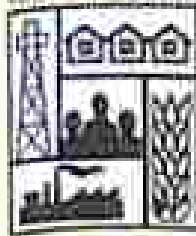


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# YOJANA

SPECIAL ISSUE

JANUARY 2022

A DEVELOPMENT MONTHLY

₹ 30

## Azadi Ka Amrit Mahotsav

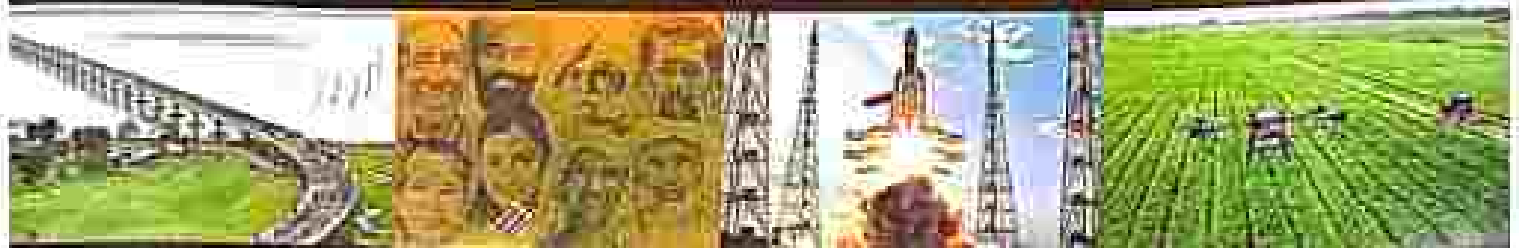
**THE GIANT LEAP**  
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Swadeshi Entrepreneurship  
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From **YOJANA ARCHIVES**



*Our Poetic Heritage*  
**SALUTE TO INDIA**

B. D. L. RAY

When out of the sleeping sea,  
How now O India! My Country!  
What a jubilation cry bursts out at the world!  
What an exultation and ecstasy!  
A day of days it was as flames lit the night  
Apathetic a radiant dawn on this beauteous Earth,  
And this they sang in adoration—"Victory to thee!  
O Mother! O Goddess! Oiver of Oiver!"

At the touch of thy lotus-feet,  
Hail! India, Nidhi of Nations!  
There we greet!

Just-bathed thou art in ecstasy, with rapture all detached,  
Thy lovely dream, belovéd in all living spirit,  
Hallowed in thy hour, and with a smile serene  
All standing and pure appears the visage gay!  
Up, thy dawns in joy round the demarcation set,  
The sun, the moon, the stars with music throng,  
And down in flames and splendour, a shell-bound sea,  
Panting, obedient a hymn sublime.

On thy head thou wearst a superb, sea-white crown,  
A wave, sunny, sea round thy feet darts fit,  
Upon the bottom swings many a string of pearls,  
The Indus, Jamuna, Ganges that sweetly gurgle by

O, remember thou art joyful, burning in desert day,  
Desolate, rugged and dreary, dazzling the eye,  
Excelsior thou art swelling, full of tender grace,  
Scorning steps to the world, benign and serene.

Away, move the simplest, good and still,  
If the day's east wind, it rains unimpeded,  
And suddenly with the resplendent coat of many a century,  
Time is deep to kiss thy feet, gentle and soft!  
Aunt! for dark clouds bring the thunder's crash and clap,  
The rain of the deluge, in torrents they pour,  
Lift! Doves at thy feet they bestow many a home,  
And make the winged grand of the floor!

Mother! What peace until on thy bosom doth lie  
What doubtless assurance in thy message sweet!  
Surrender to all thou givest, firmly with the hand  
And with salvation is secured at thy feet!  
Mother! For thy children's sake in the recess of thy heart  
What joy dost thou! What agony must!  
Providence, Nourisher, Saviour, Giver all bleed  
There we kneel!

*Quoted by Umasati Bhattacharya from Bengali  
Recollected from Bangla, December 14, 1934  
About the poet: One of the major playwrights of  
Bengal literature, Debendra Lal Ray (1863-1911) also  
composed some of the most beautiful songs.*







## Enriching Information

I have been reading this knowledge enriching magazine 'Yojana' since 2019. This is the best magazine to read about the progress/development in the field of science, agriculture, technology and much more. From every discipline of life, this magazine picks up every single initiative which is directly associated with growth. Thank you team Yojana for such service towards the nation at such an affordable price. I read this magazine for awareness and to provide my family and village with fruitful information that can help them grab better opportunities in their lives.

In this rapidly changing world, where market is flooded with loads of content to read, it is very hard to find honest and true information. Yojana magazine covers this purpose superbly.

- Dimple Wadhwan  
Karnal, UP

## Enhancing Thought Process

Yojana Team, I would like to express my gratitude towards bringing such an intellectual, analytical, logical, and in-depth explanation of every issue of national importance which has helped me in developing my analytical ability and a clear understanding of the issues, which has become a part of my thought process. As a civil service aspirant, Yojana magazine has immensely helped me in broadening my perspective and understanding overall problems of the nation.

- Abhishek Verma  
Rajkot, Gujarat

## Hotlist Analysis

I am a regular reader of Yojana magazine. It is one of the best magazines in the country. Each and every edition analyses a current topic from different point of view. My request to you is that if the upcoming edition of this magazine includes the topic of cyber security, surely,

then as a reader, it will be possible for me and the others to be aware about the importance of cyber security, this magazine has a greater reach. It can be another step inclusion of this topic should be appreciated for the nation at large.

- Nishtha Swakar Pant  
Delhi

## Panchayat Raj

I am very much delighted to see the November issue of Yojana magazine which covered the topic of 'Panchayat Raj' in a wider perspective. It has comparatively discussed several stages and services wherein both Union and State Governments are evolving plans and involving the people to make the system more vibrant. Thanks to the 'Yojana' team for enlightening us with such knowledgeable articles.

- Sudarshan Reddy Katta  
Hyderabad, Telangana

## Police Reforms

Yojana magazine is highly useful in our civil services preparation. It is my request to include a detailed issue on Indian police and its reforms. There is a need for public to know about the work of police and their structure and their other functions. This would remove the wrong perception of police in public mind. As police remains an important pillar in our society. So I humbly request the editor to please come up with these issues.

- Kunal Borhata  
Ahmedabad, Gujarat

## Suggested Topics

I have been reading 'Yojana' for three years now. This is the perfect magazine to read and make ourselves aware about positive developments that are happening in our society. From Public Schemes to Private Startups, this magazine covers every single initiative which is



directly associated with the life of the common people. Not only for UPSC, CSE aspirants, this magazine holds importance for every citizen who wants to be aware and starts with all changes that are happening in various fields from time to time. Thank you team Vojana for such service by making us aware. I want to suggest the topics to be covered in your upcoming edition. Please do cover Gati Shakti scheme, issue of crypto currency in India and Importance of New Central Vista in Strengthening Democracy of India in 21<sup>st</sup> century and beyond.

- Karan  
Kapur, UP

**Topical Articles**

I am one of your regular readers. Reading Vojana is always beneficial and keeps me updated, connecting the respective topics with facts and figures. I suggest you to come up with the issue about "Reforms in Judiciary" as it is the need of the hour.

- Pankaj Kumar Baghel  
Lucknow, UP

**Production Quality**

Dear Vojana team, I am reading the magazine since August 2021. I was reading the November 2021 issue of Vojana. I was quite surprised; I must tell you that you have solved the problem unknowingly that I was facing. The previous magazine pages were glossy which were causing problem while reading under light. I found the current quality of print easy to read without any problem.

[streamprod@gmail.com](mailto:streamprod@gmail.com)

**Reliable Source of Knowledge**

I have been following Vojana from two years and found it very useful for CSE preparation. For initial point of view, Vojana is an authentic source and provides in-depth knowledge of topics, for example, dynamics of steel services topic of August 2021 shows deep analysis of functioning of bureaucracy in India. Each topic provides way forward too, which helps in mains answer writing.

[pudipd29@gmail.com](mailto:pudipd29@gmail.com)



# आजादी का AMRIT MAHOTSAV









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## Igniting Minds

**A**zadi Ka Amrit Mahotsav is an initiative to commemorate 75 years of free India. It celebrates the glorious history of its people, culture, and achievements. This Mahotsav is dedicated to the people of India who have been instrumental in bringing India to be in its revolutionary journey. Despite many risks and challenges, India scripted an incredible success story to evolve as a strong, progressive, and self-reliant nation. It is an embodiment of all that we are proud of about India's socio-cultural, political, and economic identity. This is an intensive, country-wide initiative, that harnesses an citizen participation. An Bhagat, where small changes at the local level, will add up to significant national gains fuelled by the spirit of Amrit Mahotsav.

This lead is a tribute to legendary revolutionaries, its freedom struggle like the first war for Indian independence in 1857, the Satyagraha movement, the call for Poorna Swraj by Lokamanya Tilak, the Delhi March of Azad Hind Fauj led by Netaji, and countless movements and by unifying lives across the length and breadth of the country. While the freedom fighters were taking stride at the forefront, a legion of spiritual leaders was enlightening the flame of freedom through their teachings, and strengthening the society. The rural population of the country, monks, women, and even the children played their role in getting freedom.

Post-independence, the foundation of development was laid by the stronghold principles laid out in the Constitution and planned development in each sector. Today, our nation stands courageous as the largest democracy in the world, as the Constitution continues to drive work at the guiding light for legislative, governance, administration, and welfare of all.

Yojana, with its collectivist focus, chronicles the journey of various sectors and areas in these years of trials, tribulations, and triumphs. We are grateful to the authors for carrying these stories through the lens of what India has achieved till today and giving a perspective on what lies ahead through the lens of what India has achieved till today and giving a perspective on what lies ahead in the coming years. The inspiring stories of a farm-to-table to export surplus success, from poor health care to one of the leading suppliers of medicines and vaccines in the pandemic times, from educating girls to meeting the tax needs, and many more, are documented in Yojana from first-hand sources. In this issue, you will also find a few glimpses of this very glorious history in making, through the set of illustrated steps pages from our readers.

Azadi Ka Amrit Mahotsav is intended towards making conscious efforts to promote this history in every State and every region, and inspire future generations. Today, it is the responsibility of each of us to take India towards greater goals of self-reliance and creating equal opportunities for all. The years that lie ahead will shape the destiny of the world and not just India. The post-pandemic world, whereof the trophies, will have a new order. India will have to step up to the occasion and showcase its capabilities, spirit of synergy, and leadership across various spheres. Quoting Henry Ford's Charles Bess, who said, "One individual may die for an idea, but that idea will, after his death, become itself as a thousand lives." That idea, the vision of our great leaders for the India of their dreams, must continue to ignite minds, and their spirit should inspire us to do great deeds for the generations to come.

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# THE GIANT LEAP



*Iconic Images from*

## YOJANA ARCHIVES

# India as a Space Power

Dr K Sreen and ISRO Team



With its humble origin in 1960s, the Indian space programme over the span of six decades, has grown from strength to strength. Administered by the Department of Space (DOS) and primarily oriented by its R&D arm, the Indian Space Research Organisation (ISRO), the country today is widely recognised as a global space power being developed end-to-end capabilities: satellite earth station, launch vehicle, space transportation systems, space infrastructure, and space applications such as Earth Observation, Earth-Motion, Navigation, Remote Sensing, Space Science and the like.

**T**he beginnings of the Indian Space Programme coincided closely with its founding father Dr Vikram Sarabhai's vision that we must be "moved to work in the application of advanced technologies for the benefit of society". It was with the formation of the Indian National Committee for Space Research (INCOSPAR) in 1962, followed by the first sounding rocket launch from Thiruvananthapuram Rocket Launching Station (TRLS) in 1967 that the space programme formally took off.

Dr Sarabhai, the architect of the Indian Space Programme, conceived the concept of dedicated classes for viable disciplines to carry the load for research, design, and production, etc., with the setting up of Space Science & Technology Centre (SSTC), erstwhile VSSC (Vikram Sarabhai Space Centre), the cornerstone for physical development and related elements was an Advanced Institute of Experimental Satellite Communication Earth Station (AIESEC), erstwhile SAC (Space Applications Centre). The Indian Space Research Organisation (ISRO) was formed in 1969, superseding INCOSPAR. Today, with a total workforce of over 12,000, ISRO's establishments are functioning in every part of the country with each concentrating on a specific specialised domain. The country's public as well as private sector industries are playing a crucial role in the Space Programme. Besides, various academic institutions have also contributed to the Indian space endeavour.

With the establishment of the Space Commission and the Department of Space (DOS) in 1972, ISRO was brought under DOS and the structured space programme was set in motion under the leadership of Dr Satish Dhawan. The 70s were the learning phase during which several experimental satellites were built, including India's first satellite, *Aryabhata*, which was launched on 19 April 1975, from a launch vehicle in the former Soviet Union. *Aryabhata* laid a firm foundation for the later successful Indian Satellite Programme: *Insat*-1 and 2, the first experimental earth observation satellites, provided the rich experience and the confidence to build complex operational remote sensing satellites. Today, India is world leader in the satellite-based remote sensing area.

Additionally, APPLE - *Asian Passenger Payload Experiment*, India's first experimental communication satellite, although launched by the European Ariane rocket, marked its first geosynchronous orbit launch in June 1981, with the help of a rocket motor developed in India. *Aryabhata*, the two *Insats*, as well as APPLE were launched from abroad, which reflects India's successful international space cooperation goals. In the recent past, India has not only been a large scientific customer without Indian spacecraft but has also launched them.

Two other significant satellite communication experiments for *Aryabhata* were the *Asia* for data relay and *Space* of cooperation and *TELE-Indira* Instructional Television Experiment (1975-76) and *ATEP* - Satellite Educational Television Experiment (1978-79), complementarily





establishing the base of facilities for communication and broadcasting and providing hands-on experience for the same, paving the way for INSAT (Indian National SATellite) series of satellites.

In the space transportation domain, it was the commissioning of the Satellite Launch Vehicle (SLV-3) project in the early 1970s, the first indigenous experimental satellite launch vehicle, that served as the nucleus of an enduring partnership between ISRO and Indian industries. An all-India, five-stage launch vehicle, the SLV-3 was designed for placing satellites weighing 40 kg in Low Earth Orbit. The SLV-3 had its successful launch on 17 July 1980, placing Indira into the orbit. Indira was the first launch of its category with the capability to launch satellites in this orbit.

On the heels of SLV-3, was commissioned the ASLV (Augmented Satellite Launch Vehicle) project in the early 1980s, the next step in evolution of launch vehicle technology. The two launch vehicles, SLV-3 and ASLV, validated the critical launch vehicle technologies and gave ISRO the confidence to craft its first deal with the Polar Satellite Launch

Vehicle (PSLV) project, commissioned in mid-1980s.

During the same period, INSAT-1B, India's first multipurpose operational satellite was launched by ISRO, demonstrating its ability to bring about a revolution in television broadcasting, and weather forecasting. India's ability to design, build, and launch a remote sensing satellite was demonstrated in 1987 with IRS-1A, the first experimental satellite built to help manage the earth. The images sent by this satellite to the earth from its 900 km high orbit were used in various diverse fields such as agriculture, prospecting, mineral survey, forestry, etc.

During the 1980s, ISRO began leading a series of multipurpose satellite experiments. The first, a first, systematic stage of imagery from experimental satellite for tasks like crop yield estimation, forest and mineral prospecting, forest survey, urban planning, and watershed allocation and development maps. The second stage of capabilities of INSAT and launch vehicle systems continued using inter-ministerial mechanism as INSAT Coordination Committee (ICC) and National Resource Management System (NRMS).

Today, India has a fleet of advanced remote sensing satellites equipped with high resolution and multispectral cameras dedicated to the domain of cartography, survey, and ocean and atmosphere applications. The INSAT system with over 200 transponders is the Extended C-band, Ka-band, Ku-band, and provides services in telecommunication, broadcasting, video streaming, satellite navigation, several applications, weather forecasting, disaster and search and rescue operations. High Throughput Satellites (HTS) such as GSAT-11, GSAT-12, GSAT-13, are supporting the Digital India campaign by boosting the broadband connectivity to the rural and inaccessible areas. Pioneering in the country, the cooperation on these satellites will bring the digital divide of users including those in Jammu & Kashmir, and the North-Eastern regions of India.

The 70s were the learning phase during which several experimental satellites were built, including India's first satellite Aryabhata, which was launched on 19 April 1975. Aryabhata had a firm foundation for the first indigenous successful Indian satellite programme.

The space transportation domain with the successful advent of the first launch, Launch Vehicle (PSLV) in 1993, witnessed a quantum jump in the indigenous launch capabilities. The vehicle has pioneered in a number of ISRO's biggest ever 30 successful missions, launching several 40-ton to 10-tonne satellites. On 15 February 2017, PSLV carried a record load by successfully placing 104 satellites in orbit during a single launch. Yet, it's not over yet. It was undoubtedly a record at the time, but the

significance of the achievement is the immense confidence reposed by foreign countries in the capability of the Launch Vehicle.

With the solid and liquid propellant technologies perfected through SLV-3, ASLV, and PSLV, the nation embarked upon highly challenging space-based, but complex cryogenic technology. The commissioning of the Geosynchronous Satellite Launch Vehicle (GSLV) in the 1990s was a step in this direction. The launch vehicle was designed with three stages (including the cryogenic upper stage), with two liquid stages. Cryogenic technology involves the storage of liquid hydrogen & liquid oxygen at very low temperatures. Materials used to store at these very low temperatures, during processing, and display of engine pressure make the development of the cryogenic stage a very challenging and complex task. With the successful qualification of the indigenous developed Cryogenic Upper Stage (CUS) in the GSLV-D5 flight on 5 January 2014, ISRO demonstrated its mastery of cryogenic rocket technology. Including the one in January 2014, the vehicle has had six successful flights over the past decade.

The next-generation launch vehicle of ISRO, with a capability for putting 41 payload in GEO, came in the form of GSLV-Mk III designed with two solid stages, a cryogenic stage, and a cryogenic upper stage. (NSG-X) CAPE Mission, the first experimental sub-orbital flight of GSLV Mk III, was on 14 December 2014 and launched the Crew Module Atmospheric Reentry Experiment (CARE). The CARE module began its return journey on 2 June 2015, overland for entry atmosphere. It

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The two-launch vehicles, SLV-3 and ASLV, validated the critical launch vehicle technologies and gave ISRO the confidence to reach the next level with the Polar Satellite Launch Vehicle (PSLV) project, commissioned in mid-1980s.

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was successfully recovered over the Bay of Bengal about 20 minutes after its launch. Subsequently, after the successful developmental flight and with the injection of Chandrayaan-1 into Earth Parking Orbit in July 2007, GSLV Mk III successfully entered into operational phase.

Indian Space Programme has always focused on the development and utilization of space technologies

to achieve the overall development of the country. Despite its emphasis on applications, ISRO has pursued many space science projects to perform meaningful experiments of space. India's first satellite Aryabhata was a scientific satellite. After Aryabhata, ISRO entered into the realm of science satellites again with a major mission for X-ray Crystal Experiments (CXE-1) launched by PSLV in January 2007. CXE-1 with its scientific experiments, orbited the Earth for 12 days and was successfully de-orbited and recovered over the Bay of Bengal. This proved several technologies necessary for reusable launch vehicles and human spaceflight.

The space science missions of India - Chandrayaan-1, Mars Orbiter Mission, Astrosat, and Chandrayaan-2 - have taught the operation of millions of Indians as well as the world at large.

Launched by PSLV on 22 October 2008, the 1390 kg Chandrayaan-1 spacecraft was successfully re-orbited in the Moon in three weeks and was put into an orbit around the moon. On 14 November 2008, when a TV set named 'Moon Impact Probe' separated from Chandrayaan-1 successfully and successfully impacted the surface of the moon. India became the fourth country to send a probe to



The focus was first after the United States, the Soviet Union, and Japan. Later, which Chandrayaan-1 conclusively discovered water molecules on the lunar surface, it was widely hailed as a technological discovery.

Upgraded to the name of Chandrayaan-2, ISRO embarked on the Mars Orbiter Mission for demonstrating India's capability to launch, launch and operate an unmanned spacecraft in Mars. Launched by PSLV on 7 November 2013, the 1,340 kg Mars Orbiter Spacecraft encountered Mars on 24 September 2014. With this, ISRO

has become the fourth space agency to successfully send a spacecraft to Mars orbit.

Apsara, launched by PSLV in September 2015, is the first dedicated Indian astronomy mission aimed at studying celestial sources in X-ray, optical, and UV spectral bands simultaneously. Apsara recently made a major breakthrough by discovering one of the earliest galaxies in extreme Ultraviolet light.

The Chandrayaan-2 Mission- India's second mission to the moon was successfully launched on 22 July 2019.

Chandrayaan-2 Orbiter spacecraft was placed in its intended orbit. The eight instruments onboard the Orbiter are continuously providing orbital science data, which will enrich our understanding of the moon's evolution and mapping of the minerals and water molecules in Polar regions.

ISRO has also successfully established and operationalised Navigation with Indian Constellation (NavIC) which provides highly accurate Position, Navigation, and Time information to users in India and its surroundings. The Global Navigation System- for Geostationary Earth-orbiting Project (GNSEP), which develops geostationary mobile telephony, low-orbiting GNSS, and more mobile support constellations have demonstrated NavIC in their missions. Further, through GPS Aided GEO Augmented Navigation (GAGAN), ISRO is providing location-based Navigation services with accuracy and integrity required for civil aviation applications and to provide better Air Traffic Management over Indian Airspace.

In the recent past, the "Cryogenic Programme" approved by the Government of India in 2013 marks a part of initiative in the Indian space journey, marking a new era in the development of liquid space exploration. The Human Space Flight Centre (HSFC) was constituted in 2007 at Mysore. In 2019, its headquarters are shifted to the name, space flight program.

**Cryogenic technology involves the storage of liquid hydrogen & liquid oxygen at very low temperatures. Materials used to operate at these very low temperatures, chilling processes, and interplay of engine parameters make the development of the cryogenic stage a very challenging and complex task.**

ISRO is assisted by employees of Gaganyaan Programme and is set as the lead centre for initiating and allocating human spaceflight activities. The Gaganyaan project has the major objective of demonstrating human space flight capability to Low Earth Orbit (LEO) for a defined duration and safe recovery after the mission.

ISRO successfully proved a crucial technology element of Human spaceflight in July 2019. The Pad Abort Test (PAT), which is the first in the series of tests to qualify the Crew Escape System (CES). The Pad Abort Test Flight was a demonstration of the capability of CES to evacuate the crew in case of a contingency at the launch pad.

ISRO's expertise leading to human resources and to meet the growing demands of the Indian Space Programme, the Indian Institute of Space Science and Technology (IIST), the Indian Institute of Space Science and Technology (IIST), a deemed university, was established at Thiruvananthapuram in 2007. The Institute offers Bachelor's Degree in Space Technology with specialisation in Aerospace Engineering, Technology with specialisation in Aerospace Engineering and Electronics & Communication and a Master's Program in the area of Space Technology.

Further, amidst the Covid-19 pandemic, the Institute, space reforms initiated by the Government of India to boost ISRO mark a significant step forward in the evolution of the Indian Space ecosystem. The creation of the Indian National Space Promotion and Authorization Centre (IN-SPACe) to promote, fund, and regulate Non-Governmental Private Entities (NGPEs) to undertake space activities shall witness the next level of advancements in the sector. This will enhance the diffusion of space technology and boost the space economy within the country.

Empowering the Department of Space, NewSpace India Limited (NSIL) to cover the operational launch vehicles and space assets of ISRO, opens up a new chapter in the management of space activities in the country. Further, the present supply-based model was changed to a demand-driven model, wherein NSIL shall act as an aggregator of user requirements and implementation, infrastructures.

With these structural adjustments, ISRO shall focus on advancing the R&D initiatives such as heavier and more efficient satellites, advanced constellations such as Chandrayaan-2, Ariya-1, and Mission to Venus to better explore the solar system and beyond, the Gaganyaan Programme. The future of space activities in the country looks very promising indeed and will ensure India's presence in a 21st century space power. Q

**ISRO has also successfully established and operationalised Navigation with Indian Constellation (NavIC) which provides highly accurate Position, Navigation, and Time information to users in India and its surroundings.**

# Indian Armed Forces

Sujan R Chatter



*The journey of the Indian Armed Forces over the last hundred years has in many ways mirrored the momentous history of the birth, struggles, and victories of India. It straddles a colonial period in which the armed forces of India owed allegiance to a foreign sovereign and could readily be used to fight an alien power's wars and promote its strategic objectives. This did not erode the heroism and professionalism that the Indian Armed Forces came to be known for over two centuries.*

**F**rom the Afghan Wars to the Battle of Somerseth where a small band of British soldiers won a famous victory during a long period of a numerically superior adversary to the first great wars, and in numerous British campaigns across Asia and Africa, the Indian sepoy set the highest standards in valour. Even the spirit of peace and non-violence Mahatma Gandhi had served in a surgical corps of a medical ambulance corps that he had helped raise during the Second Boer War in 1900-1902 and Zulu War in 1886. There came a darker side too when the British used Gurkha and Baluchi troops against innocent civilians in the Jallianwala Bagh massacre in 1919.

## Phase - I

In a sense, the first phase of the armed forces journey commenced immediately after the independence in the war in Kashmir (1947-48), and terminated with the debacle of the 1962 India-China war. This period saw relatively young and inexperienced Indian officers being catapulted overnight into mid-level and senior positions in the armed forces. The discipline, training, and experience that guided them so well during WWII was ill-suited to either the advent of communism and 'People's War' advocated by China, or to Jawaharlal Nehru's worldview which was predicated on India's moral and not military power. Participation in the Korean War by offering medical assistance and sending the 60<sup>th</sup> Parachute Field Ambulance



The author is former Ambassador of the 1982 batch of the Indian Foreign Service. He currently is Director General of the Manohar Parrikar Institute for Defence Studies and Analysis, New Delhi. Email: [hg.ghosh@idsa.in](mailto:hg.ghosh@idsa.in)



China, a *de facto* army hospital, with doctors and dentists, the task to address the real problem faced by a strong colonial military force that was not without the same energy and objectives. A political leadership would be shown that just achieved independence through the means of non-violence, could not have fully appreciated the gravity of the security challenges facing its people.

A decade of insurgency was the followed further complicated the problem, leaving the Indian Army without adequate resources or manpower when it first came to a head with China in the late 1950s. In fact, the Indian Army was kept away from India's borders, whether in Ladakh or in North-East Frontier Agency (NEFA), all the Government's funds were seized by the Chinese attack and occupation of an Arunachal part in Lushai in August 1958 and an equally heavy setback of an Indian police party at Kacha La, across Ladakh in October of the same year.

#### Lashun Lashun

One of the greatest lessons of the 1962 conflict perhaps was the realization that with regard to territory, the old adage held true, that possession was nine-tenths of the law. China's army had been there in 1950, and here to sweeping promises in Aksai Chin over the following decade also taught the Indian Armed Forces and the new political system, to think in terms of porous borders, not just borders. The war and content of the 1954 Treaty between India and the Tibet Region of China are two examples of how porous or the border was interpreted differently by citizens

#### China, looking to coalition

Yet another lesson was that an army must be well equipped with the latest weaponry to protect India, national integrity and that uniform uniforms, common national identity and that common uniforms were the best, and equipped 700 Lee-Enfield rifles were no match against Chinese leaders armed with relatively modern automatic weapons. Perhaps even greater was the lesson that the Order of Battle (ORBAT) and chain of command in any army are sacrosanct. Even though it occurred in any army, the Government, even if it is too important a matter to be left to the Generals, this did not justify the frequent changes in command in NEFA, whether at the Brigade, Division, or Corps levels even as the crisis was unfolding. Even more significant was the realization of the damage that can be caused by the direction and morale of an army when its primary chain of command is riddled with, as was the case in 1962 when Lt Gen B M Kaul, the highly respected 13 Corps Commander in the North-East, had the ear of the political leadership, with even the then Chief of Army Staff (COAS) side-lined, so that a Defence Minister V K Krishna Menon could null the martial instincts of a spirited army by reportedly underplaying the Chinese *desert* despite professional institutions in the country.

**The Order of Battle (ORBAT) and chain of command in any army are sacrosanct. Even though war is too important a matter to be left to the Generals, this did not justify the frequent changes in command in NEFA, whether at the Brigade, Division, or Corps levels even as the crisis was unfolding.**

It was also decided that the Indian Air Force would not be deployed during the war in any effective role, thereby negating the advantage that could have been gained. However, by individuals and some units notwithstanding the shock of the ill-planned retreat and humiliating defeat in 1962 led to a fundamental change in the structure, training, equipping, and disposition of the armed forces for the future.



**War - II**

With the conclusion the second phase of the process of the armed forces which lasted until 1971. The period after the 1962 war not only saw the size of the army increase from about 5,50,000 to approximately 6,25,000 people. But, over time, it also witnessed modernisation, training, and doctrinal shifts. Even as these preparations were underway, Pakistan attempted to seize opportunities created by the 1962 defeat, the political instability, the death of Prime Minister Nehru in 1964 and prevailing ambitions in Jammu and Kashmir. After a period of attempts to push its borders by Pakistan, President Lyndon B. Johnson approached a war in the mistaken notion that an opportunity was ripe to force a decision upon India. In 1965, despite structural issues and limitations of resources, India met the challenge. India responded resolutely under the leadership of Prime Minister Lal Bahadur Shastri and Defence Minister Y. B. Chavan to meet the aggression.

The war ended in a stalemate, with Pakistan's initial advantage having been neutralised by the vigorous armed forces of India, backed by an equally determined public sentiment. Peace with Pakistan, however, was short-lived. In 1971, the Pakistanis were subjected one of the worst genocides upon its own Bengali population in East Pakistan. The Pakistani Army was used as an instrument of oppression of the Bengali population. This led to an exodus of refugees, causing India to be overwhelmed to take a peaceful solution to the humanitarian crisis that arose. However, having failed, and in the face of Pakistan's declaration of war on 3 December 1971, India's

armed forces embarked a lightning campaign which led to Pakistan's defeat and culminated in the first loss in India's post-independence military history.

The hybrid military strategy adopted by India in the 1971 War, an innovative approach that dealt with each theatre and sector according to its ground reality, while the western front where Pakistan exhibited "offensive defence" being employed; the core was also taken to ensure that the threat from China remained contained in the north. On the eastern front, an offensive strategy was adopted along with the needs of rapid manoeuvre warfare to bypass their enemy concentration centres in order to ensure that Kargil Dacca within reach in less than two weeks of the war. The campaign was backed by the East Pakistan population and supported by the Muslim Bahadur Association on the part of the armed forces, complete cohesion between different components of the government, including the three services, and use of psychological warfare against the adversary caused the collapse of Pakistan's military. The surrender of 90,000 soldiers from Pakistan, a record of its kind since WWI, was accompanied by the birth of Bangladesh. The Prisoners of War (POWs) were treated well and repatriated in due course back to Pakistan with dignity, thanks to the high standards of the Armed Forces of India.

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Victims in 1979; the Soviet invasion of Afghanistan the same year, and the low-level war in 1988 together created an environment that demanded adjustments in India's military preparations. Pakistan and China had come even closer together and Pakistan had the backing of the Organisation of the Islamic Cooperation (OIC) and the West for services rendered against the Soviet in Afghanistan. The source of the threat from Pakistan was changing. The western adversary had new supply lines of finance and personnel. The Pakistani army was more Islamist than before, and military plans that could be used against India as well.

The nature of the evolving military preparation on the Pakistan side, which included the creation of extensive battlefield obstacle systems, demanded a shift on the Indian side to mobile high-speed vehicles or land with the ability to undertake deep strikes in the open terrain of the deserts. This, and the need to cut the land-based route, led to emphasis on mechanisation of the Indian Army and reorganisation of the other two services as well. The changes are the present reality, with the armed forces going personally on, evolving during the period.

The modernisation of the armed forces has not accompanied by a

willingness to venture beyond India's borders in support for calls from neighbours for assistance. While the peacekeeping mission in Sri Lanka spearheaded by the Indian Peace Keeping Force (IPKF) led to questionable strategic gains despite heavy losses to men and material, Operation Cactus launched in Middle East against an unprovoked war produced approximate results in 1988.

However, both direct by India did bring some important lessons not only for the armed forces but also for policymakers. These related to the need to have capabilities, including expeditionary, according to emerging threats and challenges, as also, to fill the critical voids that became evident during both these operations. These included gaps in coordination, equipment deficiencies, weaknesses in joint structures, and readiness to operate beyond the Indian shores.

### Phase - III

A new phase in the journey of the Indian Armed Forces commenced in the mid-1980s. The Chinese challenge in Szechwan-Chia was met by transporting an entire brigade by helicopters. This was also the time when the People's Liberation Army (PLA) was acquiring new weapons systems, including US-made Sikorsky helicopters to be used in mountainous areas. For the Indian Armed Forces,

**While India had managed to keep in check sub-conventional threats such as insurgencies in the North-East of the country and terrorism in Punjab, the threats to the nation were magnified by the adversities encountered in the deployment in Operation Pagan in Sri Lanka and the spill in Pak-sponsored cross-border terrorism in**

**Kashmir.**





to India through a technical assistance and public and private sector cooperation, representing the small and medium-scale units, have been provided support and assistance to contribute to the movement. They have also been granted access to using facilities of DRDO to support their attempts at manufacturing to make in part of the domestic defence industry.

The focus on indigenous is an **ongoing initiative** across all defence manufacturing. Companies have enough space for Indigenous Original Equipment Manufacturers (IOEM) to participate in joint ventures and Transfer of Technology (TOT).

The armed forces have also witnessed a number of technological changes. Credit quality is a notable achievement. Unlike in the past when access was restricted to experimentation is a key feature of the armed forces such as the Mahatma Education Trust, academy and wings of the armed forces have used the way of support to address to generate innovations, research and flying with the latest technology of total results and will soon be provided to train alongside their counterparts at the prestigious Defence Academy.

On 17 August 2018, the Prime Minister announced the path breaking decision of the Government to create the post of Chief of Defence Staff and the Department of Military Affairs. This was a long standing demand in strategic circles. These announced changes have reflected a major shift in defence strategy of the highest officials. The process is being further strengthened with defence aimed at integration at the level of Service as

The last several years have been both a challenge and an opportunity. An outstanding and consistent feature of the Indian Armed Forces remains their secular traditions as well as apolitical professionalism under civilian government.

well as progress down the chain of command. Progress already underway in being more visible would improve with the starting of regular publications of MOI.

Conclusively, there is an operational capability in making the armed forces better equipped, raising and account the choice of military and economic MoI, financial and political institutions.

There is a need to address the issues and challenges emerging. This is aimed at enhancing the capability of the armed forces to fight modern day conflicts across the entire spectrum.

### Conclusion

The last several years have been both a challenge and an opportunity for the armed forces. The issues and challenges have been both to support the major goals challenges have been met with great valour by India's Armed Forces. They have used several opportunities to adapt and improve along every possible in military performance. An outstanding and consistent feature of the Indian Armed Forces remains their secular traditions as well as political professionalism under civilian government.

Going by these points, there is little doubt that the armed forces will continue to remain committed in being ready to support national interests and unambiguously support the government's actions to improve national security. This will increasingly be done through improved resources and a technologically-advanced capabilities supported by the clear vision of modern political leadership.

### Some Details of Publications Division:

New Titles	Books/Manuals/CDs/Books/Leaflets	11000	211.34 Lakhs
Reprints	Books/Manuals/CDs/Books/Leaflets	40000	011.24 Lakhs
Yellow	CDs/Books/Leaflets	70000	275.20 Lakhs
Others	CDs/Books/Leaflets/Books/Leaflets	10000	044.20 Lakhs
News/Reports	Printed and Non-Printed	10000	075.20 Lakhs
Hybrid	CDs/Books/Leaflets/Books/Leaflets	4000	040.20 Lakhs
Special	Books/Manuals/CDs/Books/Leaflets	50000	200.00 Lakhs
Books	Books/Manuals/CDs/Books/Leaflets	10000	040.00 Lakhs
Leaflets	Books/Manuals/CDs/Books/Leaflets	20000	080.00 Lakhs
Others	Books/Manuals/CDs/Books/Leaflets	10000	040.00 Lakhs
Total	Books/Manuals/CDs/Books/Leaflets	37000	211.34 Lakhs



# SELF-RELIANCE



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# Swadeshi Entrepreneurship

Arindra SenGupta

*Emergence of Mahatma Gandhi with his credo of non-violence and the idea of trusteeship found deep resonance with the Indian business elite. With rising nationalism, there was a definite change in consumer culture too. Irrespective of whether they were actively participating in political movements or not, people wanted to use India-made local products as a badge of their patriotism. This also led to the emergence of a swadeshi retail network.*

The idea of 'economic swadeshi' emerged by the second half of the 19<sup>th</sup> century. Thanks to the writings of R. C. Dutt, Dadabhai Nauroji and M. G. Ranade, the new nationalist movement was well aware of the colossal economic exploitation. Gopal Krishna Gokhale was one of the first swadeshi economic crusaders in 1906, but the real impetus came in a call to action given in the 'Call to the Nation' by the All India Congress in Poona.

## The Swadeshi Movement

A group of middle-class, western-educated Bengali-graduates, mostly from the elite Tagore and Lal Bahadur Shastri families, met Sir Doyal Singh Mehta, now known as Lord the Punjab National Bank (1904) to set up the first Indian-owned bank.

Lal Bahadur Shastri, who were merged as the banking firm behind this venture, went on to found a series of similar banks. These included the first Indian-owned insurance company, the first sugar factory-owned company, the first oil, a spinning and weaving mill, a cotton gin company, an oil pressing, and a textile mill company, a match factory, soap factories, brick kilns, agricultural factories, etc.

In Bombay, a Pata Deyar Anandhi (Kapoor) family (1905-1910) came to realize the importance of indigenous manufacturing. After talking to a series of contacts, he started business success

with mechanical tools and founded Godrej & Boyce in 1907.

Aditya Prafulla Chatterjee (1881/1944), a pioneering chemist, founder of Bengal Chemicals (India's first pharmaceutical company), and a devoted nationalist spent his entire life and life's savings in promoting education and scientific research and in advocating knowledge-based industries to address India's poverty. For people like him, every investment based on scientific knowledge was an inevitable step towards nation building.

In Bengal, in June 1907, when some members of the Tagore family helped Nageswar Mitra to organize a fair to promote swadeshi products, there had been much talk for self-reliance or *swadeshi* (including promotion of education, particularly technical education, the boycott of foreign goods, and indigenous production and distribution).

The banks were led by the first-class Roy family of Shyambhai, who developed a 'Swadeshi Bank' in 1906 and later, and were the chief organizers of the Bengal National Chamber of Commerce (1907), second the Tagore family, especially Jyotirmoyee, launched a soap factory in 1904 with the label River Ganges National Service.

Even Bengal Chemicals (1907) provided the Swadeshi Movement though it received a massive boost during the swadeshi days.



The author is a public policy analyst and a member of executive advisory board, [www.iti.org.in](http://www.iti.org.in)



### Swadeshi Enterprises

The announcement of the Partition of Bengal (1905) introduced a surge of nationalism and rekindled the Bengali entrepreneurial spirit. Members of the Tagore family, including Rabindranath, Satish Chandra Mukherjee's Dey's Society, and many others were regularly organizing Swadeshi fairs, setting up shops to sell swadeshi goods (Rabindranath's Swadeshi Bhandar in 1907, Jugan Chandra Chatterjee's Indian stores in 1911, Nishi Deb's Lakshmi Bhandar in 1913), and working for the revival of the traditional arts.

Artisans and professionals came together to found the short-lived Bengal National Bank (1900). Calcutta also saw a spate of insurance ventures, especially the National Insurance Company (1906) and the British Hindustani Cooperative Insurance (1907).

British dominance of shipping lines was a matter of deep concern, especially in riverine East Bengal. Despite the collapse of Jinnah's venture, swadeshi ship owners sought interest in launching shipping ventures. But they were unable to without assistance, which was provided by the English shipping lines, when an attempt to revive Indian shipping companies failed between 1905 and 1913.

Bengal's leading landlords, businessmen, and political leaders came together to launch the most high-profile swadeshi venture — Bangs Laxmi Cotton Mill (1906). Two years later, Satishchandra Chatterjee, industrialist and noted Deputy Magistrate, launched a similar Mill in India Bengal. Both did well and successfully challenged the monopoly of the only British cotton mill in Bengal. The biggest beneficiary of the boycott of Manchester cloth turned out to be Bombay and Ahmedabad, where 25 mills came up between 1909 and 1910 to cater to swadeshi demand.

The real achievement of the Bengal swadeshi entrepreneur was to tap into the new industries based on their technical knowledge. Manufacturing a number of household products, key medicines, and dyes was a huge success. At Raj's Bengal Chemicals paved the way. This example was followed by Calcutta Chemicals and a number of manufacturers of Acetylene and other chemical drugs, cosmetics, and chemical products (Chemical Works, The India Factory, Dhal Tillery), pharmaceutical products (Calcutta and Bengal Veterinary), chemical items (Bengal Laxmi, safety matches, Chemical and India Minerals, Manikganj), and a number of other items produced from jute. The experience in the new industry

The announcement of the Partition of Bengal (1905) introduced a surge of nationalism and rekindled the Bengali entrepreneurial spirit. Members of the Tagore family, including Rabindranath, Satish Chandra Mukherjee's Dey's Society, and many others were regularly organizing Swadeshi fairs, setting up shops to sell swadeshi goods.





economic development. The 'Bengal Plan' outlined the strategy for doubling of the agricultural output and five-fold increase in the industrial output within 15 years. They accepted the western state support that would not be possible. Though it was never officially accepted, but the post-independence economic planning did follow the same path of state interventions and a mixed economy with large-scale public sector.

### Legacy

Apart from the launch of mineral resources like Coal, Oil, Copper, or Aluminium (a much-diminished) Bengal Chemicals, and a clutch of PSU banks, what are the legacies of modest business enterprises?

Right from the late 19<sup>th</sup> century, the growth trajectory of Indian business has been a shift from trading to manufacturing. Taking advantage of their accumulated capital, control of distribution and raw materials, large niches belonging to traditional trading communities gradually shifted to entrepreneurship.

In contrast to this, Bengal during the Swadeshi days saw for the first time, a concerted effort by educated middle-class entrepreneurs to build businesses based on their technical knowledge. Similarly, modern banking in India developed due to the efforts of these Swadeshi-impinged entrepreneurs.

Since then, we have repeatedly seen the trend of new waves of entrepreneurs, creating disruptions based on their technical knowledge. Acharya P.C Ray would have been proud today to see that India has emerged as a global pharmaceutical giant and is making great strides in other knowledge-based industries, including Information Technology and specialty chemicals.

Evaluating Late Nationalist's contribution, historian N Girard Barrow terms that all his energies ultimately failed but his real contribution was the transformation of the Bengali middle class – he showed them the way to shift from traditional commerce to modern industrial and financial sectors. This could be said about the swadeshi phase of Indian entrepreneurial history in general. It expanded the social base of the Indian business class, showed the youth a constructive way of contributing to nation-building, and provided tremendous inspiration for future generations. □

### Endnotes

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# Global Agricultural Powerhouse

Dr Jagdeep Saxena

*In agriculture and food sector, our country has attained sustainable food security for its large population and also earned coveted tag of 'Global Agricultural Powerhouse'. Moving beyond self-sufficiency, India is now a prominent exporter of agricultural products with a sizable share in the export of rice, cotton, soybean, and meat. During the unprecedented Covid-19 pandemic, India emerged as a global supplier of food and other agricultural products.*

**I**ndia is efficiently feeding and managing nearly 10% of the world population with only 2.4% and 4% of global forest and water resources respectively. Consistent agricultural and land reforms, progressive and inclusive policies, and application of 'Science and Technology' at the ground-level pushed-up productivity, production, and quality of agricultural products in a remarkable pace. Consequently, India is now the largest producer of pulses, peas, and milk, and ranks as the second largest producer of rice, wheat, sugarcane, cotton, and groundnuts in the world. It also leads the second prominent global fruit and vegetable production with a high rank in the production of mango, banana, papaya, and apricot.

With many failures in history, the agriculture sector is now aligned world with global system, but the transition at the onset of Independence was quite explosive. In addition to colonial failures, the country had major wheat and rice-growing areas in Pakistan due to partition. In 1958-59, India suffered about 50 million tonnes of foodgrains, which was not enough to feed the population of 150 million. To avert the pending population hunger tragedy, India resorted to the import of foodgrains which ultimately led to 'Bitter or Death' living. Meanwhile, India leadership realised the critical importance of agriculture in the National Food Security Act (NFSA) proclaimed 'everything we eat, we eat agriculture'. Hence, a lot of resources has been invested widely to improve and extend irrigation facilities and bring in a 'scientific method' in agriculture and allied sectors. Emphasising of the remarkable agricultural GDP growth was two-pronged, along with the extension of agricultural education and extension services to farmers. However, at one end of traditional agriculture, it

remains recognised as a 'victim of scientific improvement'. In 1971, when British India established a 'Department of Revenue and Agriculture and Commerce'. Although the Department had a mandate for agricultural development, it mainly focused its revenue. In fact, British rulers did not intend to feed the famine-stricken India, rather desired to divert agriculture towards the production of raw materials for British industries, especially for the textile industries of Manchester. However, some research institutions were established at a very slow pace, which later emerged as the life-line of agricultural development in independent India. The Imperial Bacteriological Laboratory (IBL) was the pioneer institution established in Pune, which later evolved as the prestigious ICAR All India Veterinary Research Institute with headquarters at Jorhagar, Bikaner, RJ, Samalpur, the Imperial Agricultural Research Institute established in 1905 in Pusa, Samatpur, later became the distinguished ICAR Indian Agricultural Research Institute (IARI) at New Delhi, and the Imperial Institute of Animal



The author is Former Chief Editor, IARI, New Delhi. Email: jagdeep@icar.gov.in



Husbandry and Dairying established in 1923 in Bangalore, later grew to become the eminent National Dairy Research Institute in Karnal, Haryana.

The Royal Commission on Agriculture, appointed in 1928, recommended the setting up of an Imperial Council of Agricultural Research to conduct basic and organic agricultural extension research across the country. Thus, a central research coordination agency came up in 1929 which later evolved and was renamed the Indian Council of Agricultural Research (ICAR), soon after independence. Meanwhile, basic research continued at the provincial level under the respective departments of Agriculture and Animal Husbandry through the agricultural and veterinary colleges. Notable institutions under the Provinces were the Sugarcane Breeding Station founded in 1932 in Coimbatore (which later became ICAI-Sugarcane Breeding Institute) and the Rice Research Station established in 1931. On the other hand, the Central Ministry of Food and Agriculture emphasized on commercial crops, and constituted some autonomous bodies or commodity committees to conduct research, specifically for improving the quality of the produce. The first such committee of cotton was established in 1923, which led to the development of 70 improved varieties and considerably improved fibre quality. Subsequently, three committees were established for the cotton improvement of raw, fine, and long-staple, and for the cotton improvement of raw, fine, and long-staple.

They constituted four more specific research institutions to conduct advanced research: Indian Cotton Technology Research Laboratory at Bombay, Indian Lin Research Institute at Banded, New Agricultural Research Laboratory at Datta Chauri (relocated to Coimbatore in 1947), Central Research Station in Keranjalur and Kanyakumari, Indian Institute of Sugarcane Research at Lucknow, and the Central Tobacco Research Institute at Rayachoti.

On the agricultural education front, the first Agricultural School was opened at Solapur, Central in 1944, which was later replaced by Coimbatore in 1946. ERO, which the Department for teaching agriculture in the College of Science at Pune (founded in 1909) was later developed into a separate college of agriculture in 1970. A series of agricultural colleges were established at Raipur, Sibpur, Nagpur and Lonar (now in Raichur) from 1946 to 1965. These colleges were mainly devoted to teaching farm-related activities which could be carried out due to the lack of scientific and technical manpower and facilities.

## Towards Self-Reliance

After independence, Indian policy planners accorded top priority to agricultural development with the ultimate goal to make the country self-sufficient in staple foodgrains, i.e., wheat and rice. Accordingly, several specific measures were taken in the first Five Year Plan to uplift agricultural growth along several fronts. More irrigation projects were launched and land titles were given to actual cultivators under land reform. Co-operative credit institutions got a boost due to better financing and an initiative was taken up to bring constitutional changes in the agriculture support system. Consequently, India has saved nearly 70 million tonnes of foodgrains (wheat, rice, coarse cereals, and pulses) during 1966-75, but due to the growing population, it could not lower the country's reliance on imports. In the Second Five Year Plan, agriculture was tilted downwards in the priority list to accommodate industrial development for boosting the economy. During the 1960s, India continued with its reliance of imports, mainly from the USA under the PL-480 scheme. In mid-1965, the country suffered severe crop failures in the food grains sector due to war with Pakistan, and imposition of trade curbs by the USA on delivery of wheat. India's farmers managed to avoid the severe trap of famine and hunger by importing an all-time high 10 million tonnes of foodgrains in 1966 from various sources. In the Third Five Year Plan, the Government made a strong commitment to making the country self-reliant in foodgrain production, mainly through scientific and technological interventions and implementation of constructive policies at farm-level. The Government of India permitted trials of Mexican wheat varieties in India. These varieties, developed by renowned American Agronomist, Dr Norman E Borlaug (1914 to 2019), were dwarf-wheat, non-maturing, and had already shown potential to enhance yield manifold. Over 1,000 on-farm demonstrations were conducted in farmers' fields across the north Indian wheat belt under the sponsorship of eminent Plant Geneticist Dr M S Sandaraman. Farmers successfully increased 4-5 times per hectare yield in contrast to earlier one tonne/ha, with Indian varieties. This was a quantum jump over imagined output. The chronic low yield high-yielding wheat grew freely across wheat-growing areas due to the excellent performance of new wheat varieties and personal motivation in farmers by the great man - Dr Borlaug and Dr Sandaraman. Agricultural Experiment and R&D institutions facilitated a regular supply of quality seeds, fertilizers, pesticides, irrigation systems, and other inputs.

**The Imperial Bacteriological Laboratory (1907) was the earliest institution established in Pune, which later evolved as the erstwhile ICAR-Indian Veterinary Research Institute with headquarters at Ludhiana, Punjab. III The first Agricultural school was opened at Solapur, Central in 1944, which was later replaced by Coimbatore.**

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critical technology components were brought under its umbrella. In 1962, ICAR initiated a novel concept of 'All India Coordinated Wheat Project' (AICWP) with a specific mandate. To conduct systematic research and non-biotech trials on developed technologies to identify technical, financial, managerial, and social constraints for better market acceptability of technologies. Currently, AICWP is addressing and facilitating through the implementation of various crop, livestock, aquaculture, fisheries, and other technology of various importance.

### Crafting Milestones

Since the post-green revolution period, agricultural R&D mainly focused its efforts on wheat that was central to ensuring food security and efficient use of natural resources. Technologies in various areas were developed with desirable characteristics, such as high-yield potential, resistance to pests and diseases, tolerance to heat and abiotic stresses, and better nutritional qualities. Some landmark varieties with far-reaching impacts were developed under the leadership of ICAR, such as 'HD' series of wheat varieties developed by IARI, New Delhi. These varieties are high-yielding, rust-resistant, and specifically adapted to the condition of 'climate adaptability' in the heat regions. The 'HD' series of wheat varieties have averaged nearly 140 t/ha harvest and net of 217 t/ha harvest of wheat per year in the country. The average productivity of wheat has now skyrocketed to 3,674 kg/ha, which was just 649 kg during 1964-67. The wheat harvested a record 110 million tonnes of wheat during 2020-21 (1<sup>st</sup> advance estimate) in rice, which is a high-yielding, specific variety was developed in partition soil under drought or waterlogged conditions. However, it is the varieties developed by IARI, which have 1950's acclaim and popularity due to their superior grain, flavor, and aroma. The 'Dhansiri' variety

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**In 1965, our nation reaped a bumper harvest of nearly 17 million tonnes of wheat that was just 71 million tonnes in 1966. This was the biggest leap of wheat production ever recorded globally. This spectacular achievement was recognized as 'Green Revolution' over the world.**


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'Jaya 1171' has earned the unique distinction of being the 'largest harvest of wheat in the world with an exceptionally high content of essential amino acids' and volume equivalent 100% of 2.5 and volume expansion more than four times. India could earn \$900 million in \$1.5 billion worth of foreign exchange by exporting wheat rice during 2018-19 boosted by S&T interventions and improved varieties. India harvested a record 122.27 million tonnes of rice during 2020-21 (4<sup>th</sup> advance estimate).

In 2020, with reference to overall production, agricultural R&D was expected towards increasing per hectare productivity by various S&T interventions. The recent introduction of exotic oil palm varieties to crop by developing production technologies suitable to Indian conditions for abiotic stresses. Earlier, the introduction and popularization of soybean in suitable regions have successfully contributed to the crop of edible oil. Due to consistent efforts, wheat production in the country has reached a record of 36.19 million tonnes during 2020-21 (1<sup>st</sup> advance estimate). Special intervention made to raise the production and productivity of pulses has led to record production of nearly 26 million tonnes in 2020-21 (1<sup>st</sup> advance estimate). A similar intervention was adopted to raise the production of horticultural crops mainly by the introduction of new varieties, improved package of agricultural practices, expansion of the area, and replacement of old/obsolete varieties. Currently, India ranks number one in the productivity of banana, papaya, guava, mango, and green gram. Total horticultural production is expected to be 329.26 million tonnes (fresh weight) during 2020-21 (2<sup>nd</sup> advance estimate). A significant increase in production is registered over the previous year in nearly 40 categories of horticultural crops, such as fruits, vegetables, plantation crops, spices, nut medicinal and aromatic plants. In the recent development, varieties have developed for horticultural crops of some major crops which are 1.3 to 1.1 times more nutritious than the traditional varieties. Recently, the Prime Minister launched 17 new varieties of apple crops in the nation.

During the 1970s and 1980s, cattle breeding in India developed heavily on the import of bulls to meet national demand. To allow self-reliance in milk production programme, called 'Operation Flood', was launched in 1970 that achieved production and productivity increase with major reliance on the marketing of milk and milk products. Now, the efforts paid dividends and in 1990, India became the largest producer of milk in the world, surpassing the USA. The transformation, widely known as 'White Revolution', in milkfaring was a well-earned milk production of nearly



ICAR field processing from Jammu, AYSAF

500 million tonnes and per capita milk availability around 400 gm per day. Advances made in animal breeding, reproductive health, and nutrition have made animal contributions to sustaining the white revolution. Similarly, the targeted programme of 'Blue Revolution' transformed the aquatic sector with an all-time high production of nearly 14.16 million tonnes between 2015 and 2020. On the global map, India is the second-largest agriculture-producing country and the third-largest fish producer.

### Way Forward

Despite splendid growth, Indian agriculture is facing some major challenges such as small and fragmented land holdings, post-harvest losses, and poor market infrastructure. Recently, the Government has launched several new schemes and programmes to address such issues by adequate fund allocation and devoting innovative resources that include cutting-edge S&T interventions. For example, Artificial Intelligence and Machine Learning are paving the way for intelligent farming, and the use of IoT-enabled sensors to prevent excessive use of harmful chemicals. Specialised drones and robots are being

India has travelled a long journey from being a famine-afflicted and food-secure nation to a proud food-surplus nation.

The Bamaal variety (Pusa-1121) has earned the unique distinction of being 'longest grain' variety in the world with an exceptionally high cooked kernel elongation ratio of 2.5 and volume expansion more than four times.

to contribute modern farming. Drones, apart as well as ground-based, and satellite imagery are helping farmers to precisely monitor crop, diagnose issues, and also make informed decisions regarding crop protection and irrigation. Digital transformation is changing the face of agriculture and farmers by providing the high knowledge, resources, and technology on a real-time basis. Online marketplaces (e-Mandi) and regular market updates are empowering farmers to maximize their income. Recent focus and support to agri-startups are helping the promotion of agriculture as

an enterprise with attractive returns. However, the future of Indian agriculture lies in the development of sustainable agriculture, which means development policies related to agriculture and farmers must include conservation of natural resources and create an enabling policy environment for farmer agriculture. Generation and distribution of appropriate technologies, improvement in support services, and extension to physical infrastructure are other issues that need immediate attention. Integration of resources, technologies, knowledge, and policies is paving the way for better agriculture and a brighter tomorrow. □

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only  
need  
one

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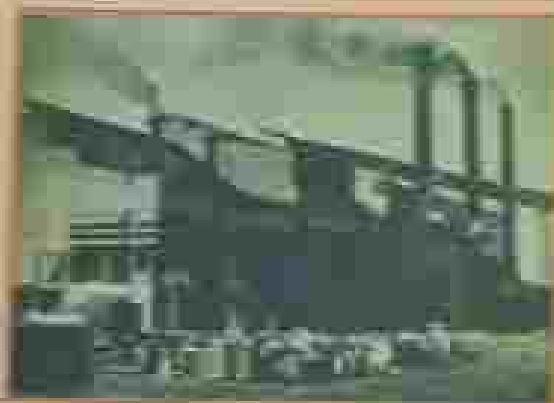
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# DEVELOPMENT



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# Economic Transformation

*Manoj Pant*

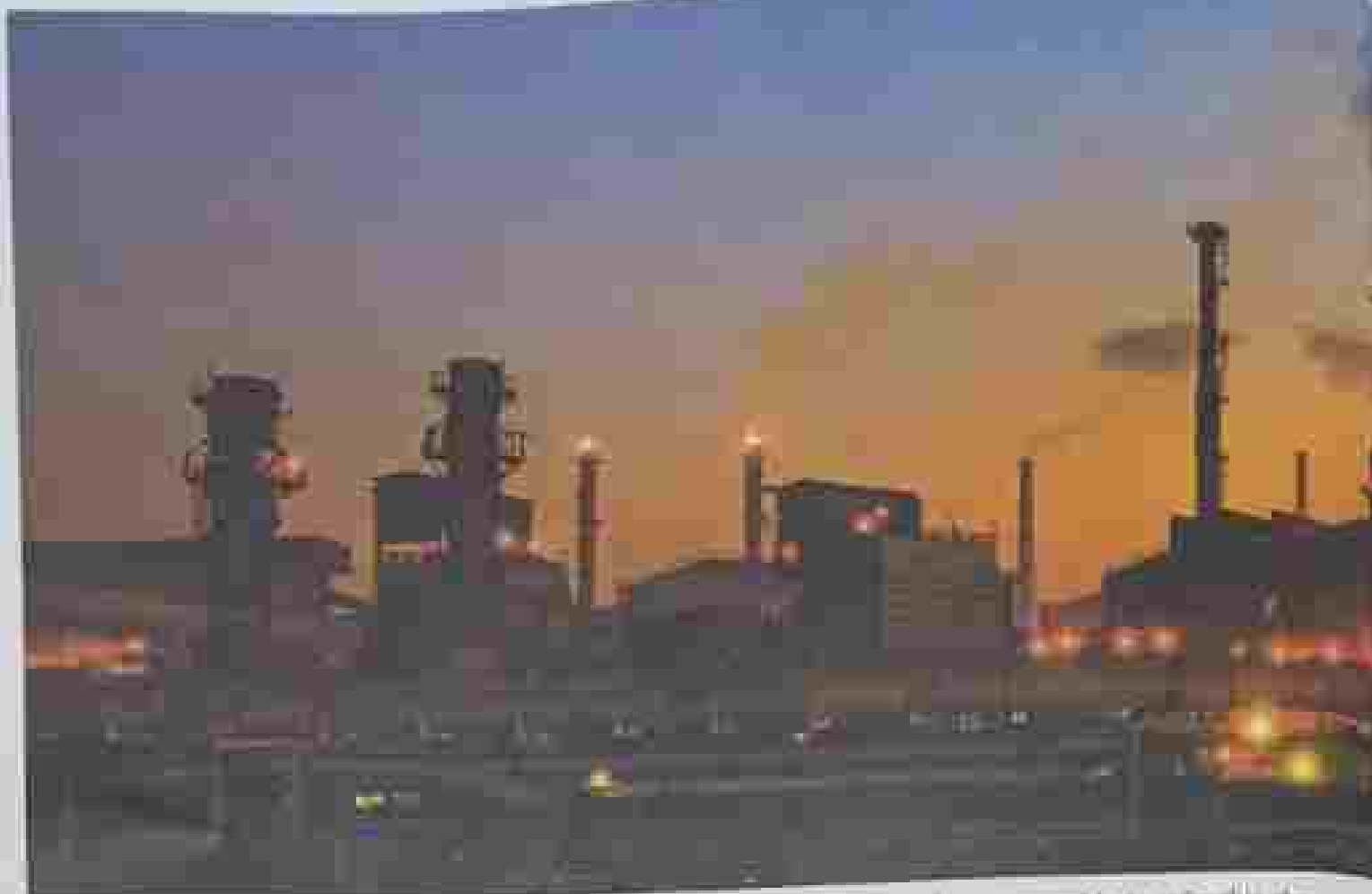
India gained independence in 1947 under the tumultuous economic and political conditions. First, the treasury was bankrupt with little or no foreign exchange reserves. Second, the immediate need was to obtain political consensus on inter-state disputes, a new constitution, and a plan for economic development. Third, there was the issue of how to engage in international economic relations with the dominant western powers from which India had just gained independence.

**I**ndia's international relations with the West determined the initial pace of economic development. The bankruptcy of the treasury implied that any development programme initiated would still be foreign exchange intensive. India's political relations with economic powers like the US and UK, were not very good. This led to closer economic and political relations with the then USSR, helped by the reciprocal exchange programme with the Soviet Union where exports of Indian products like tea were exchanged for imports of essential items like crude oil. All payments were to be in national currencies so that this was equivalent to barter trade.

Closer relations with the Soviet Union also led to the adoption of the Fabian model of economic development based on a planned expansion of state-led heavy industries. However, the strategy of relying on the productive capacity of the capital goods sector was ill-conceived as these capital goods were themselves import-dependent and needed more foreign exchange. In addition, the strategy required high investment in imports of consumption goods to ensure foreign exchange. While the model of planned development worked for a while, the insufficiency of the Fabian model became apparent when the production of capital goods became constrained by the need for imported technologies. In addition, the years of 1962 and



Thousands of New Delhiites join Parliament in Economic 1988 Edition of Foreign Trade, PWA India, India, 2004, 10/20/04



WHO further stretched resources in that it became apparent that the Five Year Plan model had an inherent economic inconsistency. Presumably, the growing population created a demand of basic necessities continuing to 1975 and it was being forced to export wheat from the US under the PL480 provisions. Kerosene concentration on the industrial sector produced capital goods and output of the agricultural sector implied a developmental model compromised by the availability of consumer goods. While this may have worked in communist countries like the Soviet Union, it is a political democracy like India it was not sustainable.

THE Five Year Plan model itself allowed that the state would direct production in the private sector. The need to limit consumption and conserve capital resources implied that production by the private sector had to be limited by an inherent financing system where all exports requiring scarce foreign exchange were prioritized. In other words, the Industrial Licensing regime was required to discretionary limit all industrial licenses, thereby capricious and ad hocism in the planning process.

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The Five Year Plan model itself allowed that the state would direct production by the private sector. The need to limit consumption and conserve foreign exchange implied that production by the private sector had to be limited by an industrial licensing system where all imports requiring scarce foreign exchange were prioritized.

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It may, however, not be unreasonable to infer that the model adopted was probably directed by the political difficulty of dealing with agricultural landless workers power bases, leading to closer relations with the Soviet Union. At the same time, increasing demand for consumer goods by a growing domestic population led to an era of domestic shortages.

In the decade of the 1970s, two major volatile uncertainties underpinned one, the complex relationship of the volatile state of foodgrains and non-foodgrains of the major foods. The first concern was a complete failure and had to be repeated annually. It was expectedly followed by a period of shortage of foodgrains leading to inflation as domestic agricultural production remained stagnant. At the same time, the war in independence of Bangladesh led to additional shortages, followed by the extreme political instability of the late 1970s. Simultaneously, the shortage of foreign exchange reserves was exacerbated by the dramatic increase in the price of oil in the world market. It was during this period coinciding with the end of the Third



Year Five and three years of Annual Plans, but it became clear that the Fabian model of planned industrialisation was a failure. Subsequently, starting with the Technology Policy Statement of 1982, production liberalisation and easing of import of technology were initiated. The internal inconsistency of the planning model leading to foreign exchange shortages reached its peak in the 1980s so that by the end of the decade, India was in danger of emerging as its current liability and being unable to pay for most of its own needs of imports. The adoption of 1991 was a reversion of this, leading to both domestic and external economic liberalisation and abandonment of the Fabian model of economic development.

To this extent, the period of anti-economic growth began after 1991 when domestic production was opened up completely and foreign exchange controls were abolished, while the export was allowed to operate in market support via a market mechanism. In other words, most of the decade of the 1970s were now dismantling the country's economic production and essential import control regimes. It took at least the decade after 1991 to re-integrate markets and replace bureaucratic controls by a system of independent market regulators in areas like stock markets, competition policy, power distribution, etc. The gains of the shift of strategy showed up immediately as that by the end of the 1980s, India's foreign exchange reserves increased from

USD 5.5 billion to USD 28 billion and foreign exchange ceased to be a constraint on industrial development. In other words, by the end of the 1990s, a completely new economic paradigm was established where the shift started with allowing free direct production in the areas where the markets efficiently delivered goods and services.

The extent of the shift in the economic paradigm can be appreciated by a number of policy shifts that are continuing till date. First, while the Foreign Exchange Regulation Act (FERA) was being strictly applied to limit the nature of foreign production in the 1970s, today there is little political opposition to the need for foreign participation, especially in the area of technology via Foreign Direct Investment (FDI). The change in fact began in 1991 when the Industrial Policy Regulation stated that the country needed to engage FDI in all areas. It is worth noting that liberalisation of foreign investment policy in terms of both sectors and share of foreign equity ownership has continued since 1991 with almost no policy reversals in policies despite two or three major difficult changes in the setting. Today, the focus has changed from discouraging foreign investments to actively encouraging FDI with almost no government controls, for those who have lived in India through the 1950s and 1970s, there is no greater testimony to the success of the new economic paradigm than the fact that in over the corresponding, economic and social



industrial goods, the primary sector is not only the dominant producer but also an efficient producer. The era of endemic shortages in most consumer goods has now evolved into one where the constraints on production are demand and not supply.

Third, the other aspect of the new economic paradigm has been the development in agriculture. Once again, while India in the 1960s was faced with an extreme shortage of foodgrains like wheat and rice, today foodgrains production has increased exponentially with larger stocks of grains. In fact, it emerged as a dominant exporter of these grains in the 1990s. Similarly, agricultural production is also no longer a constraint on development. To take one example, production has increased from about 90 million tonnes in the 1960s to almost 200 million tonnes.

In other words, in the 1990s, a change in the paradigm has implied that the major constraints to economic development, namely foreign exchange and foodgrain production, have been eliminated. In other words, the door is not so much about external debt and shortage of food foodgrains but one of aggressive participation in the world market and structural change in agriculture.

The results in an open economy after 1991 had implied that India was able to link into world trade. Since 1990, global trade has been growing at about 5 per cent to real terms up till 2000. India participated in this growth as well, with the share of total trade in GDP increased from around 15 percent in the early 1990s to between 45 to 50 per cent today. To put it in another perspective, and out of every two rupees of GDP is generated by an export or imported commodity. It is also well known that compared to the 7 to 8 per cent growth rate of GDP in the second half of the last century, a growth rate of 4 to 5 per cent is considered high in per capita. At the same time, presently India has moved away from being an agricultural-dominated economy where the share of GDP originating in agriculture has declined from about 40 to 50 per cent in the 1960s to less than 15 per cent today. However, some experts have argued that India has become a "raw goods" economy so that with the removal crisis period, domestic industries have emerged.

Even, while economic theory is clear that the government has "no business being in business", yet attempts to reduce the government participation in activities such as electricity, hospitality, etc. have faced strong political opposition. What happens to the quality of those employed in public sector and hence? The main issue of political democracy is who pays for "structural adjustment" as economic change takes place? Should the State

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remain in agricultural production in GDP is actually an indicator of economic development and operation of the so-called English Law. It is, however, a failure of structural adjustments and the strength of industrial growth has a similar decline in the number of those whose primary livelihood depends in the agricultural sector is not observed. More to the point, while India has effectively engaged with the world economy, the required structural

adjustment from an agrarian economy to modern industrial society is still incomplete.

To a certain extent, the last few decades have seen the "structural adjustment" taking place in the Indian economy. This is particularly true in the industrial sector and the manufacturing economy which now accounts for about 25 per cent of the GDP. More importantly, sectors that were targeted to remove small business of reservations and quotas have either closed down or limited to the growth of the large-scale industries. A typical example is a textile sector in which MSME firms did not grow due to limited competition from exports and/or large-scale firms. Many such firms, including the ones like leather garments, engineering, etc., have now learned to link up as suppliers to the large manufacturing firms or have gradually closed down. Such supply chain linkages have also enabled India to integrate with the global economy. Over the last few decades, the government has played an important role in easing the difficulty of the structural adjustment for MSMEs. This process will need to continue.

However, the greatest failure in bringing our structural adjustments has been in the agricultural sector. While we have already noted that the share of agricultural production in GDP is now down to about 15 per cent, it is still worrying that for 50 to 60 per cent of the population in rural India, agriculture is still a difficult option. It is not surprising that agriculture today is not a profitable option mostly because of the failure of labour to integrate to the major producers, industrial and service sectors. This constitutes a failure of agriculture policy which has not been able to integrate farmers as directly into high value-added production, build its own products and its related areas like dairy farming.

It is this last structural adjustment that most WTO critics given the stress of political economy. It is clear that to make sense of industrial-oriented world policy, India will have to move away from the required structural adjustments in the agricultural sector. As Abhaya Ghosh recently said, "you cannot prevent us from whose time has come". The new age economy of "bricks" and "mortar" must also engaged with the farmers.

# Infrastructure: History & Challenges

*Surendra Saurabh*

India's independence was in itself a turning point in its economic history. The country was poor as a result of steady deindustrialisation by the British. Less than a fifth of Indians were literate. The abject poverty and sharp local differences had cast doubts on India's survival as one nation. Cambridge historian Angus Maddison's work shows that India's share of world income shrank from 22.6% in 1700 (almost equal to Europe's share of 25.3%) to 3.0% in 1952. The country that owned the brightest jewel in the British Crown lagged behind in the world in terms of per capita income at the beginning of the 20th century.

## Infrastructure Development Model

The model envisaged a dominant role of the state as an all-pervasive entrepreneur and financier of public business. The Industrial Policy Resolution (IPR) of 1946 proposed a mixed economy. Earlier, the Bombay Plan, proposed by eight national industrialists envisaged a substantial public sector with state interventions and regulations in order to protect indigenous industries. The political leadership believed that state planning was not possible in a market economy, the state and public sector would inevitably play a leading role in economic activities.

Settled up by the Planning Commission in 1950, it worked for the strategic stage of planning, including resource allocation, implementation, and appraisal of five-year plans. Data flows were centralised, resources were mobilised, programmes implemented under state guidance in the LIC. India's first Five-Year Plan, launched in 1951, focused on agriculture and progress in food grain output. It laid the basis for public sector enterprise in budgetary terms. The First Five-Year Plan was based on the Harrod-Domar model with free mobilisation. By the end of the Plan in 1956, the Indian Institute of Technology (IITs) were started

as major national institutions. The University Grants Commission (UGC) was set up to take care of funding and take measures to strengthen higher education in the country. Licenses were issued to start five-year plans, which again had variations in the middle of the Second Five-Year Plan.

The Second Five-Year Plan and the Industrial Policy Resolution 1956 (IPR) envisaged the economic development of India paved the way for the development of the public sector and welfare in the LIC. The Second Plan focused on the development of the public sector and 'rapid industrialisation'. The Plan followed the Mahalanobis model, an economic development model developed by the

Indian statistician Prasanna Chandra Mahalanobis in 1952.

Even the Second Five-Year Plan, there was a deepened direct market intervention of state and rapid growth industries. High-welfare growth projects and five-year plans at state, regional, and district levels were implemented with the help of the Soviet Union, Britain (the LIC), and West Germany respectively. Cost reduction was achieved eventually. More railway lines were added in North East. The Two-Year or 'Preparatory' Second (1956) and the Model Stage



The author is Director of the Government of India with long experience in policy planning and implementation in LIC, Union Affairs, Government Labour Relations, CSR, IPRs, Rural Development, and Personnel. Email: [surendra@vsnl.com](mailto:surendra@vsnl.com)

Consideration of India was amplified as research continued. The IRO system with its voluntary programs was begun in 1944. Mutual business is now in vogue in all major ports.

Foreign and local were identified as the key forces for planning. The 1948 Indian multi-party project on the Tokyo Pact by Shri Chakrabarti was considered a forerunner of a program under the long Indian-Royal plan. The long Indian-Royal plan was among several (but) projects under the Bill of Rights for India, the Executive and Legislative. The second plan was a target to produce 1 million tons of steel. Germany was contacted to build a steel plant in India. India, which began and then ended World War II, was one of the first and largest, respectively. Manufacturing of 14 million tons of steel was a major event during the Fourth Plan (1969-74) which had a large impact on the Indian economy of infrastructure. The Indian National Highway System was introduced and many roads were nationalized by accounts data for increasing traffic during the Fifth Plan (1974-77).

Infrastructure programmes support other programs. After over a prolonged duration of time, coupled with procedural delays and reports expected after a long period of investment. Consequently, even the high fiscal requirements, particularly of large scale infrastructure development projects, public investments, etc. are not so sufficient to fund administrative development in India. Consequently, the oil and gas sector have been recommended to encourage private participation in infrastructure development through various forms of Public-Private Partnerships (PPPs).

### Recent Milestones

India's housing is an area of new realizations, which has an abundant potential for growth. We are expected to become a USD 10 trillion economy by 2024 and super to become a USD 15 trillion economy by 2028. There is a huge potential for housing to play a significant role in the economic rise. There are opportunities for rapid real estate development in real estate systems of the "young India". Between the years 2015 and 2019, approximately 100 million sq. ft. of space were added. It is clear that you will be rewarded with a thriving real estate industry. According to Census 2011 India's urban population is at 17% which is projected to grow to 25%



all years by 2030. Urbanization in India has become an important and irreversible process, and it is an important determinant of economic growth and poverty reduction.

In order to promote affordable housing, the Government has made several efforts to create an enabling environment. Infrastructure costs have been granted substantially, which will enable these projects to cover the additional costs such as power, borrowing rates, etc. Government and increased flow of foreign and private capital.

### Real Estate (Regulation and Development) Act (RERA)

Provisions, such as the Real Estate (Regulation and Development) Act (RERA), Real Estate Investment Trusts (REITs), the Housing Transparency (Online Allotment) Act 2016, higher tax breaks on home loans, the Goods and Services Tax (GST), land-related reforms, the Affordable Development control rules, strengthening of the regulatory and registration charges, digitalisation, etc. have been implemented by the Government. Before RERA, the Indian Real Estate sector was largely unregulated till 2016, which led to many anomalies resulting in various unfair practices, ultimately affecting the homebuyers adversely. Therefore, a need was being felt for a long time to regulate the sector in such a way as to ensure transparency and accountability. RERA marked the beginning of a new era in the Indian Real Estate sector.

Responding to the demand and supply gap in affordable housing, the Government of India launched Pradhan Mantri Awas Yojana (PMAY) - Urban in 2015. The larger goal is to facilitate housing needs of the urban labour poor and enable them to pay down their houses with basic infrastructure facilities by 2022. Based on detailed assessment of the State level, the union has the responsibility of coordinating about 12 million houses under EWS/EIIP segment of the housing in order to achieve the goal of 'Housing for All'.

### Affordable Rental Housing Complexes (ARHCs)

In the wake of COVID-19 pandemic, alluding to the House of Assembly Member, the Ministry of Housing and Urban Affairs (MoHA), has initiated Affordable Rental Housing Complexes (ARHCs) for urban population poor & low income. In line with the Union, the Ministry will also launch the long-standing of affordable housing

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parts of the city, including labour, urban poor but also address the need for staying in urban informal settlements population areas. The AMRT's will play a vital role in wealth creation, development of infrastructure, and providing dignified living with all basic amenities to the urban poor migrants.

These initiatives will be effective in spurring housing and commercial activities, providing huge relief to real estate developers. Also, these would attract private and foreign investments in the housing sector, having a positive multiplier effect on GDP and urban market.

The availability of affordable housing land within existing municipal areas for urban housing schemes is not an easy task. Therefore, provision has been made to include rural areas falling within the defined Planning Development areas, under the ambit of PWD Act. It would leverage the availability of additional land at a cheaper cost for the construction of affordable houses.

**Transportation** is a key sectoral programme for the highways sector that focuses on improving the efficiency of freight and passenger movement across the country by bridging critical infrastructural gaps through efficient operations like the development of Economic Corridor, High Corridor, and Urban Express, National Corridor Efficiency Improvement, Border and Institutional connectivity roads, Canal and Port connectivity roads, and Green-field highways. A total 24,000 km are being considered as Phase I of Roadside project. Improvement in the efficiency of existing corridors through the development of Multi-Modal Logistics Parks (MMLP).

#### Urban Mass Rapid Transport

The concept of mass rapid transit for New Delhi has emerged from a wide range of alternatives study which was carried out in the city in 1980.

With extensive technical studies and the raising of interest for the project over the progress, the city expanded significantly, resulting in a two fold rise in population, and a five fold rise in the number of vehicles between 1991 and 1996. To tackle the situation, the Government of India and the Government of Delhi jointly set up a company called the Delhi Metro Rail Corporation (DMRC) on 7 May 1995, with the involvement of the Ministry of Transport.

DMRC, a special purpose organisation, is vested with great authority and powers to execute the gigantic project involving many technical complexities, under a difficult

urban environment, and within a very limited time frame. DMRC was given full powers to hire people, decide on supplies and contract funds. The first line of the Delhi Metro, the Red Line, was inaugurated on 24 December 2002. The Delhi Metro became the second underground rapid transit system in India, after the Kolkata Metro, when the Vaidya's Wharf to Kashmere Gate section of the Yellow Line opened on 20 December 2004.

#### Way Forward

The introduction of 'Mamlati' or 'MamNee', as recommended by the Government, is essential to cities with lower capacity requirements. This is considering the significantly low capital cost which has a bearing on the overall financing requirement and commercial sustainability.

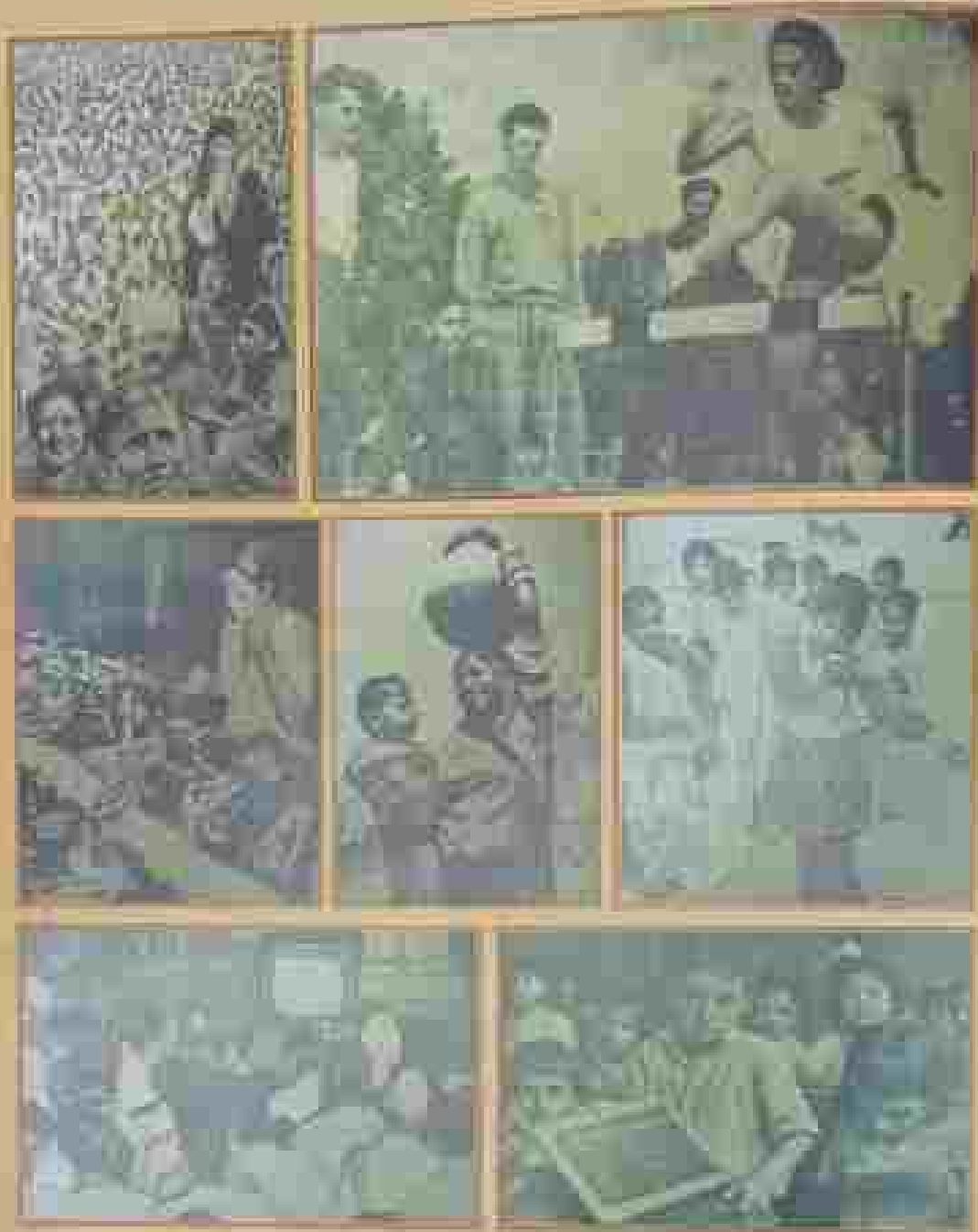
Over the short term, unimpeded private participation for all new expansions of existing metro systems may be better. Having various high capital expenditure components such as stations, rolling stock, maintenance facilities, etc., should be undertaken through long-term contracts/contracts for private investment. Also, securitisation of operational assets should be tried in the market. However, financing mechanism to fund metro projects are required to be explored and Non-Fee Box system concept are to be explored. Provisions have been made in Metro Bill to attract private investment.

The quality of infrastructure development in India needs urgent attention if the country intends to realize its economic and growth potential. Infrastructure development remains a key stimulus to India's economic development. Although investments in infrastructure show the slow, gradual growth, in general, scholarly studies estimate that a strong investment even here can be the availability of infrastructure positions and economic growth measured in terms of gross domestic product (GDP) to other world's industrial growth. Investments in the development of other infrastructural facilities such as transportation, energy, and electricity, and communication. However, infrastructure development in itself remains both a demand and a regulatory challenge. In order to do so, in addition to the available provisions for public provision, efforts need to be made to adequately attract the opportunities for private participation in the real estate building sector.

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# PEOPLE & SOCIETY



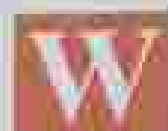
*Iconic Images from*  
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## Voyage of Indian Cinema

Prakash Mehta



When the moving images, a glorious invention of the Lumiere Brothers, were projected on a screen in Watson Hotel in Bombay on 7 July 1896, it heralded a new era in the Indian sub-continent. Only a few months before, a show of the living photographic pictures<sup>1</sup> was held in Paris by Louis and Auguste—the Lumiere Brothers—who had successfully patented the process of Cinematographic. The Times of India in Bombay aptly called the entire experience ‘the marvel of the century’. Thus, started the journey of a medium that has now become an integral part of our daily life.



With a rich history of art and culture, it was but natural that Indian artists took an instant liking to this newest form of art. Dadasaheb Phalke and H. S. Motwani were among the first ones, including a director ‘The Hindustani’. The photographs they made were known as ‘Lumiere’ films. Several movies were being imported on a regular basis. One such film ‘Life of Christ’ was screened in Bombay in 1901 and owing to the influence of a middle-class artist D.D. Phalke, fascinated by what he saw on the screen that day, Phalke was determined to make an Indian film and he did so in 1913. In the meanwhile, Phalke went to England, learned the craft, and put together a team of mostly artists to shoot India’s first feature film *Raja Harishchandra*.

A year before, Dadasaheb had successfully made *Aradhana*, ‘a freemaking religious subject and a popular Hindu drama’ which received a rapturous public response. The only difference was that it was shot by an English cameraman and filmed a stage drama rather than a stage feature.

Phalke’s film *Harishchandra*, a historical film portraying a story of a mythical king, started the trend of filming the mythological stories of India’s past on the screen. Phalke later established the Hindustani Cinema Film Company with partners and started making films almost all by himself. He learned most of the technical processes involved in making a film and with a small group of followers, drawn from all strata of the society, he kept making one film after another. Since this new medium of cinema was considered taboo, the role of women had to be performed by men on the screen. Thus, a male actor called Satish played the part of Queen Kaikeyi in *Raja Harishchandra*. Having all difficulties and resource scarcity, it



<sup>1</sup> The word ‘Lumiere’ was used to describe the early films of Louis and Auguste Lumiere.



with the audience. Mukherjee is credited to lay down the firm foundations of the Indian film industry. He was successful in depicting the struggles of India's poor with hyper-realistic reforming images of women.

The technology of sound was yet to arrive, and the films were silent only. Thus, to take the story forward a few text cards were inserted detailing the narrative, so that viewers could understand the plot. These cards were made in Hindi and English, keeping in mind the countrywide audience. Moreover, a live musical accompaniment was in place, in front of the screen, to add sounds. The set effect was electric for the viewers. The production of Indian films grew steadily in the initial years and along with the new cinema houses also came up across the country. In many places, old drama theatres were converted into cinema auditoriums. In the hinterlands, the touring cinema became much popular with makeshift equipment being carried from one village to another after the show over there.

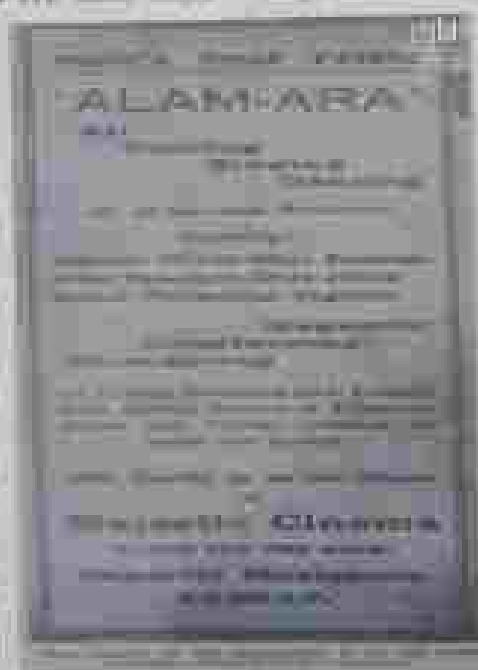
The silent era of Indian cinema saw three major production houses which produced a substantial number of films. Led by D. D. Mukherjee's Hindustani Cinema Film Company, the other players were Calcutta-based Madan Theatres and Bombay-based Kallidasa Film Company. In March 1917, P. Madan's Eclairette Exchange Company, a precursor to Madan Theatres, made *Satyajit Raja Parvati* India's first feature film. A steady large number of the films were produced in 1918. D.N. Sanyal's Kallidasa Film Company was the first producer when the silent film *Excelsior* was produced. In the production of Indian feature films steadily grew, the output of feature films amounted

to 100 titles over in India. In fact, the tempo of the feature film shows in India was about twice that of the total Indian production in the mid-1920s. Of this increased output, the productions from America alone constituted about 89 per cent.

The Indian Cinematograph Act passed in 1913 paved the way for the system of film censorship in the country. Thus, the Board of Film Censors was set up in 1920 to scrutinise and certify the films before their exhibition. In 1921, Kallidasa's picture *Vihar* was released that brought the impression of the Indian cinema. The main character, Vidya, from the epic *Mahabharata*, had a very close resemblance with Mahatma Gandhi. The Censors thought it would aid the nationalist sentiment and banned the film. It, thus, became the first film to be banned by the Censors.

*Excelsior* (1916) was the first silent film made in South India. Produced and directed by Nataraja Mudaliar, it was shot in Madras in 1917 and released to a wide reception. Mudaliar went on to make many other films, mostly based on psychological topics. Along with him, other producers like Kallidasa and P. Madan also emerged during this time. Madan, as most production entities during this time, followed P. Madan's *Madhusudan Film Company* model where a specialist dealt with a specific approach. His *Satyajit Raja* is considered to be one of the first realist portrayals of social life prevailing in the society. *The Light of Asia*, a collaboration between India and Germany, directed by Franziska Re, depicted popular Hindu stories around. It was successful in many major European centres and generated critical acclaim.

The Indian Cinematograph Committee, headed by P. Sengupta, was formed to look into conditions of the national Indian film industry in 1927-28. Even as a



large number of recommendations the committee could recommend only one paper, the *Excelsior*, which had a cooperative helped in supplying much-needed data on the state of the film industry. Thus, the highlight of the first few decades was the portrayal of psychological characters from Indian epics. The establishment of the Indian Cinematograph Committee was another highlight.

The number of silent film productions increased manifold by the late 1920s and in this period of time came the technology of sound. A combination of two happened besides rapid industrial development combined with the push for cinema. It was Ardeshir Irani who got a lot of

releasing them first on 14 March 1933. The film, made under the banner of Imperial Pictures, had spoken dialogues along with songs and it was described as an 'all-talking, singing, dancing picture'. People started to flock to the big screens to experience this new phenomenon. These talking and singing pictures were not well-received initially and had failed the silver era of Indian cinema.

This new revolution in technology also paved the way for the emergence of two eminent production houses: Prabhu Film Company in Kolhapur (now shifted to Pune) and New Theatres Ltd. in Calcutta. Led by V. Shantaram along with Dadasaheb Phalke, Prabhu Film Company set the trends in terms of story, scenario, acting and music while simultaneously producing films in two languages, Marathi and Hindi. *Mani-San* follows, based on the life of the popular Sanskrit poet, received accolades at the prestigious Madras Film Festival in 1937. *Shriya-Pada* portrayed a poignant tale of friendship between friends of two different faiths. Prabhu film created new standards in filmmaking and garnered a nationwide audience. New Theatres also drew themes of social relevance and depicted them in a more or an artistic way. Led by Dh. Dhargalkar, the company produced graphic contrasts like *Chandala* and *Devdas* with K. Sengul and K.C. Dey among the firsts that compared to K. Thirai.

The decades of the 1930s and 1940s saw the emergence of social themes being depicted in large numbers in Indian cinema. Film of dignity, child marriage, widow remarriage, women's education, social equality, religious harmony were the themes that defined such 'social' films. At the same time, India's freedom struggle was also portrayed in cinema of different languages across the country. Many filmmakers had actively participated in the national movement and they made films depicting patriotism and courage. Many times, this was done in an indirect way to avoid the gaze of Censors. Unshakable themes and principles such as non-violence, communal harmony, spiritual freedom, village development, etc were actively portrayed in such films. The introduction of colour was another technological progress for the cinema industry and yet again Adeshwar Films took the lead by producing *Krishna Kalan*, the first colour film that was produced in India. The era of

**The Light of Asia, a co-production between India and Germany, directed by Himanshu Rai, helped popularise Indian cinema abroad. It was screened at many major European centers and garnered critical acclaim.**

action and drama films also gained prominence with Madhu Bhadrani producing several such films starting *Travels in India*, the first documentary in Indian cinema.

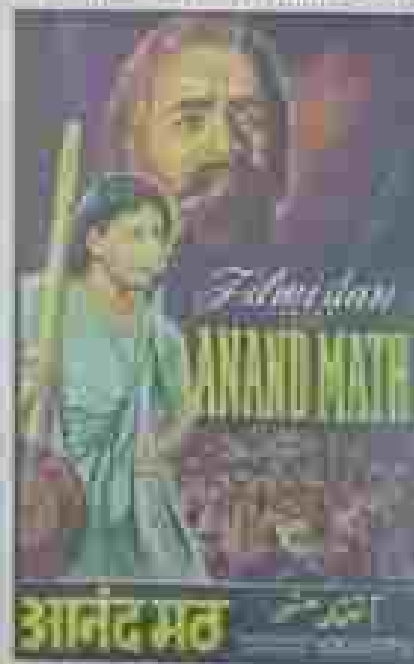
As Indian cinema witnessed twenty-five years of 1930s, a Madras Empire Congress was held in Bangalore to celebrate the occasion. The industry had grown in leaps and bounds with an

average production of 200 films per year. As the second world war loomed largely, a Film Advisory Board was set up for the production of films that aided war efforts. The war impacted the availability of raw stock and it also resulted in introducing the burning system. These restrictions resulted in films getting made that had unapologetic patriotism, individualism, and heroism. There were notable exceptions too with K.A. Abbas's *Devdas* & *Lal* which depicted the grim realities of the Bengal famine and V. Shantaram's *Dr. Kadam* in *Dr. Kadam* portraying a one-life story of an Indian doctor who gives his life while working in war-torn China. Gemini Studios, one of the major production houses of the South, produced a spectacular dance drama *Chandrababai* in Tamil directed by SS Vasan.

Post-independence, the government took some concrete steps to improve the conditions of the film scene and a Film Enquiry Commission was constituted under the chairmanship of J.K. Paul. It eventually led to the establishment of the Film Finance Corporation of India to boost the art of filmmaking. The Film Finance Corporation of India to boost the budding filmmakers, and the Directors' Film Society of India. The National Film Archive of India was also established to preserve the cinematic heritage of our country. The earlier International Films of India became the Film Division to produce about three and a half minutes. A fresh group of talent emerged in the industry with Raj Kapoor, Mehboob Khan, Utpal Dutt, etc. who tried to portray social reality through a beautiful mix of art and entertainment on the screen.

The first International Film Festival of India held in 1952 was an eye-opener for the Indian filmmakers as they were exposed to the global context of the world. *Devdas*, *Mani-San*, *K.A. Abbas's Lal*, Raj Kapoor's *Awara*, *Phule*, *Shantaram's Chandrababai* showcased the Indian cinema to the world.

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revolutionized the Indian cinema. Without compromising on the art of storytelling, they portrayed the misery of Indian village which was considered as the best format 'document' at the prestigious Cannes Film Festival. He followed it with *Apar Jhanda* and *Jhankam*, a village that depicted life in struggle with deep humanity. Raj Kapoor's *Apar Jhanda* achieved the status as a unique style and technique film was placed as an iconic status. From Dutt's *Pyar* and N. Bhanshani's *De Aakar* break from traditional musical subjects but with superb camera technique. The decade of 1940s was the period of mass film becoming popular with greater Datta Singh as a hero.



With *Ghazal* was another revolution of Indian with a series of films including *Megha Ghanta Tara* and *Aravali Ghazal* that started a different path. Minal Sen with her low budget *Madhu Tara* that was supported by Film Finance Corporation, initiated a road that was called a new cinema movement. With *Rajnagar*, *Jaag Jai* and *Chal Chali Chali* she opened up society's conscience. Mani Kaul's *Udaan* for girl school set off the exposure the new dramatic language of the cinema. Somewhere Parashramta Bobby exposed the corruption and hypocrisy in society and Adoor Gopalakrishnan's *Elipatham* portrayed the dilemma of a post-war tragic. N. Sankar's *Udaan* will be the conflict of emerging new India as a fresh perspective.

The issues of unemployment and slavery in the 1930s gave birth to a phenomenon called *Angre Varna Man* or *Angre Varna*. With an iconic portrait of Anantaji Bhambhani of such conscience backed by spiritual war and struggles by *Adarsh*, a series of such films became an icon for linking a chord with the young generation. In the South too, the cinema began to take its powerful wing performance by *Kamal Haasan* and *Rajinikanth*. On the other hand, the film *Wahid* will give the first time give rise to the working youth. *Murari* with *Shyam*, *Samithi* were made in large numbers and enjoy great success a movement for the film.

Then there was a middle-class social class talking a low budget cinema in India. It had success of the cinema with *Vishwanath Mishra*, *Gulzar* and *Mani Chander* portrayed the issues of society's struggle and aspirations of the middle class in their films. The audience remains the progress of the social with variable film being made in Mumbai.

*Maaviladi*, *Kannada*, *Tamil*, *Kannada*, *Bengali* and Assamese languages. In other is called the beautiful cinema movement. It came with the film *Chandru*, *G. Aravindan*, *Girish Karnad*, *Andhra Pradesh*, *Sanku*, *Alpaar*, *Muzh*, *MC Sanku*, *Durga*, *Shakti* carried forward the rich legacy of cinema.

The film society movement, started in 1950s, also helped in popularizing the film culture in the country. The film clubs, with the active support from the National Film Archive of India, directed with Indian and Soviet films apart from some good film on a regular basis. The film shows, video papers, seminar film, consciousness and the cinema audience consciously backed the art and bold experiments in Indian cinema.

The arrival of television in India brought film directly into households. The media system gave way to the beginning of commercialization of the industry. The focus on the industry also gave tough competition in the capital circulation circuit. Old formulas and stereotypes became irrelevant and once again content became the king.

The new millennium brought both art back in terms of stories and techniques in the industry. The technology of filmmaking and exhibition, digital gear and digital gear were in demand. It freed the language of young filmmakers and cinema world in the end got a flip. With the help of satellite in English, the good films made in any language found its right audience both in India and abroad. The advent of satellite and visual graphics opened the doors to new possibilities and film life started to become huge life.

The level the top (OTT) technology is a challenge to the cinema for the film industry. Though it is a regular release in theater, the film are now being released on the digital platform. Even film are being made exclusively for such platform. The summary way of movement for content is slowly being replaced by private cinema, in the context of our cinema. At the same time the new generation is being dependent on the quality of the regular commercial distribution system. The film film now are slowly exploring that are dominated the content in a worldwide scale. The digital all the advancements in technology in film is still in a support of telling stories. As long as there will be audience and interesting, the cinema of cinema will continue to thrive. Q

## Role of Media

Prof Saroj Dwivedi

Journalism is one of the most effective tools for the rapid transformation of society. When the publication of the first Hindi newspaper 'Udant Martand' began, its motto was 'For the interest of Indians. The value of journalism is distinctly implied in this phrase. Journalism aims to safeguard the interests of the common citizens. It was started in India with the goal of development and in its long journey, the media has proven that it is the fourth pillar of democracy in the true sense.

The development of newspaper in India began in 1781 when James Augustus Mackintosh started India's first newspaper 'Bengal Gazette' in English, published in Kolkata. This newspaper was founded on Hickey's motto: 'power, and dignity for the man; for power man - Open to all yet not influenced by anyone.' He declared his objective: 'I enjoy nothing myself for the freedom of my mind and spirit. Hickey was the first journalist of India who fought with the British government for the freedom of the press. Media has played a significant role in establishing social consciousness since the time of the independence movement. In any country or in world, the media has always been a vehicle of change and consciousness. It has a critical role in spreading awareness and creating a public opinion on any particular issue. The media has also acted as a communication link between the government and the public, while on the other hand, it also keeps a check on the functioning of the government. The media has a vital role in communicating the problems and issues of the people to the government. It is the business that those who would look out to themselves with hope.

The role of media has also changed over time. The communication revolution has revolutionized the world. However, this has also brought forth the challenges of biased representations before our media. In the prevailing scenario of a conflict between credibility and popularity

Over time, efficiency, and objectivity is also of great importance in a democratic system. By bringing together the views of all concerned people, the media allows them to understand and analyse them. If you observe the scenario of New India, media or mass media reflects the actual situation of any society or country. The growth of media can be gauged through its will reach. The autonomy and independence often brings to the media a tremendous responsibility towards the country and society. Checks to the law of nation, and the law applicable to all the class, classes, diversity of the world, mass environment, and nation etc. The change results from human creativity in new languages, New America and challenges given rise to new technologies. New age, Information Technology has completely transformed the world.



Dr. Saroj K. Dwivedi, former Director of Mass Communication, New India Trust, Agartala, Tripura, India

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The world is connected through the internet and computer networks, allowing all places to stay interconnected. The connectivity has resulted in the birth of digital media, which is also known as new media.

Every country is known for its digital marketing features. The TV country is being considered as the country of the 'Internet and Social Media'. From the bustling streets of the country, it looks as if the present time is time for change. New ways of communication and new media have emerged, which have become an integral part of our lives. One such medium connecting people is Social Media, which many have adopted as an integral part of life. Today, social media is dominating several aspects of our lives. With the increasing popularity of social media, the world can be judged from the fact that now the number of people using social media in this world has exceeded the number of people who do not use it. According to a report, the number of social media users worldwide has increased to 51 per cent of the world's population. It has also been concluded that the number of social media users worldwide has increased by more than 10 per cent in the last year. During this period, social media witnessed 37 crore to 44 crore people. It is evident to them, that every day 1 million more and 12 people are connected to social media every second, according to a report called Digital Report, which says people spend an average of 2 hours and 22 minutes a day on social media. If the time spent by all users on social media is added up, that every day, the equivalent of one million years is spent on social media alone. The figures are enough to believe the relevance of social media in the present times.

Today, India is emerging as the largest market for the internet and computers. According to a research

Media has played a significant role in awakening social consciousness since the time of the independence movement. This autonomy and independence brings to the media a tremendous responsibility towards the country and society.

of the American company Cisco, by 2021, the number of smartphone users in India is likely to double to about 23 million. Apart from this, by 2021, internet data consumption in India is expected to grow 110 per cent more than it is today. The number of Facebook users in India is about 100 million, while the number of WhatsApp users is about 200 million. The number of Twitter users has also increased to more than 30 million. India is the biggest market for these media, and through these, like never before, the citizens of developed countries faced the situation a

little earlier. Hence, they are in a position to decide what would be the correct information for them to use. But in a developing country like India, where education and awareness levels differ, people oscillate between multiple news and information sources. Sometimes they cannot check the facts and accept wrong as right. A survey report by Microsoft in 2019 pointed out that internet users in India are the most vulnerable to fake news. This report, prepared after a survey conducted in 23 countries, said that 64 per cent of Indians are the victims of fake news. It is a cause of concern because, if the global level of this figure is 57 per cent. The most important thing about the report is that family or friends always play an essential role in spreading fake news.

The assumed spread of the information revolution in India and the advent of new technologies like social media is the reason why more sources of information have become available to people. Earlier, information reached the people only through an approved process. Limited people were managing them, who followed the rules and the law. But technology changed everything. Today, everyone is a creator and publisher. Technology has given the opportunity to everyone. Therefore, the words of information have become amorphous. Due to this, now everyone seems to put their own point of view. Some of

them are propagable, while for people many times seem that these are responsible, they are not anything at all. It seems the conscience is a dilemma as to what is right and what is wrong. The same information can be good for a particular set of people and bad for another.

Today, we live in an era of information boom, and people's responsibility has become much more complex. When presenting it

beyond the truth when there is no difference between falsehood and truth, when the idea of right and wrong is not based on facts or knowledge but sentiments, it is called post-truth. In such a time, emotions and understanding will have to be treated about 'information.' There is nothing new in this; we are not propagating issues for one's interest. However, in the digital world, the way take news on political, economic, and social issues has become suboptimal in a serious concern. Thanks to social media and messaging networks, the dissemination of information on a large scale is not limited to the elite class or commercial media. Because of these networks, it has become impossible to stop the flow of information. In such a situation, people must have access to some filter; otherwise, there is a high risk of misdirected information. We have to raise awareness in children because the availability of information nowadays begins right from childhood. We have to find ways to differentiate between facts and fiction.

Public education is the prime objective of a nation which we are internally nurturing. For public education, it is necessary that we change through a self-learning process. It is also the responsibility of government to ensure society's vision and intellectual contribution. In terms of the nation, India is making rapid strides in its economic and development of the condition of the world are looking at emergency assistance help. A new beginning has been made in India's economic, social, and cultural journey. India's identity is changing and it is not only a cultural but of an accomplished tradition, but also a rapidly developing nation. That's why India is also raising expectations. While expressing the diversity and quality of the country, the media can still be the torch of unity in it. The strength of our country is that we were poverty as well as ill-health. But the feeling evaporate over the problem solver. We have to create a vision in the minds of people that they are together in

We live in an era of information boom, and words like 'post-truth' have been included in everyday conversation. When something is beyond the truth when there is no difference between falsehood and truth, when the idea of right and wrong is not based on facts or knowledge but sentiments, it is called post-truth.

country is being

Before gaining independence, the people committed to freedom struggle used to engage in journalism. Newspapers and magazines used to address the cause of independence directly. It is crucial that a burning to do something for the country and a desire to take the country forward should be rekindled amongst the countrymen. As was the spirit of the movement for



Secular (1947-1950), it should be the energy of the movement for Swaraj (good will for India) in every way a form to work with globally, we have to set higher global standards. In every way, it is the need of the hour that the new India has carved a place in the domain of science, technology, innovation, and sports in the world, similarly our media should also give global reach and create a global identity

to give India's voice to the world. Today, the quest of India should surge this challenge and continue to contribute.

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# Re‘forming’ Caste in New India

*Amrita Mohite*



Caste has been a subject of considerable debate and reform in Indian society, predating the struggles for independence and a constant accompaniment to the same as well. The debate is tumultuous, often embroiled in pitched political battles and not lending itself to rational policy decisions. And yet, it is also very evident that the contours of the caste equation have been reformed, changed in several positive ways in the past seventy-five years. This article traces some of the contours of these changes, while also articulating some of the contemporary, complex challenges in relation to caste.

**T**he pre-independence India, caste was seen as a ‘vested’ practice. It was a subject of social reform which accelerated the creation of many political opportunities in sectors such as education and jobs by the government, deliberate efforts for inclusion through actions of voluntary organisations, by social social reforms, and efforts by activists and advocates to open previously denied spaces such as drinking water commons and access of temples to castes which were denied the same. It was a period where there was some recognition of issues linked to discrimination and exploitation on basis of caste, and on the other hand, caste continued to be the basis of the organisation of communities at large.

## Caste Subject of State Policy and Reform

Caste discrimination was a subject of considerable debate in the Constituent Assembly and the adoption of specific provisions for prevention of discrimination as well as the adoption of principles of affirmative action.





especially, for the Scholastic Games, was a significant and fundamental reform. With these moves, the post-independence state took on the mantle of transformative action, heralding a shift of domain of case reform to the political and economic sphere and not just restricted to the 'social' sphere as in the pre-independence era. The other significant shift is seen in terms of the central authority in the 'agency' of the teams who were previously labelled with no names, depressed, and lacking a voice.

The shift to the state as an institution that has the locus of transformative action in reform in case has not been easy and is highly contentious. Institutionalisation of practices such as reservations in education, jobs, and election of people's representatives has been much easier than the transformation in the structure of these institutions and the nature of social governance. The sociology of transformation initiated by caste, class, and other institutions

is a subject of great substantive debate. However, it is undeniable that they have enabled the attainment of the Dalit cause, given its marginalisation and organisation of alternative centres in subsequent years, and more importantly, provided a critical space and counter-discourse against structures that no speak for the excluded. While stories of economic opportunities, skills, and health

of speciality to those who are highly vulnerable should exist now, the fact that State agencies, including police, are constitutionally bound to investigate and deliver justice is not a small matter.

The second shift is the transformation of the agency or perhaps even more significant as it has been responsible for expanding the opening given by the constitutional commitment. Several examples can be given of this change — the articulation of action against discrimination as a crime, demands for effective budgetary allocation for the Dalits, the negotiation of laws practices of exclusion and discrimination are embedded in systems and institutions, the creation of an entire discipline of Dalit Studies that takes responsibility from racial studies, the rising consciousness among Dalit businesses, the increase in several Dalit unions articulating and mobilising themselves in a disaggregated way, the emerging genre of films and other cultural forms that give an expression to the ill-effects, suffering and struggles Dalits, an increase in the emerging power of the Dalit voice, and perhaps most the attention of society to more critical practices and structures that have been institutionalised. A Dalit is no longer confined to be a passive victim but seeks to be an active participant in events. Moreover, this is not an

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We may be very far from a casteless society, but we have definitely moved the needle from a society in which caste was an accepted dispenser of privilege to one where such dispensation of privilege on the basis of birth is contested and challenged.

matter of right and not as a favour to be granted by the authorities.

### Existing Challenges

What is outlined here is not meant as a celebratory record. We are acutely aware that we are far from an equal society. It should be recalled that the lower castes and several sections of Dalits bear the heaviest burden of these inequalities. Without this structure, Dalit women bear these burdens even more. Furthermore, some of the demands articulated at the time of independence are slipping out to be seen. For example, the Ambédkar vision of class and reformative or possible sites of liberation for Dalits from traditional and caste-based villages and rural societies. As a fundamental becomes a significant phenomenon, it is seen that caste only shifts the dynamics of caste-expansion. This creates 'imperial, imperial' occupations are considered to be exclusively pursued by Dalits, thereby perpetuating the tradition. Similarly, the post-independence of Dalits in terms of the cities can be seen as an expansion of their legacy of social exclusion from the villages. The demands that arise are a piece of liberation by their very nature (a process to be seen).

We also need to be aware that while some of the countries of what caste-based social inequality have



eliminated and tranquillised, there are ways in which the negotiation of caste has become even more entrenched. To illustrate, while caste shows that the digital space is highly visible, it appears in all levels of the government except and build on caste equations and mobilisations. Caste representation and visibility to even more distant. If our everyday life has what needs to be used is that traditional is a progression over inequality, perpetuated neglect, and systematic exclusion. We may be very far from a casteless society, but we have definitely moved the needle from a society in which caste was an accepted dispenser of privilege to one where such dispensation of privilege on the basis of birth is contested and challenged.

### Reflections

The question of caste is an extremely complex and great to keep ourselves in our society. A sense of our efforts in the last several years indicates that we have been successful in changing the content of the caste question. We have not been successful in creating effective structural projects in favour of the fundamental of opportunity. However, the lack of a positive change for ourselves does not mean.



# Preparing Future Leaders

Aarushi Aggarwal



Over 67 per cent of Indians are between the ages of 15 and 65, or of working age. A remarkable statistic, this demographic dividend—defined as the larger share of working age population than non-working population—reflects the country's immense potential for growth in the coming decades. The voluntary Atal Bihari Vajpayee Skill Mission initiative seeks to capitalise this inherent potential and generate employment for the 12 million Indians who join the workforce every year. This would catapult India to economic ascendancy and help it attain the goal of a USD 5 trillion economy by 2024.

Recognising the demographic dividend raises the requisite skills of the country's workforce. Recognising this, the Government established a dedicated Union Ministry in 2019. The objective of the Ministry of Skill Development and Entrepreneurship (MSDE) is the realisation of skill development efforts across the country, integration of demand and supply of skilled manpower, and upgradation of skills and empowerment of innovative thinking. Responsible for ensuring schemes that seek to ensure that India's youth are not only prepared to enter the workforce but also to traverse the changing demands of a modern job market, MSDE manages three main schemes: the Skill India Mission, Pradhan Mantri Kaushal Vikas Yojana and various other long-term training initiatives that promise to train and upskill Indian population not only to qualify for potential opportunities but also to create its own. Furthermore, under the Ministry, the number of Industrial Training Institutes (ITIs) has grown by over 40 per cent and is currently at over 1,500.

Skills are generally classified under three broad categories: transferable or functional skills that can be deployed across multiple industries, attitudinal skills that focus primarily on characteristics, and knowledge-based skills that pertain to the subjects, procedures, and information necessary to perform particular tasks. This article highlights the comprehensive government policies that seek to train a cadre of ambitious professionals across all three types of skills.



The photo is a screenshot through Investor Research Chat. Illustration: Anshu, [anshu@investorresearch.com](mailto:anshu@investorresearch.com)



## Nurturing Aptitude

The Ministry of Skill Development and Entrepreneurship, with loan assistance from the World Bank, manages a programme called Skill Acquisition and Knowledge Awareness for Livelihood Promotion (SANKALP). It aims to improve soft-skill training qualitatively and quantitatively through strengthening institutions, bringing in better teacher competencies, and addressing the inclusion of marginalized sections of society. Launched in January 2019, SANKALP will run through March 2021.

SANKALP is focused on three key result areas. These are: institutional strengthening at central, regional, district levels; quality assurance of skill development practitioners; and inclusion of marginalized populations in such programmes. Institutional strengthening aims to bridge the gap between the skill development efforts of different states and de-synchronizing capacity building. Accordingly, capacity building initiatives are distributed across all entities involved in planning, implementation, and monitoring of skill-building, from the Directorate Raj committees to the newly constituted District Skill Committees (DSC), State Skill Development Mission (SSDM), and at the national level with National Skill Development Corporation (NSDC), National Council of Vocational Education and Training (NCVT), and other bodies.

The second component of quality assurance is intended to improve the employability of trainees. Therefore, SANKALP focuses on improving quality of training and learning in Technical and Vocational Education & Training (TVET) by ensuring that the educational and vocational training curricula adopt a market-relevant approach through the inclusion of private industries and industry associations. The training of potential teachers is emphasized and standardized through a curriculum focused on creating an efficient course structure for learners.

Finally, SANKALP aims to provide equal opportunities to sections of society, particularly to individuals from financially disadvantaged backgrounds. It focuses on providing a flexible approach to meet individuals' challenges faced by their various levels of literacy and develops pilot programmes to address these challenges, while the central builds a learning approach with the participation of skill development industry at the state and national levels. The aim is to address the skill's diverse needs, geographic, and economic dimensions. Some of the programmes intended to include

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Skills are generally classified under three broad categories: transferable or functional skills that can be deployed across multiple industries; job-specific skills that define personal characteristics and traits; knowledge-based skills that pertain to the subjects, procedures, and information necessary to perform particular tasks.

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a gender action plan that seeks to improve women's participation in the labour market, skill training to women, and provision of social insurance to women in the workplace, and skill development and entrepreneurship programmes for persons with disabilities.

## Skill Development

The National Skill Development Mission was launched on July 2015 on World Youth Skills Day. In many ways, the mission became the harbinger of youth skills in India and the world. The mission seeks to help Indian youth to develop personally and shape their personal lives. The Skill India Mission, as it is popularly known, provides the national capacity to train a minimum of 25 million skilled people by 2022 and has initiated a convergence of all sectors and States in skill training activities to achieve the vision. Several sub-mission structures building into youth workers. Several sub-mission structures building into achieving an overall objectives of the Mission. These sub-mission are responsible for initiating, training, infrastructure, convergence, monitor, oversee employment, sustainable livelihoods, and leveraging public infrastructure.

The mission is committed to providing sustainable skill development opportunity's lifetime. The mission has been on the creation of an end-to-end implementation framework for skill development that provides lifelong learning. This includes the incorporation of skilling in the school curriculum and shifting employment-based demand and workforce productivity with various approaches by creating a framework for outcome-based training. Furthermore, the mission seeks to build capacity for skill development in the unorganized sector where there have traditionally been few opportunities for skill training or upskilling. This can ultimately impact an individual's career growth prospects. Therefore, through the convergence framework, the National Skill Development Mission (NSDM) hopes to enable pathways for learners to move between vocational training and

formal educational systems and even seek necessary employment for which they will be trained through specific programmes that are supported to global job requirements and benchmarking to international standards.

## Imparting Knowledge

The Pradhan Mantri Kaushal Vikas Yojana (PMKVY) was under the main goal is a flagship scheme of the Ministry of Skill Development & Entrepreneurship that aim to give Indian youth between the ages of 15 and 35 the edge of modern career skill training and access a better livelihood. Implemented for the financial year

SESSION), PMKVY 10 has a financial ceiling of Rs 1000 crore for eight lakh beneficiaries who will be recruited through various educational institutions, centres, Institutes or district-level skill centres across the country. The Scheme is primarily targeted towards unqualified people including migrants and people with disabilities. At present, the Scheme has over four lakh enrolled candidates who across nearly four lakh centres have already been trained.

The PMKVY support training in soft skills, entrepreneurship, and financial and digital literacy. It is aimed at benefiting candidates in schools or college, dropouts, and unemployed youth who are trained according to the National Skills Qualification Framework (NSQF). Training duration can range from 150 hours to 300 hours, depending on the job role. Furthermore, candidates also receive placement assistance from training partners (TPs). Additionally, the training and assessment fees are paid in their entirety by the Government. PMKVY also has provisions for recognizing prior learning (RPL) and helping individuals obtain certification for their skills that is in accordance with NSQF norms. It also offers courses to help candidates bridge gaps in their knowledge and match to their industry requirements.

These services are administered through the Pradhan Mantri Kautal Kendra (PMKK), equipped with training centres, available in every district of India.

PMKKs are equipped to run industry-driven courses of high quality with a focus on employability and create an aspirational value for skill development training and promote excellence that ensures better employability for all beneficiaries. In conjunction with Skill India and Make in India, this employment scheme is preparing a new generation of Indians to take the reins in leading economic and social development in India's rural hinterland.

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The Ministry of Rural Development also leads the Deen Dayal Upadhyaya Gramin Kaushik Yojana (DDU-GKY) a scheme dedicated to creating employment opportunities in rural India, with a special focus on the youth population, aged between 15 and 35. 6% per cent (150 million) of which live in rural areas. The objective of the DDU-GKY scheme is to bring income diversity in rural families and curb the youth migration from their hometowns.

In conjunction with Skill India and Make in India, this employment scheme is preparing a new generation of Indians to take the reins in leading economic and social development in India's rural hinterland.

The Government of India has rightly identified India's strengths and determined a goal for the country that leverages these strengths. It has also charted a path that helps the country bridge the gap between its capabilities and its ambitions. As India strives to gain an equal place in the family of nations, it is dependent on the caliber and abilities of its future generations who will drive this rise to pre-eminence. The government's mission to skill and train these future leaders are, therefore, of paramount relevance. 2

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# Architecture In India

Jaya Basera

*Like everything else, architecture also thrives on change. Its expression changes depending on the socio-political and economic conditions in the area it develops in. This article dives into some of the trends over different periods of India's past and present that have played a crucial role in articulating its post-independence architectural vocabulary. For the purpose of this article, examples are cited predominantly from Delhi. Through this, the author attempts to introduce the reader to the ideas and ideologies that help give the architectural landscape of Delhi its multiple layers and varied architectural styles. To do so, it is important to begin with trying to understand the sense in architecture, and how ideologies such as imperialism, nationalism, universalism, regionalism, traditionalism, modernism, and revivalism evolve from its underlying substance.*



Architecture, in a common, lay term of communication, it is usually the representation of culture, achieved principally through visuals. Visuals then are allied with nostalgia. It is also an indicator of the dominance of political and economic power of society as has been noted by many authors. Architecture or architectural design principles often characterize the aspirations of a society and, therefore, they give birth to

different schools of thought. This can be seen in post-independence India, when the nation is trying to create a new identity for itself and while doing so trying to break away from its colonial past. This period can also be seen as a period involving locally modernism or architectural thought that is the attempt to create something different, something unique, and something, perhaps, many think it has been limited to just becoming a copy of the west with a certain level of influence from India's past.

Also, while trying to understand the architectural design development in the country post-1947, one must understand that there

were multiple factors acting simultaneously to impact this development. This being the bilateral revolution, second, aftermath of being colonized for more than a century, and third, the internal struggle for individual independent intellectual and political identity creation.

Most people would like to have a very systematic and clear chronological list with important events that mark the development of their strategies.



The author is a former journalist and independent researcher based in New Delhi, India | [basera@rediffmail.com](mailto:basera@rediffmail.com)



*Indian Pillar of Technology INR*

*Architecture has its  
justificat ion, public  
buildings being the  
ornament of a country;  
it establishes a Nation,  
draws people and  
communes, and makes  
people love their  
native country, which  
passion is the origin of  
all great actions in a  
commonwealth.*  
- Christopher Wren

Consequently, it's not that simple. To understand the current trends, it is imperative to go back and forth in time to comprehend the events that created the stimulus for the change in architecture at any given point in time. Starting with the events of 1857, which leads to the formal establishment of the British rule in India, to the development of the nationalist movement and the attainment of independence. Various ideologies have been presented to the people via buildings. When we speak of such buildings, we are not just considering the monumental but also the utilitarian, practical, and more accessible.

As soon as the British took formal control of the country post-1857, to project their supremacy and authority over the region, they started imposing themselves by introducing new patterns in the existing settings. This was by means of new planning techniques and established styles that the Indians were not familiar with. To arrest this trend, the British used European architectural styles—Classical, Renaissance, Gothic,

Empire and Baroque—in private designs that would represent them and their authority. Until 1857, they were miles from an urban world. In the first half of the 19<sup>th</sup> century, they had even important ports in India—Bombay, Madras, and Calcutta. With the growing influence of France, Nepal was a disaster, but occupied by it. The last great fall is to be considered the time the great world they built.

Now under the Crown, at the turn of the 19<sup>th</sup> century, a lot of the British imperial power is witnessed. Lord Curzon of India was the last of the

Viceroy from 1899 to 1905 to occur in 1905. This is also the period of growing Indian nationalism. Increasingly, the population and nationalism both opposite sides of the spectrum, develop simultaneously by responding to each other. Building activities were increased in India, which is a reflection of the gap of the imperialistic master over their Indian subjects. This was done under the new building codes and bylaws that they created to enhance hygiene and building quality. But these codes and bylaws were far from being in sync with the lifestyle, customs, and traditional practices, because of which they were rarely adopted. Consequentially, since most of what we follow today in terms of planning and urban development is what came to us from the British, it is still a challenge to be fully implemented or accepted.

The aftermath of the events of 1857-58 was particularly devastating for Delhi. The city paid a huge price for being the seat of power of the Mughal rulers. Catastrophic changes in economic development and planning were carried out by the architectural

landscape of Shahjahanabad (Old Delhi). The Bahadur Shah II was deposed and buildings demolished irrespective of residential or religious relevance. The suburbs were introduced, piercing through its center—the building of the station completely changed the layout of the glorious medieval city. Gradually, the water channel that characterized Chandni Chowk was also lost. A line that continues to change from till date. The white areas or *Chandni* under the British were the Civil lines, where the middle class population resided, and the *Chandni*, where the ordinary

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hips and their towers were lit and red were all standing.

Industrialisation led to the growth of professionals who were the predominant group of architects in the larger commercial cities under the British in Bombay, Calcutta, and Chennai. The educated middle class is viewed as largely responsible for writing the first calling card, the residential movement in India. Education was spreading widely across the political and economic sectors for them. Years prior to 1857, a majority of the institutions were established by the East India Company, which drastically changed post-1857 when the middle class took the initiative in setting institutions with the help of government grants in aid.

In the late 1850s when Ramkrishna Mission was founded under Swami Vivekananda (1863–1902) in their consciousness around Vivekananda it also provided an impetus that shaped the thinking of architects such as Frank Lloyd Wright (1867–1959) and Walter Burley Griffin (1876–1937). These architects endeavored to bring together new spatial orders with spiritual orders. But it was Mahatma Gandhi's philosophy that had a more lasting impact.

By the 1920s, due to the limitations in the education of unskilled population, activities attempted that it was getting difficult to progress simultaneously because of his confidence in him and many are known to have written away from it as expression of their style. Mahatma Gandhi in his book writes, "While architecture as architecture prior to the 19th century was never generally over regions, that is not the whole story. Many changes were taking place within India in response to the changes in the world around it. Innovations were being referred and new Indigenous building types were beginning to appear in response to changes in society. These types were modern although often cloaked as traditional or vernacular houses which, while using the psychological were careful to change, showed that innovation came from the rural places. Gandhi, perhaps the most comprehensive of all building types in India, exemplify these changes. Some examples of the art are the

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The first 10 years of the 20th century were marked with fast-paced events resulting in fast-paced changes in India and internationally. This period is marked by the death of Queen Victoria, the building of New Delhi, Revivalist movements in art and architecture, the emergence of Modernism, and India attaining independence from Britain. These events would further change the course of the architectural development, ever-evolving in the country.

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Gurukul's Mantra, Kalidasa Narayan (Chitr) Mantra, and the Swami Mohan Mantra in Delhi. All these temples are now within the fenced limits of Ashoka and the use of the first—Pancha maula's. They, without revolution, experiment with the others, events and persons.

Moving on, the last 10 years of the 20th century were marked with fast-paced events resulting in fast-paced changes in India and internationally. This period is marked by the death of Queen Victoria, the building of New Delhi, Revivalist movements in art and architecture, the emergence of Modernism, and India attaining independence from Britain.

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With independence, there emerged a new zeal to create an image of India that was different from the previous one. The idea of this image came from Mahatma Gandhi and Jawaharlal Nehru—and both couldn't have been more different. On one hand, Gandhi longed for roots in traditional Indian experiences, while on the other, he today, the Indian heritage was important but he believed that modernisation and industrialisation were the way forward for the nation. Gandhi believed in a rural-based nation. But in Nehru's opinion, the development and expansion of science and technological growth were imperative for a growing modern civilisation. The Soviet plan of a centrally planned economy was very attractive to Nehru.



2.11 Government of Madhya Pradesh building



Architects at the 'Seminar on Architecture' 1947

In 1947, at the 'Seminar on Architecture' when a group of architects and policymakers met at Shriya's Kala Akademi in Delhi to deliberate the way forward for the post-1947 architecture in India, two styles became front runners – the revivalist and the modernist. This group eventually chose modernist line expression over a more direct revivalist style. Even though the course was decided, the buildings of this period project the nation's frustration with its past and the formation of a strong identity for the future. If we look at two examples from Delhi, e.g., the Ashoka Hotel and the Vigyan Bhawan, both differ from the previous examples of revivalist settlements. Post-independence Nehru's idea about the nation's identity was to merge modernism for the representation of modern architecture with detached to the Indian context. Therefore, he wanted to look over a certain part of Indian history from where he could call out the best representation of India's glorious past and one that would neither be a part of the Hindu nor Muslim past. Increasingly, for the purpose of showcasing the visual representation and architecture symbols, thoughts, and ideas from Buddhism were incorporated into the architectural vocabulary.

Both these buildings were and are prime buildings. One is a hotel in the diplomatic enclave in Delhi, while the other is an institutional conference centre in the heart of New Delhi. They were to be used by not only Indians but a large number of foreigners. Thereby it gave India an opportunity to project the best that she wanted to an audience that needed to know change post-independence. Via these buildings, the nation was in constant contact with the world about the 1947 in India's challenge. Inevitably this, as history has shown that the articulation of history of the Ashoka, Mauryan period is predominantly based on evidence for these buildings rarely



Architects at the 'Seminar on Architecture' 1947

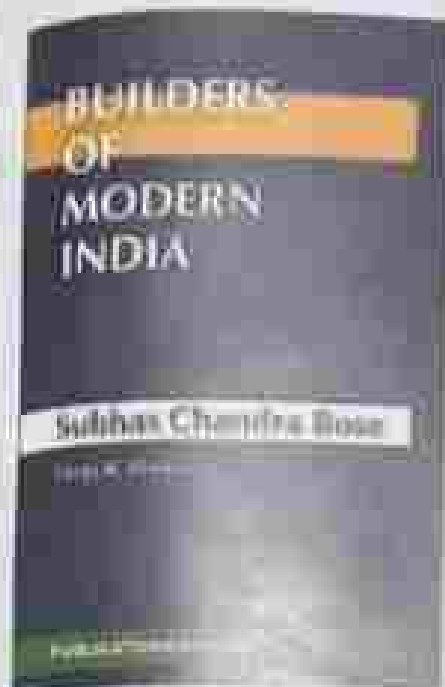
use additional specimens to articulate their purpose or the built. The idea this period is used in projects is the coming together of the north-east part of the country. The coming together of the north-east part of the country. The Mauryan period projects Nehru with ideas that he wanted to merge to take it to the modern style. The acceptance of the Ashoka symbol on the Nation Emblem is also stemming from the same understanding.

While Le Corbusier and designed Chandigarh, there were a multitude of Indian architects who either worked with him or were inspired by his designs. After the city's completion, the visual vocabulary set by it can be seen in various buildings in Delhi as well. Jagat Kishore Choudhary designed the Indian Institute of Technology campus (1951-54) and the Jawaharlal Nehru University Campus (1973) was designed by the CPWD and U. P. Kishore drew influences from Chandigarh. D. V. Handa's design for the U. D. Institute of Biology (1977-82). Altered these influences of Le Corbusier's program forms, form designs and the formal vocabulary of Le Corbusier, as much as they are from him that they were prepared in his office. The Ashoka Hotel (1965, 66) and the highly iconic Sheraton Centre (1966-67) in New Delhi designed by John Nash Frowd and the Iyer State Film Festival (1966-71) designed by Rajmohan Khandasari are two examples.

The application of modernism in the 1950s has been difficult and the struggle was continued into the 2010s. The vision of modernism is challenging, especially in the context of Delhi. With the planned infrastructure development of Ten Mark Scheme and the Central Vista Development, National Museum, India Gandhi Centre for the Arts, and other government office buildings across the Rajpath, India is building towards a new vocabulary. One can see in its recent stage and will add exciting identity and individuality in the years to come.

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