the entire world to visit India and along with it, came Romans, Greeks, Turks, and Muslim invaders to conquer the great intellect and the singing bird with their muscle power. Muslim invaders like Qasim, Ghazni, Ghori, Khilji, Taimur and other Sultans changed the overall growth and intellect patterns of medieval India. Though there was favorable balance of trade, but proliferation of intellect started diminishing a lot after horrible, brutal, and irreparable destruction of Nalanda University in year 1193 by Turkish leader Bakhtiyar Khilji.

Khilji's this act of destruction was a major blow on roots of knowledge, cultural heritage, Buddhism, and Ayurveda of India. This event restricted the proliferation of great intellect of world's oldest civilization. The destruction was so massive that the great library of Nalanda with nearly 9 million manuscripts kept smoldering continuously for 3 months, and people witnessed tragic killings of thousands of scholars, professors, and students. This assassination of knowledge, culture, tradition, and intellect changed the entire fate of intellectual growth of India. This point onwards, India has been continuously struggling to regain, reclaim, and recapture the lost legacy till now.



RISE OF WEST

Coincidentally, and concurrently, another great knowledge center was in making in the West, the Cambridge University got established in the year of 1209. With the growing influence of Oxford University and newly established Cambridge University, the knowledge center of world changed its place from East to the West at this juncture. The Intellectual Property Rights started coming into existence, then grew in the land of West, with great knowledge and intellect created by the East. Eventually, the Golden Sparrow of India started losing its shine of gold in this period due to frequent attacks from several invaders, foreign dynasties, and simultaneously, establishment of various knowledge centers in west.

Though, leather industry, sugar industry, paper industry, shipping industry, stone and brick industry, and other minor industries did flourish a lot with intellect of mankind in this period. Buddhist school of atomism developed and flourished in this period where they considered atoms to be point-sized, duration less, and made of energy. The mining of diamonds and their early use as gemstones

originated in India. Diamonds were then exported to other parts of the world. The famous inventions, the “spinning wheel” and “cotton gin” reached Europe from India by the 14th century and was stamped as the early innovations from West. The term “Gravity” was given by Brahmagupta (598–668) and the “Calculus” theorem by mathematician, Bhāskara II, in the 12th century. However, the titles of father of “Gravity” and “Calculus” went to Sir Issac Newton from the Cambridge University. Indian astrology and astronomy were based on Nine Planets and derived from the world's first concepts given by Maharishi Bhrigu and Rishi Parashar. However, the credit of discovery of nine planets went to Galileo Galilei from West. In 1500, Nilakantha Somayaji in his Tantrasangraha revised Aryabhata's elliptical model for the planets Mercury and Venus. His model is considered a true heliocentric model of the solar system. However, the 'history' teaches planetary motion as Kepler's theory given by Johannes Kepler in the 17th century.

शीघ्रोच्चं रविमध्यं कुजस्य, तद्वद् गुरोः शनेऽचापि।
निजमध्यं शीघ्रोच्चं बुधसितयोर्भानुमध्यमं मध्यम्॥

The mean Sun is the *sighroccha* for Mars, Jupiter and Saturn. The mean Sun is the mean planet and the actual mean planet is the *sighroccha* in the case of Mercury and Venus.

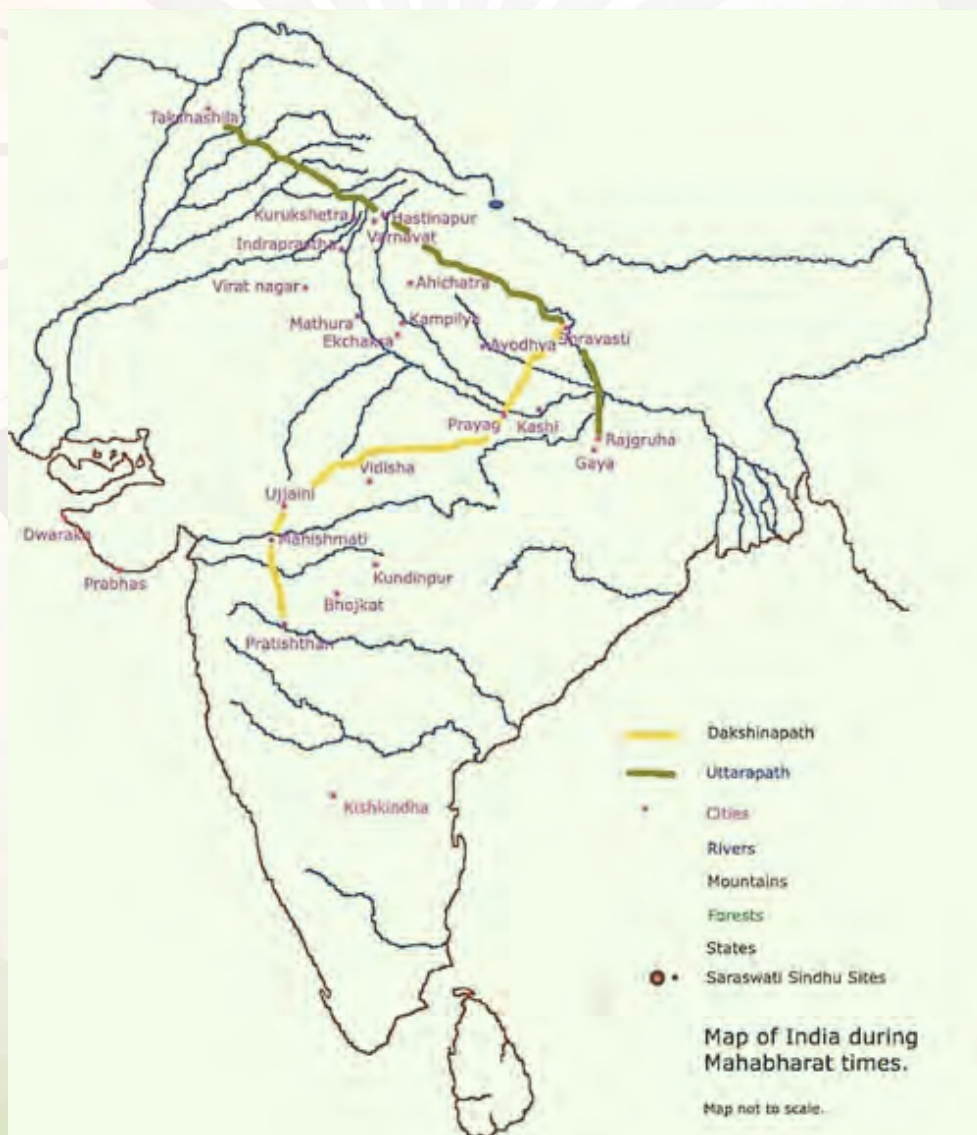
From this era, Muslim invaders started looting and destroying the physical assets of India and Western invaders started looting and discrediting the intellectual assets of India. The Golden Sparrow of Glorified India started losing the physical as well intellectual shine from this period onwards.

MODERN IMPACT

As we moved along with Mughals in modern period, this era saw rise and fall of knowledge, intellect, and cultural heritage. Trade in this period impacted a lot and the pirate culture started in Indian subcontinent. History mentions that Sher Shah Suri took initiatives in improvement of trade by abolishing all taxes which hindered progress of free trade. He built large networks of roads and constructed Grand Trunk Road (under his rule from 1540–1544), which connects Chittagong to Kabul; parts of it are still in use today. However, our historians have failed to convince a logical mind that how a ruler can build 2500 Kms

road in just 4 years of rule, or to substantiate if a ruler came in power only to make a Road!

The Grand Trunk Road finds its mention first by Rishi Panini in Panini's Ashtadhyayi where he lists the various kingdoms along the 'Uttarapathenahritam' or "UttarPath" in 700BCE and the same has also been mentioned by the great Chankaya as the "UttarPath" and "DakshinPath" were the way to reach the world's first University "Takshila" and famous trade route of India since vedic period. The first mention in Sanskrit literature of trade routes or 'panihas' comes in the Prithvi Sukta of the Atharva Veda.



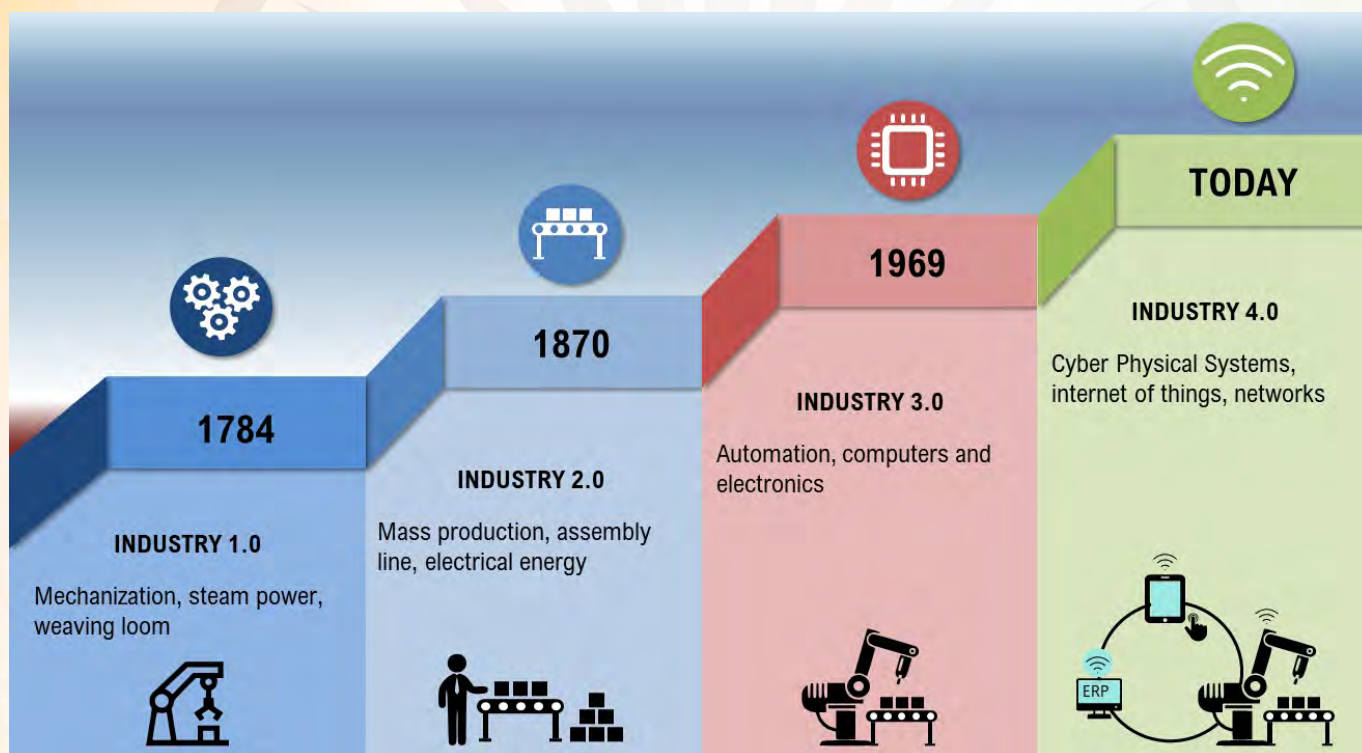
INDUSTRIAL REVOLUTION: THE GAME CHANGER

As Indians were under control of the Muslim invaders and later under the Britishers, Indian intellectual instinct almost got lost in this period. Modern period witnessed glorious shaping up and shine in west with the acquired knowledge and displaced treasures of glorified India. Meanwhile, west started implementing the “Patent System”. King Henry II of France introduced the concept of publishing the description of an invention in a patent in 1555. Accordingly, English patent system evolved from its early medieval

“Golden Sparrow” in the tornado of Industrial Revolution 1.0 and finally in Industrial Revolution 2.0 during 18th and 19th Century.

HERE WE LOST THE GOLDEN TAG

History witnessed that India did not participate in Industrial Revolution 1.0, 2.0, and 3.0. Due to introduction of Patent System in west, the competitive business environment has been emerging that resulted into a chain reaction of innovations from everywhere except from India and China. Since



origins into the first modern patent system that recognized intellectual property in order to stimulate invention and took the civilization in entirely different arena. This introduction of Intellectual Property Rights to the mankind was a revolutionary legal foundation upon which the Industrial Revolution could emerge and gradually flourished in west. And subsequently, India by now completely lost the tag of

the physical effort was evolving into mechanization, western civilizations were dramatically changing the economic and social structure of their respective countries. The handicrafts and agriculture were now getting less importance than factory made products and establishments got started to set up large-scale factories.

REASON FOR SLAVERY

Seeing the huge opportunities in finished products and bigger markets like India, Britishers firmly established their root and imposed heavy duty on export and lesser on import of finished products, and simultaneously export of raw materials was duty-free. That resulted into an accelerated and sudden downfall of Indian economy. Indians were still in stage of “Struggle for Existence” while, Britishers were on “Survival of the Fittest”. Indians were being used as laborers and users while Britishers were bragging as innovators and employers. **The Industrial Revolutions converted India from being a great intellect to great consumer.**

During first industrial revolution, mechanization happened on large scale. Various tools and machines were invented and protected through patent system, and accordingly were a crucial factor in deciding the rulers. In the period 1760 to 1830 the first Industrial Revolution was largely confined to Britain. Perhaps that was the major reason of slavery of Indians under British rule. Industrialization was more inclined towards coal, iron, and textile that largely impacted the economy of India due to the direct control of trade and innovations by the Britishers. Some of the greatest inventions that changed the world during first industrial revolution were steam engine, spinning jenny, cotton gin, flying shuttle, water frame, power loom, ice box, steam engine locomotive, Portland cement, iron processing, wrought iron, arc lamp, spectrometer, gas light, match box, etc.

During second industrial revolution, the mass production started with the invention of electricity. Now, the factories needed more markets to export their finished goods during the period of 1870 to 1914. A synergy among iron, steel and electricity, railroads and coal developed at the beginning of the Second Industrial Revolution. Railroads allowed cheap transportation of materials and products, which in turn led to cheap rails to build more roads. The industry and factory led country had grown much more and poor countries like India were facing challenge of food scarcity, education, and poverty. Iron, steel, rail, electricity, paper, petrol, ford engine, automobile, dynamite, maritime technology, telegraphs, telephone, bulb, and many more changed the entire lifestyle of mankind and civilization witnessed spurted growth with much higher level of luxury and comfort, leaving behind the knowledge and cultural value of great Indian heritage. Now, India grew up getting divided into caste, religion, society, color, language, region, and what not, and left far behind the gurukul culture and real intellect that made India what it used to be.

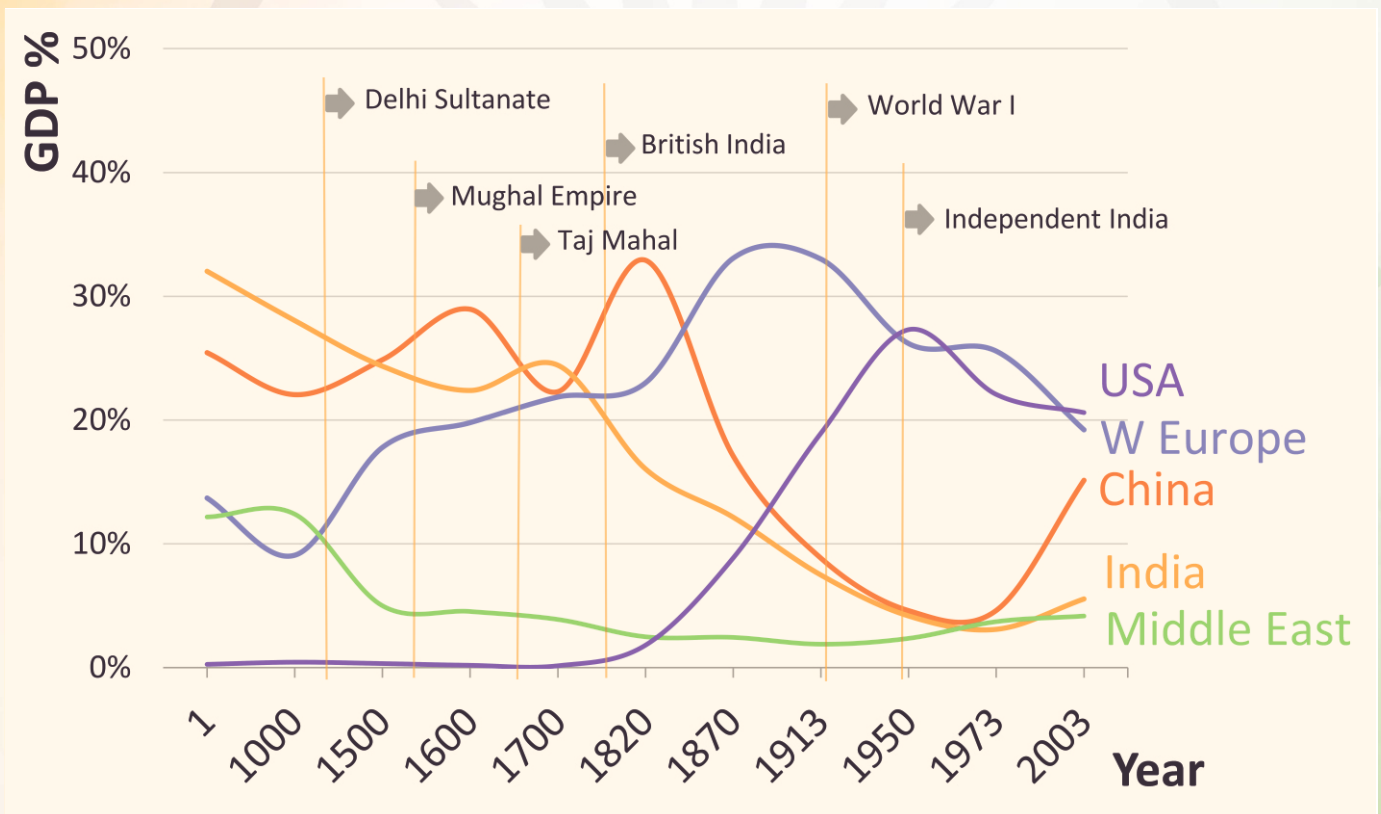
‘The Golden Sparrow’ got freedom in 1947, but not before entirely losing its shine.

INNOVATION: AFTER INDEPENDENCE

Even after independence, it took us 23 years to enact our first Patent Act as that was not a need of the country which was still struggling to meet its end on fronts of basic amenities like food, education, employment, etc. In this process, we yet again missed being part of the innovations during third Industrial Revolution, the period of 1969-2008. We still have a lot to learn and we are yet to acknowledge importance of including 'innovation' in our curricula. The habitual 'user' attitude led us to let pass the very

Further, due to many social and political reasons, the Indian economic conditions saw its worst in year 1991 when we mortgaged our gold reserve to survive as a nation.

The famous British Economist, Angus Maddison written and published, *The Economy - A Millennial Perspective* in 2001 which is very relevant for Indian perspective where he has compared world's economy and given historical GDP timelines. He has also mentioned the downfall of Indian economy from 16th century and given various reasons. Though the



important automation and computer era of the world without any participation from us as a nation. Our industries faced critical downfall again during 1965-1974, when only establishment of generic companies in India could take place and R&D culture was completely absent, and culture of innovation did not develop due to various other associated reasons.

reasons were very centric to Indian socio-economic conditions, but he has not mentioned that due to Industrial Revolutions, Britishers were more dependent on Indian economy and raw materials to establish their industries to become world economy leader and hence de-industrialized the entire Indian economy.

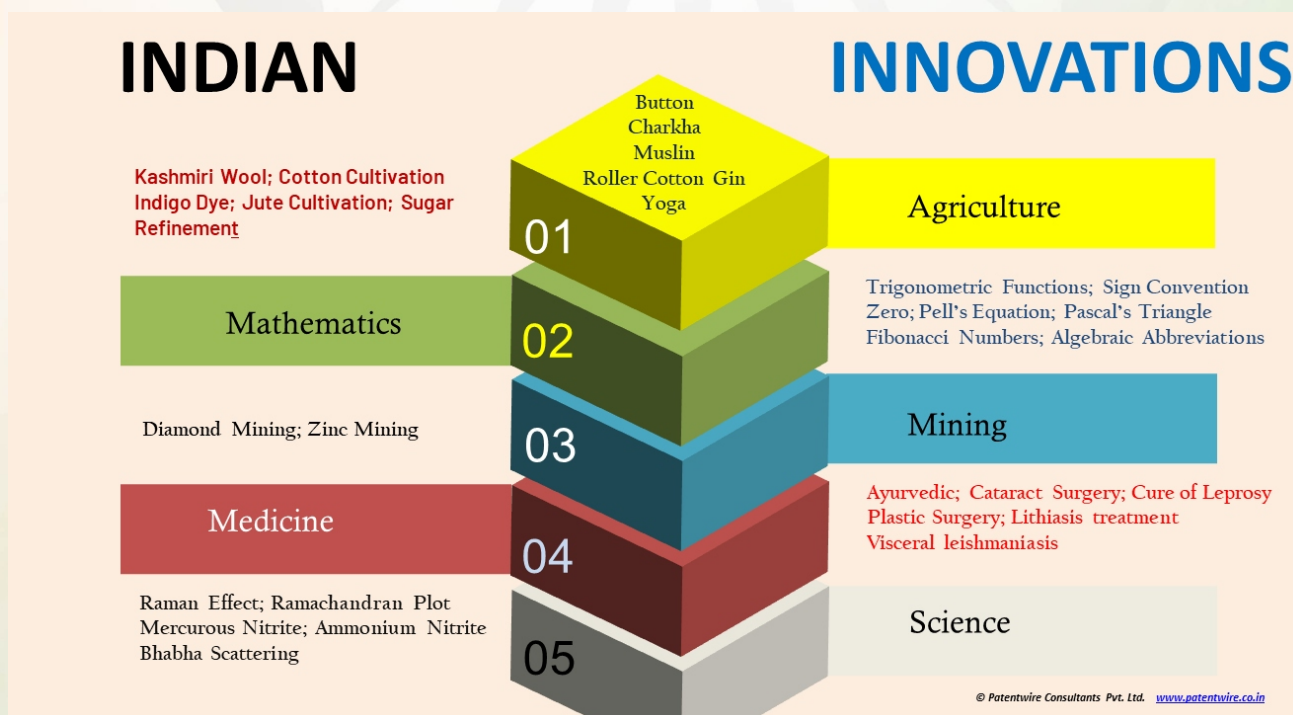
CONCLUSION

With all ups and downs, we lately realized the need to contribute in Global Economy and signed Trade Related Aspect of Intellectual Property Rights Agreement (TRIPS) under WTO which led to the enactment of all IP Acts in India as per TRIPS. As a signatory of TRIPS, we were bound to enact all forms of Internationally recognized IPs viz. Patents, Designs, Trademarks, Copyrights, Geographical Indications, Plant Varieties, Semiconductor Layouts and Trade Secrets. India is now fully compliant with TRIPS and dealing with all major technology producers in the world in real time. The fourth Industrial Revolution is going on and world is inventing sensors, smartphones, IoT, artificial intelligence, Block Chain, metaverse, Li-Fi, digital transformation, cloud computing, and so on for the new civilized world. However, whether Indian intellectuals are aware about this fact, whether Indian R&D institutions and industries are at the right pace and right page, whether government is working sufficiently towards awareness at school and college level, whether our CEOs and Managers are aware about the intangible assets; we need to have a relook.

The years 2014-2018 will be remembered for integrated

development of IP and Business Laws in India. The unique business mantras were introduced, like 'Make in India', 'StartUp India', Digital India, Skill India, Standup India, which inoculated the seed of Indian economical growth. The first National Intellectual Property Rights (IPR) Policy 2016 was adopted on May 12th, 2016 as a vision document to guide future development of IPRs in the country. However, still 95% of population is unaware about the term of Intellectual Property, still IP is not being taught enough in any curriculum as mainstream subject, and the best brains still want to go to west to learn and explore the intellect and knowledge that we have given to the world.

Indians are still great users of western and Chinese technologies, and we are yet to see our technologies ruling or flourishing substantially in any other country. We still look westwards to have our own heritage vetted, verified, and approved of. This sign is very evident and alarming. In last 4-6 years, though we have moved up in Global Innovation Index, established many incubators, given many incentives for filing IP to startups and SMEs, started NIPAM and CIPAM, have filed more than 25, 000 patent applications but still, if we wish to recapture and reclaim the glory of our lost "Golden Sparrow", we must work collaboratively on each front, be it as a professional, institution, industry, or government.



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About Reinforce Intellectual Property Association

RIPA is a Not for profit organization with an aim to promote and facilitate indigenous Intellectual Property (IP) at National and International level. RIPA aims at meeting the present and future requirements for growth and development of indigenous IP. RIPA further strengthens and complements the efforts of indigenous R&D and innovations.

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