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YOJANA

SPECIAL ISSUE

JANUARY 2022

A DEVELOPMENT MONTHLY

₹ 30

Azadi Ka Amrit Mahotsav

THE GIANT LEAP

India as a Space Power

Dr K Sivan

SELF-RELIANCE

Global Agricultural Powerhouse

Dr Jagdeep Saxena



DEVELOPMENT

Economic Transformation

Manoj Pant

PEOPLE & SOCIETY

Swadeshi Entrepreneurship

Anindya Sengupta



From **YOJANA** ARCHIVES



Our Poetic Heritage

SALUTE TO INDIA

By D. Ray

When out of the sapphire sea,
Thou rose O India! My Country!
What a jubilant cry burst out in the world!
What an exultation and ecstasy!
A day of days it was as thine lustre bright
Brought a radiant dawn on this benighted Earth,
And this they sang in adoration—"Victory to thee!
O Mother! O Goddess! Giver of Glory!"

Ah, blest is this Orb,
At the touch of thy lotus-feet;
Hail! India, Nurse of Nations!
Thee we greet!

Just-bathed thou art it seems, with robes all drenched,
Thy lovely tresses, bedewed with briny spray;
Hallowed is thy brow; and with a smile serene
All shining and pure appears the visage gay!
Up, they dance in joy round the firmament vast,
The sun, the moon, the stars with music divine,
And down it foams, and shimmers, a spell-bound sea,
Rumbling incessant a hymn sublime.

On thy head thou wearest a superb, snow-white crown,
A wavy, foamy sea round thy feet doth lie;
Upon the bosom swings many a string of pearls,
The Indus, Jamuna, Ganges that merrily sparkle by.

O, somewhere thou art awful, burning in desert dry,
Desolate, rugged and dreary, dazzling the eye.
Elsewhere thou art smiling, full of tender green,
Scattering crops to the world, benign and serene.

Above, blows the tempest, loud and shrill,
In the sky's vast void, it roars unstopped;
And suddenly with the melodious coos of many a cuckoo,
How it drops to kiss thy feet, gentle and soft!
Aloft, the dark clouds surge, the thunders crash and clap,
The rains of the deluge, in torrents they pour;
Lo! Down at thy feet they bedeck many a bower,
And wake the fragrance grand at thy door!

Mother! What peace untold on thy bosom doth lie!
What deathless assurance in thy message sweet!
Sustenance to all thou givest, freely with thy hand
And verily salvation is secured at thy feet!
Mother! For thy children's sake in the recess of thy heart
What joy doth throb! What agony mute!
Protector, Nourisher, Saviour, Giver of bliss!
Thee we salute!

*(Translated by Umanath Bhattacharya from Bengali)
Reproduced from Yojana, December 14, 1958
About the poet: One of the master playwrights of
Bengali literature, Dwijendra Lal Ray (1863-1913) also
composed some of the sweetest patriotic songs.*





EDITOR
SHUCHITA CHATURVEDI

PRODUCTION OFFICER
D K C HRUDHAINATH

COVER DESIGN
BINDU VERMA

OUR REPRESENTATIVES

Ahmedabad: Janhavi Patel, Bengaluru: BK Kiranmai, Bhubaneswar: Itishree Singh Rathaur, Chennai: Sanjay Ghosh, Guwahati: Ramanikant Sharma, Hyderabad: Krishna Vandana P, Jalandhar: Gagandeep Kaur Deygan, Kolkata: Rama Mandal, Mumbai: Umesh Ujgare, Thiruvananthapuram: Roy Chacko.

Yojana (English): Room No. 647, Soochna Bhawan, CGO Complex, Lodhi Road, New Delhi-110 003.
E-mail (Editorial): sec-yojanaeng-moib@gov.in

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Let noble thoughts come to us from all sides.
Rig Veda

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YOJANA is published in Assamese, Bengali, English, Gujarati, Hindi, Kannada, Malayalam, Marathi, Odia, Punjabi, Tamil, Telugu, and Urdu.





Enriching Information

I have been reading this knowledge enriching magazine 'Yojana' since 2019. This is the best magazine to read about the frequent developments 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 siblings 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 serves this purpose superbly.

– Dimple Wadhawan
Kanpur, UP

Enhancing Thought Process

Yojana Team, I would like to express my gratitude towards bringing such an intellectual, analytical, logical, and to-the-point 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 Yardi
Rajkot, Gujarat

Holistic 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 certain 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 entirely,



then as a **Dehli**, it will be possible for me and the others to be aware about the importance of cyber security, as this magazine has a greater reach. It can be assumed that inclusion of this topic should be impactful for the society at large.

– Nilabja Sekhar Panda

Panchayati Raj

I am very much delighted to see the November issue of Yojana magazine which covered the topic of 'Panchayati Raj' in a wider perspective. It has comprehensively disclosed varied 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.

– Sudershan 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 is also an important pillar in our society. So I humbly request the editor to please come up with these issues.

– Krunal Boricha
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 alerts with all changes that are happening in various fields from time to time. Thank you team Yojana for such service in making us aware. I want to suggest the topics to be covered in your upcoming editions. Please do cover Gati Shakti scheme, future of crypto currency in India and Importance of New Central Vista in strengthening Democracy of India in 21st century and beyond.

– Kiran
Kanpur,

Topical Articles

I am one of your regular readers. Reading Yojana is always intellectual 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 Yojana team, I am reading the magazine since August 2020. I was reading the November 2021 issue of Yojana. 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.

abmanu.jnu@gmail.com


Reliable Source of Knowledge

I have been following Yojana from two years and found it very useful for CSE preparation. For mains point of view, Yojana is an authentic source and provides in-depth knowledge of topics, for example, dynamics of civil 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.




pushpa12995@gmail.com








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Igniting Minds

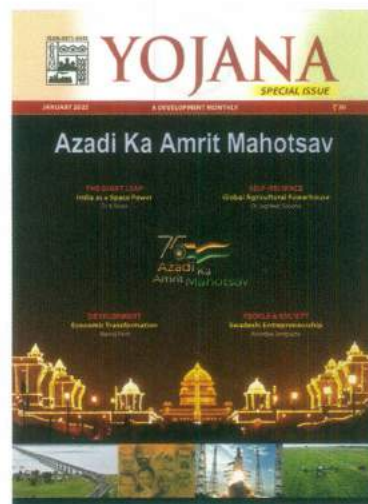
Azadi Ka Amrit Mahotsav is an initiative to commemorate 75 years of free India. It celebrates the glorious history of its people, culture, and achievements. This Mahotsav is dedicated to the people of India who have been instrumental in bringing India this far in its evolutionary journey. Despite many odds and challenges, India scripted an incredible success story to evolve as a strong, prosperous, 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 focuses on citizen participation, *Jan Bhagidari*, where small changes at the local level, will add up to significant national gains fuelled by the spirit of Atmanirbhar Bharat.

This land is a witness to stupendous moments in freedom struggle like the first war for Indian independence in 1857, the Satyagraha movement, the call for Poorna Swaraj by Lokmanya Tilak, the Delhi March of Azad Hind Fauj led by Netaji, and countless movements led by inspiring lives across the length and breadth of the country. While the freedom fighters were taking stride at the forefront, a league of spiritual leaders was reigniting this flame of freedom through their teachings, and strengthening the society. The rural population of the country, tribals, women, and even the children played their role in getting freedom.

Post-independence, the foundation of development was led 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 shine forth as the guiding light for legislation, governance, administration, and welfare of all.

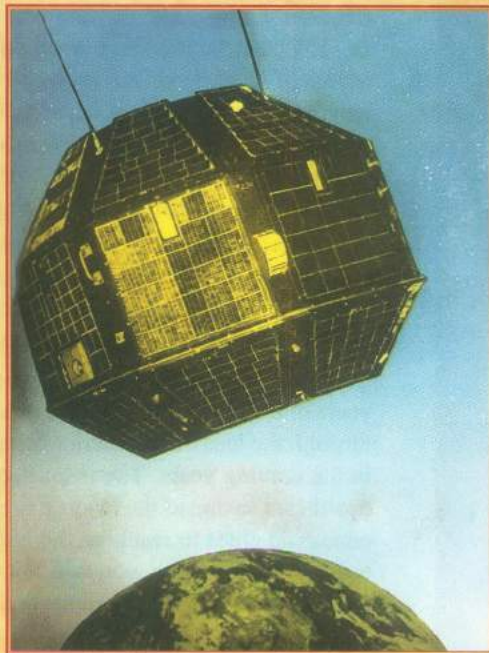
Yojana, in this collectible issue, chronicles the journey of various sectors and areas in these years of trials, tribulations, and triumphs. We are grateful to our authors for essaying these stories through the lens of what India has achieved today and giving a perspective on what lies ahead in the coming years. The inspiring stories of a farm-deficit to export-surplus nation, from poor healthcare to one of the leading suppliers of medicines and vaccines in the pandemic times, from educating elites to reaching the last mile, and many more, are documented in Yojana from time-to-time. In this issue, you will also find a few glimpses of this very glorious history in making, through the set of treasured sepia pages from our archives.

Azadi Ka Amrit Mahotsav is intended towards making conscious efforts to preserve 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, whenever that happens, will have a new order. India will have to step-up to the occasion and showcase its capabilities, scope of synergy, and leadership avenues in each sphere. Quoting Netaji Subhas Chandra Bose, who said, "One individual may die for an idea, but that idea will, after his death, incarnate itself in a thousand lives." That idea, the vision of our great leaders for the India of their dreams, must continue to ignite minds, and their ideals should inspire us to do great deeds for the generations to come. □





THE GIANT LEAP



Iconic Images from
YOJANA ARCHIVES

India as a Space Power

Dr K Sivan and ISRO Team



With its humble origins 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 executed by its R&D arm- the Indian Space Research Organization (ISRO), the country today is widely recognised as a global space power having developed end-to-end capabilities cutting across various domains viz. space transportation systems, space infrastructure, and space applications such as Earth Observation, Communication, Navigation, Meteorology, Space Science, and the like.

The beginnings of the Indian Space Programme resonated strongly with its founding father Dr Vikram Sarabhai's vision, that we must be 'second to none 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 Thumba Equatorial Rocket Launching Station (TERLS) in 1963 that the space programme formally took off.

Dr Sarabhai, the architect of the Indian Space Programme, initiated the creation of dedicated clusters. So, while Trivandrum became the hub for sounding rockets, solid propellants, etc., with the setting up of Space Science & Technology Centre [SSTC, present-day VSSC (Vikram Sarabhai Space Centre)], the cornerstone for payload development and related electronics was at Ahmedabad in the form of Experimental Satellite Communication Earth Station [ESCES, present-day SAC (Space Applications Centre)]. The Indian Space Research Organization (ISRO) was formed in 1969, superseding INCOSPAR. Today, with a total workforce of over 18,000, ISRO's establishments are functioning in many parts 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 our 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 now poised to soar 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 centre in the former Soviet Union. *Aryabhata* laid a firm foundation for the later immensely successful Indian Satellite Programme. *Bhaskara-I* and *II*, the two 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- Ariane Passenger PayLoad Experiment, India's first experimental communication satellite, although launched by the European Ariane rocket, reached its final geosynchronous orbital home in June 1981, with the help of a rocket motor developed in India. *Aryabhata*, the two *Bhaskaras*, as well as APPLE were launched free-of-cost, which reflects India's successful international space cooperation policy. In the recent past, India has not only flown foreign scientific instruments on-board Indian spacecraft but has also launched them.

Two further significant satellite communication experiments that deserve a mention here for their ingenuity and spirit of cooperation are SITE- Satellite Instructional Television Experiment (1975-76) and STEP- Satellite Telecommunication Experimental Project (1977-79), comprehensively

Dr K Sivan is Chairman, ISRO and Secretary, DOS. Correspondence Email: osddelhi@isro.gov.in



establishing the usage of satellites 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-3 (SLV-3) project in the early 1970s, the first indigenous experimental satellite launch vehicle, that served as the beginning of an enduring partnership between ISRO and Indian industries. An all solid, four-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 18 July 1980, thrusting India into the select league of six countries with the capability to launch satellites on their own.

On the heels of SLV-3, was commissioned the ASLV- Augmented Satellite Launch Vehicle project in the early 1980s, the next step of evolution in launch vehicle technology. 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.

During the same period, INSAT-1B, India's first multipurpose operational satellite was launched in 1983, demonstrating its ability to bring about a rapid and major revolution in India's telecommunications, television broadcasting, and weather-forecasting domains. India's ability to design, build, and maintain a complex remote sensing satellite was demonstrated in 1988 when IRS-1A, the first operational satellite built in India, started imaging the earth. The images sent by that satellite circling the Earth from its 900 km high polar orbit were utilised in various diverse fields such as agriculture, groundwater prospecting, mineral survey, forestry, etc.

During the 1990s, ISRO began building INSAT-2 series of multipurpose satellites indigenously. At the same time, systematic usage of imagery from our remote sensing satellites for tasks like crop yield estimation, groundwater and mineral prospecting, forest survey, urban sprawl monitoring, and wasteland classification and fisheries development began. The optimal usage of onboard capabilities of INSAT and remote sensing satellites was coordinated using inter-ministerial mechanisms such as INSAT Coordination Committee (ICC) and National Natural Resources Management System (NNRMS).

Today, India has a fleet of advanced remote sensing satellites equipped with high resolution and multispectral cameras dedicated to the themes of cartography, resource survey, and ocean and atmospheric applications. The INSAT system with over 300 transponders in the C-band, Extended C-band, Ku-band, Ka/Ku band, and S-band provides services to telecommunications, television broadcasting, radio networking, satellite newsgathering, societal applications, weather forecasting, disaster warning, and Search and Rescue operations. High Throughput Satellites (HTS) such as GSAT-11, GSAT-29, and GSAT-19 are supporting the Digital India campaign by boosting the broadband connectivity to the rural and inaccessible Gram Panchayats in the country. The transponders on these satellites will bridge 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 laid a firm foundation for the later immensely successful Indian satellite programme.

The space transportation domain, with the successful advent of the Polar Satellite Launch Vehicle (PSLV) in 1994, witnessed a quantum jump in the indigenous launch capabilities. The vehicle has proven to be a workhorse of ISRO, logging over 50 successful missions, launching national as well as foreign satellites. On 15 February 2017, PSLV created a world record by successfully placing 104 satellites in orbit during a single launch. Well, as numbers go, it was undoubtedly a record at the time, but the real

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

With the solid and liquid propulsion technologies perfected through SLV-3, ASLV, and PSLV, the nation embarked upon a highly challenging quest to master the 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 four liquid strap-ons. 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. With the successful qualification of the indigenously developed Cryogenic Upper Stage (CUS) in the GSLV-D5 flight on 5 January 2014, ISRO demonstrated its mastery of cryogenic rocket propulsion. 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 4T payload in GTO, came in the form of GSLV-Mk III designed with two solid strap-ons, a core liquid booster, and a cryogenic upper stage. LVM3-X/ CARE Mission, the first experimental suborbital flight of GSLV Mk III, was on 18 December 2014 and launched the Crew Module Atmospheric Re-entry Experiment (CARE). The CARE module began its return journey and a little later, re-entered the earth's atmosphere. It

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.

was successfully recovered over the Bay of Bengal about 20 minutes after its launch. Subsequently, after two successful developmental flights and with the injection of Chandrayaan-2 into Earth Parking Orbit in July 2019, GSLV Mk III successfully entered into its operational phase.

Indian Space Programme has always focused on the development and utilisation 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 exploration of space. India's first satellite Aryabhata was a scientific satellite. After Aryabhata, ISRO entered into the realm of science missions again with a unique mission—the Space Capsule Recovery Experiment-1 (SRE-1). Launched by PSLV in January 2007, SRE-1 with its scientific experiments, orbited the Earth for 12 days and was successfully deorbited 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 caught the attention of millions of Indians as well as the outside world.

Launched by PSLV on 22 October 2008, the 1380 kg Chandrayaan-1 spacecraft was successfully navigated to the Moon in three weeks and was put into an orbit around the moon. On 14 November 2008, when a TV set sized 'Moon Impact Probe' separated from Chandrayaan-1 spacecraft and successfully impacted the surface of the moon, India became the fourth country to send a probe to



the lunar surface after the United States, the Soviet Union, and Japan. Later, when Chandrayaan-1 conclusively discovered water molecules on the lunar surface, it was widely hailed as a path-breaking discovery.

Uplifted by the success of Chandrayaan-1, ISRO embarked on the Mars Orbiter Mission, for demonstrating India's capability to build, launch, and navigate an unmanned spacecraft to Mars. Launched by PSLV on 5 November 2013, the 1340 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.

AstroSat, 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. AstroSat 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 useful 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 Standards body- 3rd Generation Partnership Project (3GPP), which develops protocols for mobile telephony, has approved NavIC and major mobile chipset manufacturers have incorporated NavIC in their releases. Further, through GPS Aided GEO Augmented Navigation (GAGAN), ISRO is providing Satellite-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 "Gaganyaan Programme" approved by the Government of India in 2018 marks a point of inflexion in the Indian space journey, marking its entry into the new age of human space exploration. The Human Space Flight Centre (HSFC) was constituted in ISRO in January 2019, for implementing the vision on the human space flight programme.

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.

was a demonstration of the capability of CES to evacuate the Crew in case of a contingency at the launch pad.

Towards capacity building in human resources and to meet the growing demands of the Indian Space Programme, the Indian Institute of Space Science and Technology (IIST), a deemed university, was established at Thiruvananthapuram in 2007. This institute offers Bachelor's Degree in Space Technology with specialisation in Aerospace Engineering and Electronics & Communication and a Masters Programme in the areas of Space Technology.

Further, amidst the Covid-19 pandemic, the landmark space reforms initiated by the Government of India in June 2020 mark a significant step forward in the evolution of the Indian Space ecosystem. The creation of the Indian National Space Promotion and Authorization Center (IN-SPACE) to promote, handhold, and authorise Non-Government Private Entities (NGPEs) to undertake space activities shall unleash the next wave of advancements in the sector. This will enhance the diffusion of space technology and boost the space economy within the country.

Empowering the department PSU- NewSpace India Limited (NSIL) to 'own' 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 simultaneously obtain commitments.

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.

HSFC is entrusted to implement the Gaganyaan Programme and to act as the lead centre for sustained and affordable human spaceflight activities. The Gaganyaan project has the stated 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 2018- 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

With these structural adjustments, ISRO shall focus on advancing the R&D endeavours such as heavier and more efficient satellites, advanced space missions such as Chandrayaan-3, Aditya-L1, and Mission to Venus to further explore the solar system and of course, the Gaganyaan Programme. The future of space activities in the country looks very promising indeed and shall cement India's position as a 21st-century space power. □

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Indian Armed Forces

Sujan R Chinoy



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.

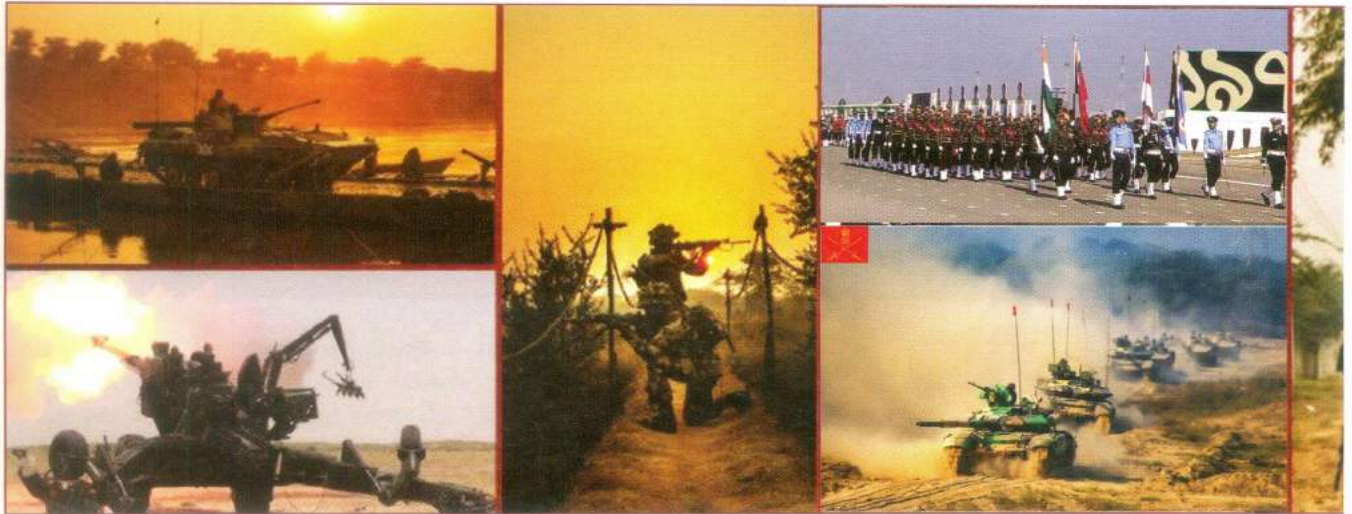
From the Afghan Wars to the Battle of Saragarhi where a small band of Sikh soldiers wreaked havoc during a siege mounted by a numerically superior adversary to the two great wars, and in numerous British campaigns across Asia and Africa, the Indian sepoy set the highest standards in valour. Even the apostle of peace and non-violence, Mahatma Gandhi, had served as a sergeant major of a medical ambulance corps that he had helped raise during the Second Boer War in 1899-1902 and Zulu War in 1906. There came a darker side too when the British used Gorkha 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, on 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 doctrines, 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 60th Parachute Field Ambulance



The author, a former Ambassador of the 1981 batch of the Indian Foreign Service, is currently the Director General of the Manohar Parrikar Institute for Defence Studies and Analyses, New Delhi. Email: dg.idsai@nic.in



Platoon, a mobile army surgical hospital with doctors and dentists, did little to address the real problems faced by a strong colonial military force that was now without the same energy and objectives. A political leadership wedded to *ahimsa*, that had achieved independence through the *mantra* of non-violence, could not truly appreciate the gravity of the security challenges evolving on India's periphery.

A decade of budgetary cuts that further compounded the problem, leaving the Indian Army without adequate weapons or manpower when it 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), till the Government's hand was forced by the Chinese attack and occupation of an Assam Rifles post at Longju in August 1959 and an equally bloody ambush of an Indian police party at Konka La, eastern Ladakh in October of the same year.

Lessons Learnt

One of the greatest lessons of the 1962 conflict perhaps was the realisation that with regard to territory the old adage held true, that possession was nine-tenths of the law! China's entry first into Tibet in 1950, and later its creeping presence in Aksai Chin over the following decade also taught the Indian Armed Forces, and the new political masters, to think in terms of precise borders, not just frontiers. The text and context of the 1954 Treaty between India and the Tibet Region of China are fine examples of how passes on the border are interpreted differently by covetous

China, leading to contention.

Yet another lesson was that an army must be well-equipped with the latest weaponry to protect India's territorial integrity and that summer uniforms, canvas shoes, and outdated .303 Lee Enfield rifles were no match against Chinese hordes 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 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. Even more egregious a lesson was the realisation of the damage that can be caused to the direction and morale of an army when the military chain of command is trifled with, as was the case in 1962 when Lt Gen B M Kaul, the hastily appointed IV Corps Commander in the NorthEast, had the ear of the political leadership, with even the then Chief of Army Staff (COAS) side-lined; or that a Defence Minister V K Krishna Menon could dull the martial instincts of a splendid army by repeatedly underplaying the China threat despite professional assessments to the contrary.

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 offensive role, thereby, negating the advantage that could have been created. Bravery 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 better.



Phase - II

With this commenced the second phase of the journey of the armed forces which lasted until 1988. The period after the 1962 war not only saw the size of the army increase from about 5,50,000 to approximately 8,25,000 troops, but, over time, it also witnessed structural, training, and doctrinal shifts. Even as these preparations were underway, Pakistan attempted to seize the opportunity created by the 1962 defeat, the political void after the death of Prime Minister Nehru in 1964 and prevailing conditions in Jammu and Kashmir. After a failed attempt to push in raiders by Pakistan, President Ayub Khan unleashed a war in the mistaken notion that the opportunity was ripe to force a defeat upon India. However, despite structural issues and limitations of equipment that still posed a challenge, India responded resolutely under the leadership of Prime Minister Lal Bahadur Shastri and Defence Minister Y B Chavan to blunt the aggression.

The war ended in a stalemate, with Pakistan's initial advantage having been neutralised by the resurgent armed forces of India, backed by an equally determined public sentiment. Peace with Pakistan, however, was short-lived. In 1971, the Pakistani state unleashed one of the worst genocides upon its own Bengali population in East Pakistan. The Pakistani Army was used as an instrument of repression of the most horrendous nature. This led to ten million refugees entering India. India endeavoured to seek 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 undertook a lightning campaign which led to Pakistan's defeat and ushered in the finest hour in India's post-independence military history.

The layered military strategy adopted by India in the 1971 War saw a nuanced approach that dealt with each theatre and sector according to its ground reality. While the western front along Pakistan witnessed "offensive defence" being employed, due care 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 tenets of rapid manoeuvre warfare to bypass major enemy concentration centres to create an opening that brought Dacca within reach in less than two weeks of the war. The campaign was backed by the East Pakistan population and supported by the Mukti Bahini. Innovation on the part of the armed forces, complete cohesion between different constituents of the government, including the three services, and use of psychological warfare against the adversary ensured the collapse of Pakistan's military. The surrender of 90,000 soldiers from Pakistan, a record of its kind since WWII, was accompanied by the birth of Bangladesh. The

The surrender of 90,000 soldiers from Pakistan, a record of its kind since WWII, was accompanied by the birth of Bangladesh. The Prisoners of War (POWs) were treated well and despatched in due course back to Pakistan with dignity, thanks to the high standards of the Armed Forces of India.

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Even though India's armed forces had delivered an unqualified victory, the path that followed was not free of challenges. The world was rapidly changing. Sino-US rapprochement in 1972, the third Arab-Israel war in 1973 and the oil crisis, the end of the long-drawn war in Vietnam in 1975, the failed Chinese invasion of



Vietnam in 1979, the Soviet invasion of Afghanistan the same year, and the Iran-Iraq war in 1980 together created an environment that demanded adjustments in India's military preparedness. 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 Soviets in Afghanistan. The nature of the threat from Pakistan was changing. The western adversary had new supply lines of finance and armaments. The Pakistan army was more Islamist than before, and nurturing groups that could be used against India as well.

The realities of the evolving military preparations on the Pakistani side, which included the creation of extensive battlefield obstacle systems, demanded a shift on the Indian side to mobile fast-paced warfare on land with the ability to undertake deep strikes in the open terrain of the deserts. This, and the need to cut the teeth-to-tail ratio, led to emphasis on mechanisation of the Indian Army and upgradation of the other two services as well. The eighties saw this process underway, with the armed forces gaining substantially in capability during that period.

The modernisation of the armed forces was also 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 Maldives against an attempted coup produced appreciable results in 1988.

However, both forays by India did bring home important lessons not only for the armed forces but also for policymakers. These related to the need to hone 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 Sumdorong Chu 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 Pawan in Sri Lanka and the spike in Pak-sponsored cross-border terrorism in Kashmir.

the scope and scale of challenges had multiplied further. 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 Pawan in Sri Lanka and the spike in Pak-sponsored cross-border terrorism in Kashmir.

The involvement of Pakistan became more pronounced in Kashmir, as terrorism emerged as its primary instrument in the low-intensity hybrid war against India. The armed forces were stretched to the extreme and the simultaneity of the threats demanded local understanding of each challenge and calibration of the effort accordingly. Winning hearts and minds became as important as taking a bead on terrorists through a rifle-sight. A people-centric approach also meant that the armed forces would take higher casualties. This, the armed forces did without demur, despite a large number of soldiers laying down their lives to protect the sovereignty and territorial integrity of India. For an entirely voluntary military, the commitment and dedication to duty of the Indian Armed Forces is truly exemplary.

Pakistan's frustration at not being able to achieve a major breakthrough in Kashmir, eventually led to its misadventure at Kargil in 1999. What followed was one of the most laudable and awe-inspiring efforts on part of the armed forces. They had one hand tied behind their backs as they successfully fought, inch-by-inch with the support of the Indian Air Force, to beat back the incursions along the Line of Control without crossing it. The Kargil experience raised questions, akin to those raised in the 1950s in Aksai Chin in the run-up to the 1962 conflict, about the effectiveness of intelligence gathering, and the need for regular patrolling of India's border regions. The Kargil episode also questioned about structures and institutions, to develop more effective and timely responses to future challenges based on the recommendations of the Kargil Review Committee (KRC) and Group of Ministers (GoM).

Some early measures undertaken thereafter included the appointment of a full-time National Security Adviser, creation of Multi-Agency Centre, the establishment of a tri-services command in the Andaman & Nicobar Islands, and NTRO. The 2008 dastardly terror attacks in Mumbai occasioned the revamping of the National Security Guard (NSG) and beefing-up of maritime security through the

Indian Coast Guard and the Indian Navy acting in tandem with state police. A second front had opened up vis-a-vis Pakistan's malevolence, all along India's coastline.

Phase - IV

The Government undertook major course correction in 2014. A proactive approach was adopted to enhance the budget for all three wings of the armed forces. The Indian Navy and the Indian Coast Guard in particular, received generous funding to meet emerging maritime threats, both traditional and non-traditional. Apart from preventing sea-mounted terrorist attacks, thwarting piracy, and smuggling of drugs and arms, India's maritime security must now factor in the growing presence of the Chinese PLA Navy in the Indian Ocean.

A policy of zero tolerance was adopted in regard to terrorism from across the border. This resulted in a cross-LoC strike against terrorist camps in 2016 after an attack at an army camp at Uri. In 2019, after a deadly suicide bombing against CRPF troopers at Pulwama, offensive airpower was employed for the first time against terrorist targets in Balakot, deep inside the Khyber Pakhtunkhwa province of Pakistan. These actions changed the strategy

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adopted by the armed forces against terrorism sponsored by Pakistan. For once caution was replaced by a proactive approach and it was Pakistan that was forced to assume a reactive posture against India's actions. It also demonstrated India's ability to undertake conventional military action against Pakistan under a nuclear overhang.

In recent years, the armed forces have also undertaken a tough stance against border violations by China along the LAC. Both in 2017 and 2020, Chinese attempts at altering status quo were not only challenged, but also blunted through immediate action by India. These actions displayed India's resolute and firm stance in the face of provocations. It also proved that the armed forces deliver better when the political leadership is resolute and gives military leaders the resources and independence to undertake initiatives as well as counter measures based on their professional military assessment. In the aftermath of the Chinese aggression in Galwan in eastern Ladakh in June 2020, the Government left no stone unturned to equip the armed forces with modern weapons, equipment, and logistics needed to mirror the Chinese deployments.

Today, the armed forces are also leading the way in support of Atmanirbhar Bharat— a call for self-reliance given by the Prime Minister. A wide-ranging set of measures have been undertaken to give a fillip to Make

in India through a tandem between the public and private sector. Entrepreneurs representing the small and medium sectors have been provided support and opportunities to contribute to this endeavour. They have also been granted access to testing facilities of DRDO to support their attempts at manufacturing in India as part of the Atmanirbhar Bharat initiative.

The focus on indigenisation is not aimed at creating absolute autarky in defence manufacturing. Current policies leave enough space for foreign Original Equipment Manufacturers (OEMs) to participate in joint ventures and Transfer of Technology (ToT).

The armed forces have also witnessed a number of institutional changes. Gender equality is a laudable achievement. Unlike in the past when women were restricted to representation in a few branches of the armed forces such as the Medical and Education Corps, nowadays most wings of the armed forces have seen the entry of women. In addition to permanent commissions, women are also flying combat aircraft, deploying on naval vessels, and will soon be permitted to train alongside their male counterparts at the prestigious National Defence Academy.

On 15 August 2019, 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 met a long-standing demand in strategic circles. These institutional changes have ushered in earnest major defence reforms at the highest echelons. The process is being further strengthened with reforms aimed at integration at the level of theatres as

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

well as jointness down the chain of command. Steps are already underway to bring about much needed integration within the training and logistics establishments as well.

Simultaneously, there is an unprecedented emphasis on making the armed forces technology-centric, taking into account the advent of Artificial Intelligence (AI), Internet of

Things (IoT), and modern advances in stand-off weapons and surveillance techniques. This is aimed at enhancing the capability of the armed forces to fight modern day conflicts across the entire spectrum.

Conclusion

The last seventy years have been both a challenge and an opportunity for the armed forces. This account seeks to suggest that many tough challenges have been met with great resilience by India's Armed Forces. They have used several opportunities to adapt and improve along every yardstick in military performance. An outstanding and consistent feature of the Indian Armed Forces remains their secular tradition as well as apolitical professionalism under civilian governments.

Going by their record, there is little doubt that the armed forces will continue to remain steadfast in dealing robustly against external threats and simultaneously supporting the government's actions to improve internal security. This will increasingly be done through improved structures and a technologically-driven organisation, supported by the clear vision of resolute political leadership. □

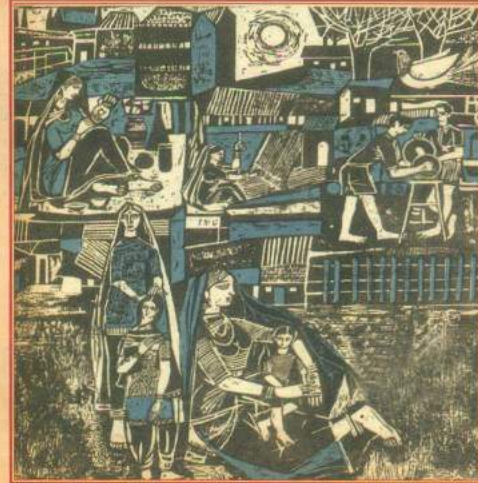
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SELF-RELIANCE



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Swadeshi Entrepreneurship

Anindya 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 19th century. Thanks to the writings of R C Dutt, Dadabhai Naoroji, and M G Ranade, the new western-educated middle class was well aware of the colonial economic exploitation. Gopal Hari Deshmukh was one of the firsts to advocate economic swadeshi in 1849. But the credit for translating it to a call to action goes to the 'college faction' of the Arya Samajists in Punjab.

Pre-Swadeshi Movement

A group of middle-class, western-educated Punjabis—prominent among them were Lala Lajpat Rai, Lala Harkishan Lal, and Sir Dayal Singh Majithia came together to found the Punjab National Bank (1894). This was the first major Indian-owned bank. Lala Harkishan Lal, who soon emerged as the moving force behind this venture, went on to found a series of joint-stock companies. These included insurance firms (Bharat Insurance was the first major Indian-owned insurance company), flour mills, a spinning and weaving mill, a cotton press company, an oil pressing, and a timber works concern, a match factory, soap factories, brick kilns, sawmills, ice factories, etc.

In Bombay, a Parsi lawyer Ardeshir Burjorji Sorabji Godrej (1868-1936) came to realise the importance of indigenous manufacturing. After failing in a series of ventures, he tasted business success

with mechanised locks and founded Godrej & Boyce in 1897.

Acharya Prafulla Chandra Ray (1861-1944), a pioneering chemist, founder of Bengal Chemicals (India's first pharmaceuticals company) and a devoted nationalist spent his entire life (and savings) in promoting education and scientific research and in advocating knowledge-based industries to address India's poverty. For people like him, entrepreneurship based on scientific knowledge was an inevitable step towards nation-building.

In Bengal, at least since 1827, when some members of the Tagore family helped Nabagopal Mitra to organise a fair to promote swadeshi enterprises, there had been regular calls for self-reliance or *atmasakti* (including promotion of education, particularly technical education, the boycott of foreign goods, and indigenous production and distribution).

Two families took lead in this — first, the Roy family of Bhagyakul, who developed a flourishing trade in rice and jute, and were the chief organisers of the Bengal National Chamber of Commerce (1887); second, the Tagore family, especially Jyotirindranath, launched a major venture in 1884 with his Inland River Steam Navigation Service.

Even Bengal Chemicals (1892) preceded the Swadeshi Movement though it received a massive boost during the swadeshi days.



The author is a public policy analyst and a student of economic history. Email: andy8275@gmail.com



Swadeshi Enterprises

The announcement of the Partition of Bengal (1905) unleashed a surge of nationalism and rekindled the Bengali entrepreneurial spirit. Members of the Tagore family including Rabindranath; Satish Chandra Mukherjee's Dawn Society, and many others were regularly organising Swadeshi fairs, setting up shops to sell swadeshi goods (Rabindranath's Swadeshi Bhandar in 1901, Sarala Debi's Chandra Chaudhuri's Indian Stores in 1901, Sarala Debi's Laksmir Bhandar in 1903), and working for the revival of the traditional crafts.

Landlords and professionals came together to found the short-lived Bengal National Bank (1908). Calcutta also saw a spate of insurance ventures, especially the National Insurance Company (1906) and the famous Hindustan Cooperative Insurance (1907).

British dominance of shipping lines was a matter of deep discontent, especially in riverine East Bengal. Despite the collapse of Jyotirindranath's venture, swadeshi days saw renewed interest in launching shipping ventures. But they were unable to withstand brutal rate war unleashed by the English shipping lines, where as many as twenty Indian shipping companies failed between 1905 and 1930.

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Bengal's leading landlords, businessmen, and political leaders came together to launch the most high-profile swadeshi venture – Banga Luxmi Cotton Mill (1906). Two years later, Mohinimohan Chakraborti, landlord and retired Deputy Magistrate, launched a smaller Mohini Mill in East 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 cloths turned out to be Bombay and Ahmedabad, where 39 mills came up between 1904 and 1910 to cater to swadeshi demands.

The real achievement of the Bengali swadeshi entrepreneurs was to venture into new industries based on their technical knowledge. Manufacturing a number of household products, key medicines, and basic acids, PC Ray's Bengal Chemicals showed the way. This example was followed by Calcutta Chemicals and a number of manufacturers of Ayurvedic and/or allopathic drugs, cosmetics, and chemical products. Chrome tanning (National Tannery, Utkal Tannery), production of glazed potteries (Calcutta and Bengal Potteries), electric lamps (Bengal Lamp), safety matches (Oriental and Bande Mataram Match factories), and a number of consumer items attracted their interests. Giving expressions to the new nationalist

sentiments, Anandabazar and Jugantor emerged as two successful media companies.

Most of these ventures ended in failure. They were built on the limited finances of petty landlords and the savings of professionals. They had the technical knowledge but not always the business acumen to deal with supply bottlenecks or distribution challenges. They were often more focused on developing technical knowledge, replacing foreign goods, and contributing to nation-building. An archetype of a swadeshi entrepreneur was someone like Dr Nilratan Sarkar – one of the most renowned doctors of Calcutta, who spent his fortune in setting up one swadeshi venture after another, sinking into debts and again rising from there, or H Bose, a successful businessman selling Kuntalin hair oil and Delkhosh perfumes, pioneered colour photography in India, first manufactured gramophone records in India, and tried to promote new mechanical innovations throughout his life.

One of the great contributions of the swadeshi period was the promotion of science. Meritorious students were sent to Japan, Germany, and the USA for technical education. Some of them came back to set up successful businesses like Calcutta Chemicals, Calcutta Potteries, and Bengal Waterproof. The National Education Movement (1905-1938) helped set up colleges and schools, and one of the institutions associated with it metamorphosed into Jadavpur University. A rejuvenated nation took great pride in the achievements of scientists like P C Ray and J C Bose, with a leading magazine calling Jagadish Chandra's plant response experiment, 'the greatest swadeshi event of 1906'.

In Bombay, a chemistry professor, Tribhuvandas Kalyandas Gajjar (1863-1920) set up two small factories to produce a range of chemical products. He was soon joined by B D Amin, a rich Baroda landlord. Thus began the journey of Alembic, Western India's first chemical company (1907). The other great visionary was Laxmanrao Kirloskar (1869-1956), founder of the Kirloskar business empire, who started his career as a teacher of mechanical drawings at Bombay's Victoria Jubilee Technical Institute. A self-taught technical expert, Laxmanrao began to produce small mechanical implements and set up his independent business by 1910 with support from the ruler of Aundh.

But as business historian Dwijendra Tripathy suggested, the biggest beneficiary of the prevailing swadeshi sentiment was the Tatas. By 1904-05, they were on the verge of realising Jamshedji's dream of setting up a modern steel factory in India. But Dorabji Tata's efforts to raise money in London were not successful. Returning to

A large number of Indian banks were founded between 1900 and the First World War (1914-1919) and helped to extend modern banking facilities to Indian customers, but due to the lack of managerial experience, most of them failed.

India, he appealed to his fellow Indians and received an incredible response. In just three weeks, the Tatas could collect a huge 16.30 lakh pounds. At the height of the Swadeshi Movement, as hundreds of ordinary Indian investors queued up to buy TISCO shares, the Tatas conceived this as a truly national project. The first Governing Board of TISCO had all the luminaries of the Indian business world, representing all major communities.

In Madras, firebrand nationalist leader V O Chidambaram Pillai launched his Swadeshi Steam Navigation Company from Tuticorin (1906), to challenge the British monopolies but had a short life. The other important venture set up in Madras was the United India Life Assurance.

Emergence of Modern Banking

In the wake of the swadeshi spirit, different groups of people across the country came to the same conclusion as that of the Arya Samajists in Punjab and what thinkers like Bholanath Chandra advocated in Bengal earlier– the central role of finance in creating an indigenous business ecosystem.

In Madras, a group of eminent citizens and businessmen came together under the leadership of a lawyer (later on, High Court judge) K. S. Ramaswamy Iyer, to set up the Indian Bank in 1907. Among the other smaller ventures in the Madras Presidency were the Canara Banking Corporation of Coimbatore (later Corporation Bank) and the Canara Hindu Permanent Fund (later Canara Bank).

Similar groups in Bombay founded two major banks – the Bank of India (1907) and the Central Bank of India (1911, the first Chairman was Sir Pherozeshah Mehta). In Baroda, Maharaja Sayajirao II led the way to set up the first major bank in a princely state – Bank of Baroda (1908). Business elites in Punjab set up the Punjab and Sind Bank in the same year.

A large number of Indian banks were founded between 1900 and the First World War (1914-1919), and helped to extend modern banking facilities to Indian customers, but due to the lack of managerial experience, most of them failed.

Swadeshi in Everyday Lives

Boycott of foreign goods and the use of India-made products– the trend that started in Bengal in 1905, spread to the rest of the country with Mahatma Gandhi and his advocacy of *khadi*. 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.

Business ventures also appealed to patriotic feelings or Indian sensibilities—Banga Luxmi proclaimed that they offered Bengali cloth, manufactured in a Bengali factory by Bengali workers and sold through shops owned by Bengalis. Godrej promoted their soap as the first vegetable soap in the world (and it was endorsed by none other than Rabindranath Tagore). All Indian sugar companies insisted that their swadeshi sugar was 'pure', meaning no chemical had been used.

Similarly, all drugs/cosmetic manufacturers insisted on the swadeshi/Ayurvedic roots of their medicines and often directly or indirectly hinted at potential harms of using western medicines/chemical products.

Thus, production, distribution, advocacy and usage of such products (even when of inferior quality and costly) became an extension of one's patriotism and a way to contribute to nation-building.

Another wave of Swadeshi enterprises sprung up in the 1930s. This time in response to Gandhiji's call for the boycott of foreign goods, even rural India responded, leading to capacity expansion/setting up of new textile mills in Bombay and Ahmedabad.



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By the late 1930s, it was clear that the days of the British Raj were numbered and the nation-building had to be a joint exercise between the political and industrial leaderships. In 1944-45, 'Bombay Plan' outlined the strategy for doubling of the agricultural output and five-fold increase in the industrial sector within 15 years.

Apart from a variety of other experiments, two major ventures stood out:

Walchand Hirachand (1882-1953), who was greatly inspired as a student by Dadabhai Naoroji and M G Ranade, represented a more militant nationalist approach to business. His Scindia Steam Navigation Company put up a brave fight for decades to resist the monopoly and discriminatory policies of the P&O and British India Shipping lines. Taking advantage of the opportunities presented by the Second World War, he launched a

series of projects, including India's first modern shipyard (Hindustan Shipyard, Vishakhapatnam), first car factory (Premier Automobiles, near Bombay), and first aircraft factory (Hindustan Aircrafts in Bangalore, today's Hindustan Aeronautics Limited or HAL).

Another remarkable venture was Chemical, Industrial and Pharmaceuticals Laboratories (Now Cipla), founded in 1935 by a visionary scientist Khwaja Abdul Hamied, who had a doctorate in Chemistry from Germany. Hamied was a close associate of Mahatma Gandhi and a great institution builder.

Convergence

After the First World War, a large number of Indian businesses made the crossover from trading to manufacturing.

The emergence of Mahatma Gandhi with his credo of non-violence and the idea of trusteeship found deep resonance with the Indian business elite. Earlier, it was an alliance of interests but now it became a close personal bond and businessmen like G D Birla and Jamnalal Bajaj emerged as Gandhiji's closest associates.

By the late 1930s, it was clear that the days of the British Raj were numbered and the nation-building had to be a joint exercise between the political and industrial leaderships. There are two major landmarks in the evolution of this relationship:

In 1938, Congress President Subhas Chandra Bose set up a National Planning Commission under the chairmanship of Jawaharlal Nehru. This Commission had prominent industrialists like Purushottamdas Thakurdas, Walchand Hirachand, A D Shroff, and Ambalal Sarabhai as members, along with technocrat M Visvesvaraya and scientist Meghnad Saha.

In 1944-45, eight leading industrialists – J R D Tata, G D Birla, Ardeshir Dalal, Lala Shri Ram, Kasturbhai Lalbhai, A D Shroff, Purushottamdas Thakurdas, and John Matthai came out with a blueprint for independent India's

economic development. This 'Bombay Plan' outlined the strategy for doubling of the agricultural output and five-fold increase in the industrial sector within 15 years. They accepted that without State support this 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 handful of material successes like Godrej or Cipla or Alembic or (a much-diminished) Bengal Chemicals, and a clutch of PSU banks, what are the legacies of swadeshi business enterprises?

Right from the late 19th century, the general 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 traders 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-inspired entrepreneurs.

Since then, we have repeatedly seen this 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 pharmaceuticals giant and is making great strides in other knowledge-based industries, including Information Technology and speciality chemicals.

Evaluating Lala Harkishanlal's contribution, historian N Gerald Barrier wrote that all his ventures ultimately failed but his real contribution was the transformation of the Punjabi 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. □

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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.

India is efficiently feeding and managing nearly 18% of the world population with only 2.4% and 4% of global land 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 at a remarkable pace. Consequently, India is now the largest producer of pulses, jute, and milk, and ranks as the second-largest producer of rice, wheat, sugarcane, cotton, and groundnuts in the world. It also holds the second position in global fruit and vegetable production with a high rank in the production of mango, banana, papaya, and lemon.

With many feathers in its cap, the agriculture sector is now a proud entity with global acclaim, but the situation at the time of independence was quite deplorable. In addition to recurrent famines, the country lost major wheat and rice-growing areas to Pakistan due to partition. In 1950-51, India produced around 50 million tonnes of foodgrains, which was not enough to feed the population of 350 million. To save its growing population from hunger, India resorted to the import of foodgrains which ultimately led to 'ship to mouth' living. Meanwhile, Indian leadership realising the critical importance of agriculture in the National Food Security Act (NFSA), proclaimed 'everything can wait, but not agriculture'. Hence, a slew of measures was initiated mainly to improve and extend irrigation facilities and bring in a 'scientific temper' in agriculture and allied sectors. Strengthening of the nationwide agricultural R&D network was fast-tracked, along with the creation of agricultural education facilities and extension services to farmers. However, in our land of traditional agriculture, it

was first recognised as a 'subject of scientific improvement' in 1871 when British rulers established a 'Department of Revenue and Agriculture and Commerce'. Although the Department had a mandate for agricultural development, it mainly focused on revenue. In fact, British rulers did not intend to feed the famine-afflicted India, rather desired to direct 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 light-house of agricultural development in independent India. The Imperial Bacteriological Laboratory (1889) was the earliest institution established in Pune, which later evolved as the prestigious ICAR-Indian Veterinary Research Institute with headquarter at Izatnagar, Bareilly, UP. Similarly, the Imperial Agricultural Research Institute established in 1905 in Pusa, Samastipur, later became the distinguished ICAR-Indian Agricultural Research Institute (IARI) at New Delhi; and the Imperial Institute of Animal



From Yojana Archives

The author is Former Chief Editor, ICAR, New Delhi. Email: jagdeepsaxena@yahoo.com

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 1926, recommended the setting up of an Imperial Council of Agricultural Research to endorse, direct, and organise agricultural veterinary 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 1912 in Coimbatore (which later became ICAR-Sugarcane Breeding Station) and the Rice Research Station established in 1911. On the other hand, the Central Ministry of Food and Agriculture emphasised on commercial crops, and constituted semi-autonomous bodies or commodity committees to conduct research, specifically for improving the quality of the products. The first such committee of cotton was established in 1921, which led to the development of 70 improved varieties and considerably improved fibre quality. Subsequently, these committees were established for the overall improvement of lac, jute, sugarcane, coconut, tobacco, oilseeds, areca nut, cashew nut, and spices.

They established their own specific research institutions to conduct advanced research, such as Cotton Technology Research laboratory at Bombay; Indian Lac Research Institute at Ranchi; Jute Agricultural Research Laboratory at Dhaka (later relocated to Calcutta in 1947); Central Research Station at Kayankulam and Kasargod; Indian Institute of Sugarcane Research at Lucknow; and the Central Tobacco Research Institute at Rajahmundry.

On the agricultural education front, the first Agricultural School was opened at Saidapet, Chennai in 1868, which was later relocated to Coimbatore in 1906. Likewise, the Department for teaching agriculture in the College of Science at Pune (founded in 1889) was later developed into a separate college of agriculture in 1907. A series of agricultural colleges were established at Kanpur, Sabour, Nagpur, and Lyallpur (now in Pakistan) from 1901 to 1905. These colleges were mainly devoted to teaching, but research activities could not 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-reliant in staple foodgrains, i.e., wheat and rice. Accordingly, several specific initiatives were taken in the first Five Year Plan to uplift agricultural growth along several verticals. Major irrigation projects were launched and land titles were given to actual cultivators under land reforms. Co-operative credit institutions got a boost due to better financing and an initiative was taken up to bring institutional changes in the agriculture support system. Consequently, India harvested nearly 70 million tonnes of foodgrains (wheat, rice, coarse cereals, and pulses) during 1956-57, but due to the growing population, it could not lessen the country's reliance on imports. In the Second Five Year Plan, agriculture was shifted downwards in the priority list to accommodate industrial development for boosting the economy. During the 1960s, India continued with the escalation of imports, mainly from the USA under the PL-480 scheme. In and around 1965, the country suffered three major setbacks on the food front—severe drought, war with Pakistan, and imposition of strict curbs by the USA on delivery of wheat. India somehow 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 foodgrains production, mainly through scientific and technological interventions, and implementation of conducive policies at farm-level. The Government of India permitted trials of Mexican wheat varieties in fields. These varieties, developed by renowned American Agronomist, Dr Norman E Borlaug (1914 to 2019), were dwarf/semi-dwarf, rust-resistant, and had already shown potential to enhance yield manifold. Over 1,000 trials/demonstrations were conducted in farmers' fields across the north Indian wheat belt under the mentorship of eminent Plant Geneticist Dr M S Swaminathan. Farmers

successfully harvested 4-5 tonnes per hectare yield in contrast to earlier one-tonne hectare with Indian varieties. This was a quantum jump never imagined earlier. The clamour for new high-yielding seeds grew rapidly across wheat-growing areas due to the excellent performance of new wheat varieties and personal motivation to farmers by the great duo- Dr Borlaug and Dr Swaminathan. Agriculture departments and R&D institutions facilitated a regular supply of quality seeds, fertilisers, machinery, irrigation facilities, and more importantly,

The Imperial Bacteriological Laboratory (1889) was the earliest institution established in Pune, which later evolved as the prestigious ICAR-Indian Veterinary Research Institute with headquarter at Izatnagar, Bareilly, UP. The first Agricultural School was opened at Saidapet, Chennai in 1868, which was later relocated to Coimbatore in 1906.

scientific advisories. In 1968, our nation reaped a bumper harvest of nearly 17 million tonnes of wheat that was just 11 million tonnes in 1966. This was the biggest leap of wheat production ever recorded globally. This spectacular achievement was recognised as 'Green Revolution' over the world.

Acting almost on a similar pattern, the Government of India indented seeds of dwarf and high-yielding rice variety IR-8, developed by the International Rice Research Institute at Manila, Philippines. Its seeds were distributed among farmers, mainly in the southern and eastern regions. In comparison to merely 2 tonnes per hectare yield from local varieties, farmers could reap a bumper harvest of 6-7 tonnes per hectare, and that too in a short duration of only 105 days. Farmers adopted this variety widely, and Indian rice breeders developed a series of 'IR' varieties with a yield potential up to 10 tonnes per hectare. Thus, an era of high-yielding varieties of crops began with new dimensions such as multiple cropping, a package of good agricultural practices, an extension of modern farm practices and irrigation facilities, and a newer approach towards post-harvest technologies. During the post-Green Revolution period, policy planners focussed more on research, extension, education, input supply, credit support, marketing, price support, and institution building. The new strategy has enabled the country to increase the production of foodgrains by 5.6 times, horticultural crops by 10.5 times, fish by 16.8 times, milk by 10.4 times, and eggs by 52.9 times from 1950-51 to 2017-18. As per fourth advance estimates, for 2020-21, total foodgrain production in the country is estimated at a record 308.65 million tonnes. Horticulture production is expected to reach a record level of 329.86 million tonnes in 2020-21 (2nd advance estimates). Thus, India has travelled a long journey from being a famine-afflicted and food-scarce nation to a proud food- surplus nation.

Building Networks

During the 1950s and 1960s, the Government of India decided to build a public agricultural research system with ICAR as an apex body to plan, coordinate, and undertake research across commodities. Animal husbandry, fisheries, aquaculture, and many other enterprises integral to agriculture, were also brought under the umbrella of ICAR. Now, the system has grown into one of the world's largest networks of agricultural R&D, education, and extension institutions. Currently, ICAR is managing R&D activities in 102 institutions that include 65 research institutions, four deemed universities with research facilities, 14 National Research Centres, six National Bureaux, and 13 Project Directorates. ICAR is also playing a major role in

Major irrigation projects were launched and land titles were given to actual cultivators under land reforms. Co-operative credit institutions got a boost due to better financing and an initiative was taken up to bring institutional changes in the agriculture support system.

the promotion of excellence in higher agricultural education by mentoring and providing financial support to 71 State Agricultural Universities. In addition to research and education, ICAR also supports technology assessment, demonstration, and capacity development activities through a network of 11 Agricultural Technology Application Research Institutions and 721 Krishi Vigyan Kendras (KVKs) across the country. KVKs are small

entities at the district level that perform frontline extension activities and are responsible for the implementation of 'Lab to Land' programmes. The first KVK was opened in Pondicherry in 1974 on the recommendation of an expert committee (1973), constituted to suggest ways for the institutionalisation of agricultural extension at a national level.

To strengthen the agricultural research network, it was imperative to develop a network for higher education in agriculture and allied sciences. In 1948, the country has only 17 agriculture colleges that were working under the administrative control of agriculture departments of respective States. During 1948-49, the then Chairman of the University Grants Commission Dr Sarvepalli Radhakrishnan advocated opening rural universities for scientific training and skilling of rural youth. Pandit Govind Ballabh Pant, the then Chief Minister of Uttar Pradesh, acted on his call and deputed an expert committee to the USA to study the working of Land-Grants Universities and recommended a model for agricultural universities in India. Subsequently, acting on the recommendations of the committee, the Government of Uttar Pradesh decided to establish a large and integrated State Agricultural University in Rudrapur. The huge campus was inaugurated on 17 November 1960, by the then Prime Minister Pandit Jawaharlal Nehru as 'Uttar Pradesh Agricultural University'. This was the first agricultural university of India that laid a strong foundation of higher agricultural education with excellence. Later, it was renamed Govind Ballabh Pant University of Agriculture & Technology, and also played an important role in the success of the Green Revolution. During the Fourth Five Year Plan (1960-65), seven State Agricultural Universities (SAUs) were established in Uttar Pradesh, Orissa, Rajasthan, Punjab, Andhra Pradesh, Madhya Pradesh, and Karnataka. Besides higher education, the wide network of SAUs is currently addressing State-specific research and extension needs in close contact with farmer communities. Meanwhile, ICAR was also reorganised and revamped in 1966 to address emerging challenges at the national level. Administratively, it became an autonomous body under the Government of India, and all research institutions/stations under various

central commodity committees were brought under its umbrella. In 1965, ICAR initiated a novel concept of 'All India Coordinated Research Projects' (AICRPs) with a specific mandate— 'To conduct operational research and multi-location trials on developed technologies to identify technical, financial, managerial, and social constraints for better market acceptability to technologies'. Currently, 60 AICRPs are dedicated and functioning towards the improvement of various crops, livestock species, fisheries, and many other commodities of economic importance.

Creating Milestones

Since the post-Green Revolution period, agricultural R&D mainly focused its efforts on issues that were critical to sustaining food security and efficient use of natural resources. In attempting so, an array of improved varieties of various crops were developed with desirable characteristics, such as high-yield potential, resistance to pests and diseases, tolerance to biotic 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 scientists also added the attribute of 'climate adaptability' in the latest varieties. The 'HD' series of wheat varieties now covers nearly 140 lakh hectare area out of 317 lakh hectare of wheat growing area in the country. Per hectare productivity of wheat has now sky-rocketed to 3,424 kg, which was just 669 kg during 1946-47. The nation harvested a record 110 million tonnes of wheat during 2020-21 (4th advance estimate). In rice, other than high-yielding, specific varieties were developed to perform well under drought or water-logged conditions. However, Basmati rice varieties, developed by IARI, won worldwide acclaim and popularity due to their exquisite aroma, flavour, and texture. The Basmati variety

In 1968, our nation reaped a bumper harvest of nearly 17 million tonnes of wheat that was just 11 million tonnes in 1966. This was the biggest leap of wheat production ever recorded globally. This spectacular achievement was recognised as 'Green Revolution' over the world.

'Pusa-1121' has earned the unique distinction of being the 'longest grain' variety in the world with an exceptionally high cooked kernel elongation ratio of 2.5 and volume expansion more than four times. India could earn equivalent to Rs 33,000 crore of foreign exchange by exporting basmati rice during 2018-19. Backed by S&T interventions and improved varieties, India harvested a record 122.27 million tonnes of rice during 2020-21 (4th advance estimate).

To attain self-reliance in oilseeds production, agricultural R&D was oriented towards increasing per hectare productivity by various S&T interventions. The recent introduction of exotic oil palm as an oilseeds crop by developing production technologies suitable to Indian conditions has shown promise. Earlier, the introduction and popularisation of soybean in suitable regions have successfully contributed to the kitty of edible oils. Due to consistent efforts, oilseed production in the country has reached a record of 36.10 million tonnes during 2020-21. (4th 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 (4th advance estimate). A mission mode approach 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 regeneration of old/unproductive orchards. Currently, India ranks number one in the productivity of banana, grapes, papaya, cassava, and green peas. Total horticultural production is estimated to be 329.86 million tonnes (highest ever) during 2020-21 (2nd advance estimate). A significant increase in production is registered over the previous year in nearly all categories of horticultural crops, such as fruits, vegetables, plantation crops, spices, and medicinal and aromatic plants. In the latest development, scientists have developed bio-fortified varieties of some major crops, which are 1.5 to 3.0 times more nutritious than the traditional varieties. Recently, the Prime Minister dedicated 17 such varieties of eight crops to the nation.

During the 1950s and 1960s, just like foodgrains, India depended heavily on the import of milk to meet national demand. To attain self-reliance, an ambitious programme, called 'Operation Flood', was launched in 1970 that addressed production and productivity issues with major reforms in the marketing of milk and milk products. Soon, the efforts paid dividends and in 1998, India became the largest producer of milk in the world, surpassing the USA. The transformation, widely known as 'White Revolution', is still making waves with current milk production of nearly



GIS-based fore-warning System. Source: MSSRF

200 million tonnes and per capita milk availability crossing 400 gm per day. Advances made in animal breeding, reproduction, health, and nutrition have made seminal contributions in sustaining the white revolution. Similarly, the targeted programme of 'Blue Revolution' transformed the fisheries sector with an all-time high production of nearly 14.16 million tonnes between 2019 and 2020. On the global map, India is the second-largest aquaculture-producing country and the third-largest fish producer.

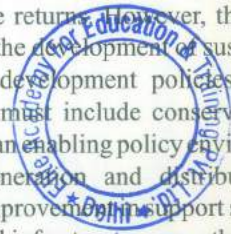
Way Forward

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 devising innovative measures 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 poised

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

The Basmati 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.

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 future agriculture. Generation and distribution of appropriate technologies, improvement in support services, and enhancement in 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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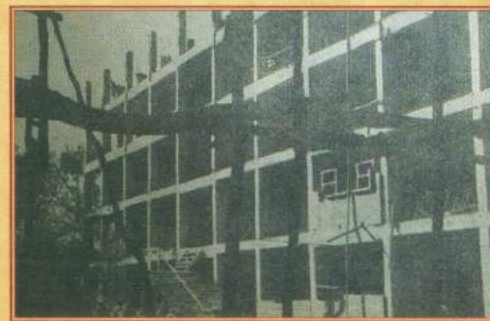
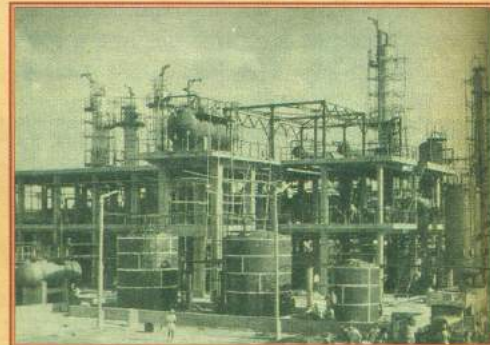
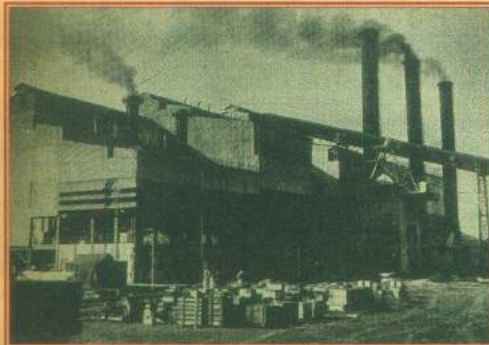
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DEVELOPMENT



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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.

India's international relations with the west determined the initial plan of economic development. The bankruptcy of the treasury implied that any development programme initiated could not 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 rupee-ruble 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.

Close relations with the Soviet Union also led to the adoption of the Feldman model of economic development based on a planned expansion of State-owned heavy industries. However, the strategy of adding to the production capacity of the capital goods sector was ill-conceived as these capital goods were themselves import-dependent and needed scarce foreign exchange. In addition, the strategy required strict control on imports of consumption goods to conserve foreign exchange. While the model of planned development worked for a while, the inefficiency of the Feldman model became apparent when the production of capital goods became constrained by the need for imported components. In addition, the wars of 1962 and



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The author is Vice-Chancellor and Professor in Economics, Indian Institute of Foreign Trade, New Delhi. Email: diroffice@iift.ac.in



1965 further stretched resources so that it became apparent that the Five Year Plan models had an inherent economic inconsistency. Parallely, the growing population created a shortage of basic foodstuffs culminating in India and it was being forced to import wheat from the US under the PL480 programme. Excessive concentration on the industrial sector producing capital goods and neglect of the agricultural sector implied a development model constrained by the availability of consumer goods. While this may have worked in communist countries like the Soviet Union, in a political democracy like India it was not sustainable.

The Five Year Plan model itself hinted that the state would direct production in 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 prohibited. In other words, the industrial licensing regime soon implied the discretionary issue of industrial licenses, crony capitalism, and ad hocism in the planning process.

It may, however, not be unreasonable to infer that the model adopted was probably directed by the political difficulty of dealing with aggressive dominant western power influence, 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 socialist initiatives were undertaken: one, the complete takeover of the wholesale trade in foodgrains and, two, nationalisation

The Five Year Plan model itself hinted that the state would direct production in 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 prohibited.

of the major banks. The first measure was a complete failure and had to be repealed quickly. 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 for 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 Plan and three years of Annual Plans, that it became clear that the Feldman model of planned industrialisation was a failure. Subsequently, starting with the Technology Policy Statement of 1982, production liberalisation and easing of imports 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 reneging on its external liability and being unable to pay for more than one month of imports. The reforms of 1991 were a consequence of this, leading to both domestic and external economic liberalisation and abandonment of the Feldman model of economic development.

To that extent, the period of real economic growth began after 1991 when domestic production was opened up completely and foreign exchange controls were also lifted, while the rupee was allowed to devalue to control imports via a market mechanism. In other words, most of the decade of the 1990s went into dismantling the complex domestic production and external import control regimes. It took at least the decade of the 1990s to open up 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 so that by the end of the 1990s, India's foreign exchange reserves increased from

USD 5.8 billion to USD 38 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 state started withdrawing from 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 producers in the 1970s, today there is little political opposition to the need for foreign participation, especially in the area of technology via Foreign Direct Investments (FDI). The change in fact began in 1993 when the Industrial Policy Resolution 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 extent of foreign equity ownership has continued since 1991 with almost no policy reversals in policies despite two or three major political changes in the centre. Today, the issue has changed from discouraging foreign investments to actively encouraging FDI with almost no restrictions. Second, for those who have lived in India through the 1960s and 1970s, there is no greater testimony to the success of the new economic paradigm than the fact that in areas like communications, automobiles, and other

consumer goods, the private 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 developments 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 items in the 1990s. Presently, 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 1980s, a change in the paradigm has implied that the major constraints to economic development, namely, foreign exchange and foodgrain production, have been eliminated. In current times, the issue is not so much about external debt and shortage of basic foodgrains but one of aggressive participation in the world market and structural change in agriculture.

The switch to an open economy after 1991 had implied that India was able to lock into world trade. Since 1980, global trade has been growing at about 8 per cent in real terms up till 2008. India participated in this growth as well, with the share of total trade in GDP increased from around 15 per cent in the early 1990s to between 45 to 50 per cent today. To put it in another prospective, one out of every two rupees of GDP is generated by an exported or imported commodity. It is also well known that compared to the 2 to 3 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 below par today. At the same time, present-day 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 'crisis-driven' economy so that with the external crisis averted, domestic constraints have emerged.

First, while economic theory is clear that the government has "no business being in business", yet attempts to reduce the government participation in areas like civil aviation, hospitality, etc., have faced strong political opposition: what happens to the security of those employed in public sector vital focus? The main issue of political democracy is who pays for "structural adjustment" as economic change takes place? Second, the declining

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 items in the 1990s.

share in agricultural production in GDP is actually an indication of economic development and operation of the so-called Engel's Law. It is, however, a failure of structural adjustments and the strategy of industrial growth that a similar decline in the number of those whose primary livelihood originates 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 this '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 forced to remain small because of reservations and quotas have either closed down or linked 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 imports and/or large-scale firms. Most such firms, including the areas 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 this structural adjustment for MSMEs. This process will need to continue.

However, the greatest failure to bring out structural adjustment 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 areas, agriculture is still a fallback option. It is not surprising that agriculture today is not a profitable option mainly because of the failure of labour to migrate to the more productive industrial and service sectors. This constitutes a failure of agriculture policy which has not been able to induce farmers to diversify into high value-added production, both in farm products and in related areas like dairy farming.

It is this last structural adjustment that must take place given the issues of political economy. It is clear that in trade or in industrial/service sector policy, future reforms must relate to the required structural adjustment in the agricultural sector. As Aldous Huxley famously said, "you cannot prevent an idea whose time has come". The new-age economy of "fintech" and "startups" must also engage with this question. □

Infrastructure: History & Challenges

Sameera 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 sixth of Indians were literate. The abject poverty and sharp social 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 23.3%) to 3.8% 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 private businesses. The Industrial Policy Resolution (IPR) of 1948 proposed a mixed economy. Earlier, the 'Bombay Plan', proposed by eight influential industrialists envisaged a substantial public sector with State interventions and regulations in order to protect indigenous industries. The political leadership believed that since planning was not possible in a market economy, the state and public sector would inevitably play a leading role in economic progress.

India set up the Planning Commission in 1950 to oversee the entire range of planning, including resource allocation, implementation, and appraisal of five-year plans. These Plans were centralised economic and social growth programmes modelled after those prevalent in the USSR. India's first Five-Year Plan, launched in 1951, focused on agriculture and irrigation to boost farm output as India was losing precious foreign reserves on foodgrain imports. The First Five-Year Plan was based on the Harrod-Domar model with few modifications. By the end of the Plan in 1956, five Indian Institutes of Technology (IITs) were started



as major technical institutions. The University Grants Commission (UGC) was set up to take care of funding and take measures to strengthen higher education in the country. Contracts were signed to start five steel plants, which came into existence in the middle of the Second Five-Year Plan.

The Second Five-Year Plan and the Industrial Policy Resolution 1956 (long considered the economic constitution of India) paved the way for the development of the public sector and ushered in the *Lights Raj*. 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 Prasanta Chandra Mahalanobis in 1953.

From the Second Five-Year Plan, there was a determined thrust towards substitution of basic and capital good industries. Hydroelectric power projects and five steel plants at Bhilai, Durgapur, and Rourkela were established with the help of the Soviet Union, Britain (the UK), and West Germany respectively. Coal production was increased enormously. More railway lines were added in North East. The Tata Institute of Fundamental Research (TIFR) and the Atomic Energy

The author is Director in the Government of India with work experience ranging from policy formulation and implementation in External Affairs, International Labour Standards, G20, BRICS, Rural Development, and Commerce. Email: sameera.saurabh@gmail.com

Commission of India were established as research institutes. In 1957, a talent search and scholarship programme was begun to find talented students to train for work in nuclear power.

Power and steel were identified as the key bases for planning. The 680ft Bhakra multi-purpose project on the Sutlej river in Himachal Pradesh was considered a new landmark of a resurgent India. The huge Bhakra-Nangal dams are among several hydel projects India built to light up homes, run factories, and irrigate crops. The second plan set a target to produce 6 million tonnes of steel. Germany was contracted to build a steel plant in Rourkela, while Russia and Britain would build one each in Bhilai and Durgapur, respectively. Nationalisation of 14 public sector banks was a major event during the Fourth Plan (1969-74) which had a huge impact on the Indian economy & infrastructure. The Indian National Highway System was introduced and many roads were widened to accommodate the increasing traffic during the Fourth Plan (1974-78).

Infrastructure provisioning requires massive investments, often over a prolonged duration of time, coupled with procedural delays and returns expected after a long period of investment. Consequently, given the high fiscal requirements, particularly for large-scale infrastructure development projects, public investments alone may not be sufficient to fund infrastructure development in India. Consequently, time and again there have been recommendations to encourage private participation in infrastructure development through various forms of Public-private Partnerships (PPPs).

Recent Milestones

India is heralding in an era of new transformation, which has an enormous prospect for growth. We are expected to become a USD5 trillion economy by 2024 and aspire to become a USD10 trillion economy by 2030. There is a huge potential for entities to play a transformational role in the upcoming time. There are opportunities for large-scale development to meet the aspirations of the 'Young India.' Between the present and 2030, approximately 700 to 900 million square metres of urban space every year will be constructed. India is witnessing rapid urbanisation. According to Census 2011, India's urban population was 37.7 crore, which is projected to grow to about



From Yojana Archives

60 crore by 2030. Urbanisation in India has become an important and irreversible process, and it is an important determinant of national economic growth and poverty reduction.

In order to promote affordable housing, the Government has made several efforts to create an enabling environment. Infrastructure status has been granted to affordable housing which will enable these projects to avail the associated benefits such as lower borrowing rates, tax concessions, and increased flow of foreign and private capital.

Real Estate (Regulation and Development Act) [RERA]

Proactive measures, such as the Real Estate (Regulation and Development) Act, 2016 (RERA), Real Estate Investment Trusts (REITs), the Benami Transactions (Prohibition) Amendment Act 2016, higher tax breaks on home loans, the Goods and Services Tax (GST), land-related reforms, optimising development control rules, rationalising of the stamp duty and registration charges, digitalisation, etc., have also been introduced 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 so 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 fulfill the housing needs of homeless urban poor and enable them to own decent pucca houses with basic infrastructure facilities by 2022. Based on demand assessment at the State level, the nation has the mammoth task of constructing about 12 million houses under EWS/LIG segment of the society in order to achieve the goal of Housing for All.

Affordable Rental Housing Complexes (ARHCs)

In the wake of Covid-19 pandemic, aligning to the vision of *Amanirbhar Bharat*, the Ministry of Housing and Urban Affairs (MoHUA), has initiated Affordable Rental Housing Complexes (ARHCs) for urban migrants/ poor. A first of its kind in the country, this initiative will not only improve the living conditions of urban migrants from

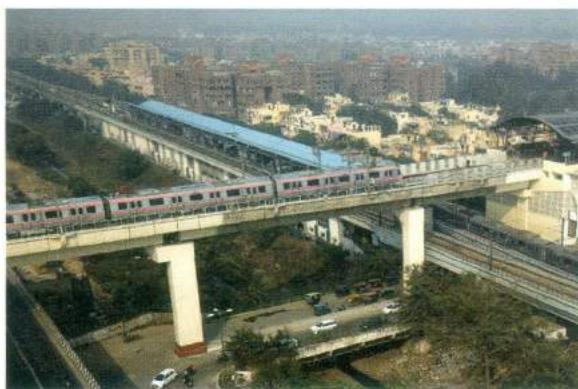
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EWS/ LIG categories including labour, urban poor but also obviate the need for staying in slums/informal settlements/ peri-urban areas, etc. ARHCs will play a vital role in wealth creation, development of infrastructure, and providing dignified living will all basic amenities to the urban poor/ migrants.

These initiatives will be effective in spurring housing and construction 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 labour market.

The availability of encumbrance-free 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 notified Planning/Development areas, under the ambit of PMAY (U). It would leverage the availability of additional land at a cheaper cost for the construction of affordable houses.

Bharatmala Pariyojana is a new umbrella programme for the highways sector that focuses on optimising the efficiency of freight and passenger movement across the country by bridging critical infrastructural gaps through effective interventions like the development of Economic Corridors, Inter Corridors, and Feeder Routes, National Corridor Efficiency Improvement, Border and International connectivity roads, Coastal and Port connectivity roads, and Green-field expressways. A total 24,800 kms are being considered in Phase I of Bharatmala project. Improvement in the efficiency of existing corridors through the development of Multi-Modal Logistics Parks (MMLPs).



Urban Mass Rapid Transport

The concept of mass rapid transit for New Delhi first emerged from a traffic and travel characteristics study which was carried out in the city in 1969.

While extensive technical studies and the raising of finance for the project were in progress, the city expanded significantly, resulting in a two-fold rise in population, and a five-fold rise in the number of vehicles between 1981 and 1998. To rectify the situation, the Government of India and the Government of Delhi jointly set up a company called the Delhi Metro Rail Corporation (DMRC) on 3 May 1995, with E Sreedharan as the Managing Director.

DMRC, a special-purpose organisation, is vested with great autonomy and powers to execute this 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 tenders, and control 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 VishwaVidyalaya–Kashmere Gate section of the Yellow Line opened on 20 December 2004.

Way Forward

The Introduction of ‘MetroLite’ or ‘MetroNeo’, as recommended by the Government, is mandated in cities with lower capacity requirements. This is considering the significantly less capital cost which has a bearing on the overall funding requirement and commercial sustainability.

Over the short term, unbundled private participation for all new/expansions of existing metro systems may be taken up. Herein, various high capital expenditure components such as stations, rolling stock, maintenance facilities, etc.,

should be undertaken through long-term contract/concession for private investment. Also, securitisation of operational assets should be tested in the market. Innovative financing mechanisms to fund metro projects are required to be explored and Non-Fare Box revenue streams are to be augmented. 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 realise its economic and growth potential. Infrastructure development remains a key constraint in India’s economic development. Although investments in infrastructure do not guarantee growth, in general, scholarly studies estimate that a strong association exists between the availability of infrastructure provisions and economic growth measured in terms of gross domestic product (GDP). In other words, industrial growth is contingent upon the development of other infrastructural facilities such as transportation, energy, and electricity, and communications. However, infrastructure development in itself remains both a financial and a regulatory challenge. In order to do so, in addition to the available provisions for public investments, efforts must be made to adequately channelise the opportunities for private participation in the real estate/housing sector. □

Endnotes

1. Planning Commission, 2008
2. Ministry of Finance, 2015
3. Economic Survey 2018-19
4. Mishra *et al.* 2013, Nataraj 2014



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PEOPLE & SOCIETY



Iconic Images from
YOJANA ARCHIVES



Voyage of Indian Cinema

Prakash Magdum



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' was held in Paris by Louis and Auguste—the Lumiere Brothers who had successfully patented the process of 'Cinematographe'. The Times of India in Bombay rightfully 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.



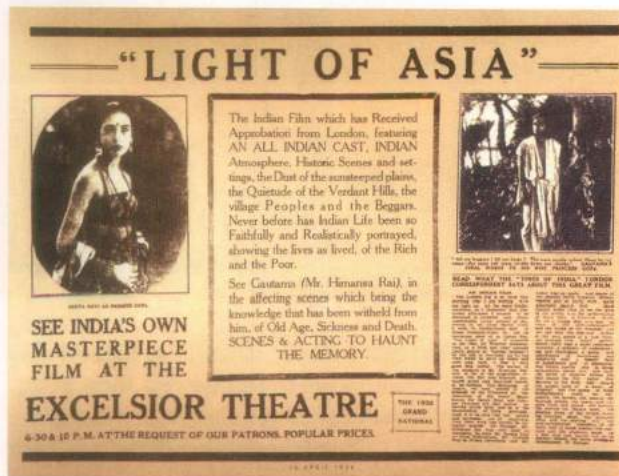
With a rich history of art and culture, it was but natural that Indian artists took an instant liking to this newest form of art. Hiralal Sen and H S Bhatavadekar filmed short items including a short reel 'The Wrestlers'. The photographer duo made such footages while several narrative films were being imported on a variety of topics. One such film 'Life of Christ' was screened in Bombay in 1901 and among the audience was a middle-aged artist DG Phalke. Enchanted by what he saw on the screen that day, Phalke was determined to make an Indian film and his dream came true in 1913. In the meanwhile, Phalke went to England, learned the craft, and put together a team of motley artists to shoot India's first feature film *Raja Harishchandra*.

A year before, Dada Torney had successfully made *Pundalik*, 'a fascinating religious subject and a popular Hindu drama' which received a tremendous public response. The only difference was that it was shot by an English cameraman and filmed a stage drama rather than a single feature.

Phalke's *Raja Harishchandra*, a four-reel film portraying a story of a truthful king, started the trend of filming the mythological stories of India's past on the screen. Phalke later established the Hindustan 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 artist called Salunke played the part of Queen Taramati in *Raja Harishchandra*. Braving all difficulties and securing finance in



The author is Director, National Film Archive of India, Pune. Email: nfaipune@gmail.com



war-like situations, Phalke is credited to lay down the firm foundations of the Indian film industry. He was successful in blending the folklores of India's past with the technology of moving images of cinema.

The technology of sound was yet to arrive, and the films were silent only. Thus, to take the story forward, a few title 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 net effect was electric for the viewers. The production of Indian films grew steadily in the initial years and along with that 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 cinemas became much popular with makeshift equipment being carried from one village to another after the show was over.

The silent era of Indian cinema saw three major production houses which produced a substantial number of films. Led by DG Phalke's Hindustan Cinema Film Company, the other players were Calcutta-based Madan Theaters and Bombay-based Kohinoor Film Company. In March 1917, JF Madan's Elphinstone Bioscope Company, a precursor to Madan Theaters, made *Satyavadi Raja Harishchandra*, a much longer version of the famous story. Established in 1918, DN Sampat's Kohinoor Film Company went on to produce more than 100 silent films. Even as the production of Indian feature films steadily grew, the import of foreign films dominated

the exhibition space in India. In fact, the footage of foreign films shown in India was about seven times the total Indian production in the mid-1920s. Of this imported footage, the productions from America alone consisted of more than 80 per cent.

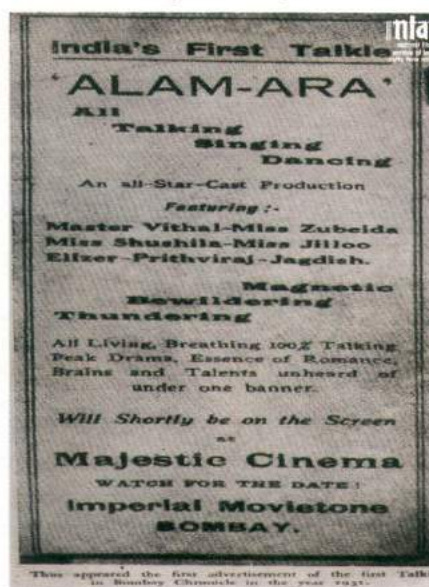
The Indian Cinematograph Act passed in 1918 paved the way for the system of film censorship in the country. Thus, the Board of Film Censors was set up in 1920 to scrutinise and certify the films before their exhibition. In 1921, Kohinoor's *Bhakta Vidur* was released that caught the imagination of the Indian masses. The main character, Vidur, from the epic Mahabharata, had a very close resemblance with Mahatma Gandhi. The Censors thought it would aid the nationalist sentiments and banned the film. It, thus, became the first film to be banned by the Censors.

Keechaka Vadham 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 silent films, mostly based on mythological topics. Along with Bombay and Kolkata, Kolhapur and Pune also emerged as major production centers during this time. Baburao Pante's Maharashtra Film Company made some spectacular films with a realistic approach. His *Savakari Pashu* is considered to be one of the first realist portrayal of social ills prevailing in the society. *The Light of Asia*, a co-production between India and Germany, directed by Himanshu Rai, helped popularise India cinema abroad. It was screened at many major European centers and garnered critical acclaim.

The Indian Cinematograph Committee headed by T Rangachariar was formed to look into conditions of the nascent Indian film industry in 1927-28. Even as a large number of recommendations the committee made

remained only on paper, the entire exercise helped in establishing much-needed data on the state of the film industry. Thus, the highlight of the first few decades was the portrayal of mythological characters from Indian epics. The establishment of big studios at many centers was another highlight

The number of silent film productions increased manifold by the late 1920s and at this point in time came the technology of sound. A competition of sorts happened between various production companies to introduce sound with the picture but ultimately it was Ardeshir Irani who got it first by



releasing *Alam Ara* on 14 March 1931. 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 thronged to theatres in large numbers to experience this new phenomenon. These talking and singing pictures soon got widespread approval and thus ended the silent era of Indian cinema.

This new revolution in technology also paved the way for the emergence of two eminent production houses; Prabhat Film Company in Kolhapur (then shifted to Pune) and New Theatres Ltd. In Calcutta, helmed by V Shantaram along with Damle and Fattalal, Prabhat Film Company set new trends in terms of story, treatment, acting, and music while simultaneously producing films in two languages, Marathi and Hindi. While *Sant Tukaram*, based on the life of the popular Saint-poet, received accolades at the prestigious Venice Film Festival in 1937, *Shejari/Padosi*, portrayed a poignant tale of friendship between friends of two different faiths. Prabhat, thus created new standards in filmmaking and garnered a nationwide audience. New Theatres also chose themes of social relevance and depicted them on screen in an artistic way. Led by BN Sarkar, the company produced popular musicals like *Chandidas* and *Devdas* with KL Saigal and KC Dey singing melodious tunes composed by RC Boral.

The decades of the 1930s and 1940s saw the emergence of social themes being depicted in large numbers in Indian cinema. Evils of bigamy, child marriage, widow remarriage, women's education, social equality, religious harmony were the topics that defined such 'social' films. At the same time, India's freedom struggle too got portrayed in cinemas of different languages across the country. Many filmmakers had actively participated in the national movement and they made films depicting patriotism as a virtue. Many times, this was done in an indirect way to avoid the gaze of Censors. Gandhian themes and principles such as non-violence, communal harmony, sanitation, swadeshi, village development, etc were actively portrayed in such films. The introduction of colour was another technological progress for the cinema industry and yet again Ardeshir Irani took the lead by producing *Kisan Kanya*, the first colour film shot and processed in India. The era of

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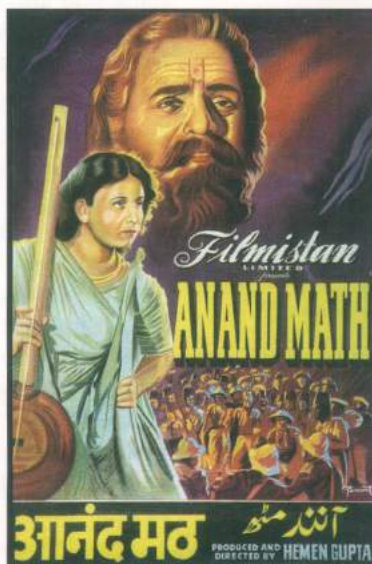
action and stunt films also gained prominence with Wadia Movietone producing several such films starring Fearless Nadia, the first stuntwoman in Indian cinema.

As Indian cinema completed twenty-five years in 1938, a Motion Picture Congress was held in Bombay 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 licensing system. These restrictions resulted in films getting made that had escapist entertainers, melodramas, and musicals. There were notable exceptions too with KA Abbas's *Dharati Ke Lal* which depicted the grim realities of the Bengal famine and V Shantaram's *Dr Kotnis ki Amar Kahani* portraying a true-life story of an Indian doctor who gives his life while serving in war-torn China. Gemini Studio, one of the major production houses of the South, produced a spectacular dance drama *Chandralekha* in Tamil directed by SS Vasan.

Post-independence, the government took some concrete steps to improve the conditions of the film sector and a Film Enquiry Committee was constituted under the chairmanship of SK Patil. It eventually led to the establishment of the Film Institute of India to teach the art of filmmaking, The Film Finance Corporation of India to assist the budding filmmakers, and the Children's Film Society of India. The National Film Archive of India was also established to preserve the cinematic heritage of our country. The earlier Information Films of India became the Films Division to produce short films and documentaries. A fresh group of talent emerged in the industry with Raj Kapoor, Mehboob Khan, Bimal Roy, etc who tried to portray social realities 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 vibrant cinema of the world. Bimal Roy's *Do Bigha Zamin*, KA Abbas's *Rahi*, Raj Kapoor's *Boot Polish*, P Bhaskaran's *Neelakuyil* showcased the harsh realities with a novel cinematic style. But it was Satyajit Ray whose *Pather Panchali*, released in 1955,



revolutionised the Indian cinema. Without compromising on the art of storytelling, Ray portrayed the reality of Indian village which was commended as 'the best human document' at the prestigious Cannes Film Festival. He followed it with *Apur Sansar* and *Aparajito*, a trilogy, that depicted life in Bengal with deep humanity. Raj Kapoor's *Jagte Raho* followed the suit in a similar style and technique but was placed in an urban milieu. Guru Dutt's *Pyasa* and V Shantaram's *Do Anken Barah Haath* tackled unusual subjects but with superb cinematic treatment. The decade of 1960s also saw the trend of stunt films becoming popular with wrestler Dara Singh as a hero.



Ritwik Ghatak was another torchbearer of realism with a series of films including *Meghe Dhake* and *Komal Gandhar* that charted a different path. Mrinal Sen, with his low-budget *Bhuvan Shome* that was supported by Film Finance Corporation, initiated a trend that was called a new cinema movement. Rajender Singh Bedi's *Dastak* dwelled on society's conscience, Mani Kaul's *Uski Roti* and *Ashadh Ka Ek Din* explored the new thematic language of the cinema. *Samskara* by Pattabhirama Reddy exposed the orthodoxy and hypocrisy in society and Adoor Gopalakrishnan's *Swayamvaram* portrayed the dilemma of a newlywed couple. Shyam Benegal's *Ankur* put the conflicts of emerging new India in a fresh perspective.

The issues of unemployment and identity in the 1970s gave birth to a phenomenon called Angry Young Man on the screen. With an intense portrayal by Amitabh Bachchan of such characters backed by spirited story and dialogues by Salim-Javed, a series of such films became an instant hit striking a chord with the young generation. In the South too, this became a rage thanks to powerful acting performances by Kamal Haasan and Rajinikanth. On the other hand, the films with disco and pop music gave voice to the aspiring youth. Musicals with western sensibilities were made in large numbers and peppy songs became a cornerstone for hit films.

Then there was a middle-of-the-road cinema striking a fine balance between art and commerce. It told stories of the common man with Hrishikesh Mukherjee, Gulzar, and Basu Chatterjee portraying the themes of the daily struggle and aspirations of the middle-class in their films. The art-house cinema also prospered in this period with notable films being made in Marathi,

Malayalam, Kannada, Tamil, Odia, Gujarati, Bengali, and Assamese languages. In what is called the parallel cinema movement, the films made by John Abraham, G Aravindan, Girish Karnad, Amol Palekar, Saeed Akhtar Mirza, MS Sathyu, Tapan Sinha carried forward the rich legacy of realism.

The film society movement, started in 1950s, also helped in popularising the film culture in the country. The film clubs, with the active support from the National Film Archive of India, showcased both Indian and foreign classics apart from avant-garde films on a regular basis. The film viewers, in the process, became film connoisseurs

and this mature audience consciously backed the new and bold experiments in Indian cinema.

The arrival of television in India brought films directly into households. The studio system gave way to the beginning of corporatisation of the industry. The boom in the video industry also gave tough competition to the regular exhibition circuit. Old formulas and stereotypes became irrelevant and once again content became the king.

The new millennium brought fresh air, both in terms of stories and techniques in the industry. The technology of filmmaking and exhibition shifted gears and celluloid gave away to digital. It freed the energies of young filmmakers and themes rooted in the soil got a fillip. With the help of subtitles in English, the good films made in any language found an eager audience both in India and abroad. The advent of animation and visual graphics opened the doors to new possibilities and films like *Bahubali* became huge hits.

The over-the-top (OTT) technology is a harbinger to newer vistas for the film industry. Instead of a regular release in theaters, the films are now being released on the digital platform. Even, films are being made exclusively for such platforms. The community way of consuming the content is slowly being replaced by private viewing in the comforts of one's home. At the same time, the new filmmaker is no longer dependent on the vagaries of the regular commercial distribution system. He has now new avenues to explore that can showcase the content to a worldwide audience. But despite all the advancements in technology, the film is after all a medium of telling stories. As long as these stories are humane and interesting, the medium of cinema will continue to thrive. □

Role of Media

Prof Sanjay 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 imbibed 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.

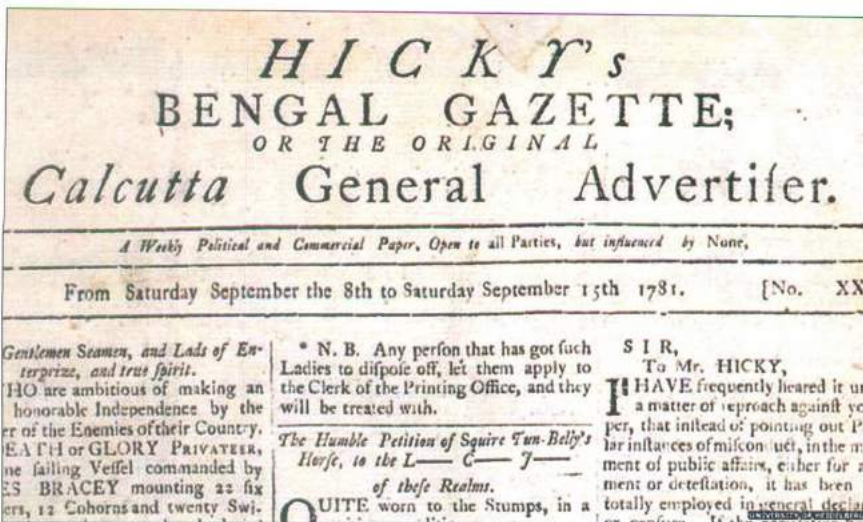
The development of newspapers in India began in 1780 when James Augustus Hicky launched India's first newspaper, 'Bengal Gazette', in English. Published in Kolkata, this newspaper was founded on Hicky's tenacity, passion, and standing for the truth. Its motto was- 'Open to all yet not influenced by anyone.' He declared his objective- 'I enjoy shackling myself for the freedom of my mind and spirit.' Hicky was the first journalist of India who fought with the British government for the freedom of the press.¹ Media has played a significant role in awakening social consciousness since the time of the independence movement. Be it any country in the 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 prevalent issue. The media, on one hand, acts 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 for this reason that even today people look up to the media with hope.

The role of media has also changed over time. The communication revolution has contributed the most to this. However, this has also brought forth the challenge of factual representation before the media in the prevailing scenario of a conflict between credibility and popularity.

Diversity of views, differences, and disagreements is also of great importance in a democratic system. By bringing together the ideas of all concerned people, the media allows them to understand and analyse them. If you observe in the context of New India, media or mass media reflects the actual situation of any society or country. The power of media can be gauged through its wide reach. This autonomy and independence also brings to the media a tremendous responsibility towards the country and society. Change is the law of nature, and this law applies to all the ideas, concepts, objects of this world, man, environment, and nature itself. This change results from human reactions to new situations. New situations and challenges give rise to new technologies. Nowadays, Information Technology has completely transformed the world.



The author is Director General, Indian Institute of Mass Communication, New Delhi. Email: dgiimc196@gmail.com



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

Every century is known for its distinguishing feature. The 21st century is being considered as the century of the 'Internet and Social Media'. From the shifting dimensions of the media, 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 determining several aspects of our lives. How the increasing popularity of social media grips the world can be gauged from the fact that now the number of people using social media in the world has exceeded the number of people who do not use it. According to a report², 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 over 10 per cent in the last years. During this period, social media connected 37 crore 6 lakh people. If its average is taken, then every day, 1 million users and 12 people are connected to social media every second. According to a report called DataReportal, a user spends 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, then every day, the equivalent of one million years is spent on social media alone. The figures are enough to indicate the relevance of social media in the present times.

Today, India is emerging as the largest market for the internet and smartphones. According to an estimate

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 vacillate between multiple news and information choices. 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 22 countries, said that 64 per cent of Indians are the victims of fake news. It is a matter of concern because, at the global level, this figure is 57 per cent. The most important thing about this report is that family or friends also play an essential role in spreading fake news³.

The sustained spread of the information revolution in India and the advent of new technologies like social media is the reason why many 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 this opportunity to everyone. Therefore, the sources of information have become innumerable. Due to this, now everyone wants to put forward his point of view. Some of

them are responsible, while for people many times more than them, this responsibility does not mean anything at all. It leaves the commoner in 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 words like 'post-truth' have been included in everyday conversation. When something is

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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, awareness and understanding will have to be created about 'information.' There is nothing new in fabricating and propagating issues for one's interest. However, in the digital world, the way fake news on political, economic, and social issues has become widespread is 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 conventional media. Because of these networks, it has become impossible to stop the flow of information. In such a situation, people must have access to tools that empower them to analyse and even discard that information. We have to raise awareness in children because the bombardment 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 journalism which we are gradually neglecting. For public education, it is necessary that we also go through a self-learning process. It is also the responsibility of journalism to sustain society's vision and intellectual consciousness in favour of the nation. Today, when India is making rapid strides in its progress and development, all the

countries of the world are looking at our country with new hope. 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 heir of an accomplished tradition, but also a rapidly developing nation. That's why India is also evoking expectations. While expressing the diversity and plurality of this country, the media can elicit the threads of unity in it. The strength of our country is that we unite swiftly in times of crisis. But that feeling evaporates once the problem is over. We have to create a vision in the minds of people that they are together in

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country is facing.

Before attaining independence, the people committed to freedom struggle used to engage in journalism. Newspapers and magazines used to advocate the cause of independence fiercely. It is crucial that a yearning to do something for the country and a desire to take the country forward should be awakened amongst the countrymen. As was the spirit of the movement for

Swaraj (self-rule), so should be the energy of the movement for Surajya (good rule). For India to emerge as a force to be reckoned with globally, we have to attain higher global standards in many areas. It is the need of the hour that the way India has earned a place in the domain of science, technology, innovation, and sports in the world, similarly our media should also gain global reach and create a global identity

to raise India's voice in the world. Today, the press of India should accept this challenge and contribute to nation-building. □

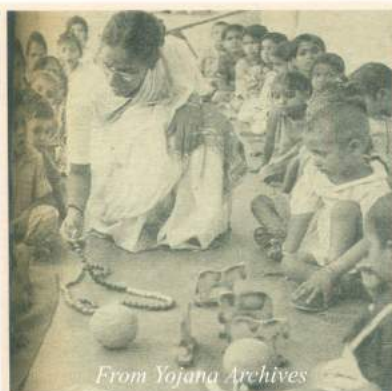
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Re‘forming’ Caste in New India

Amita Bhide



From Yojana Archives

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 equations 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.

In pre-independence India, caste was seen as a ‘social’ question; it was a subject of social reform which necessitated the creation of more universal opportunities in sectors such as education and jobs (by the government), deliberate efforts for inclusion through actions of voluntary organisations, by several educational reformers, 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 cognition 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,



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The author is Professor, Mumbai Campus, Tata Institute of Social Sciences. Email: amita@tiss.edu



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especially for the Scheduled Castes, was a significant and foundational reform. With these moves, the post-independence state took on the mantle of transformative action, heralding a shift of domain of caste reform to the political and economic sphere and not just restricted to the 'social' sphere as in the pre-independence era. The most significant shift is seen in terms of the transformation in the 'agency' of the castes who were previously labelled only as victims, depressed, and lacking a voice.

The shift to the state as an institution that has the onus of transformative action in relation to caste has not been easy and is highly uneven. Institutionalisation of practices such as reservations in education, jobs, and election of people's representatives has been much easier than the transformations in the structure of these institutions and the texture of actual governance. The adequacy of transformations initiated by reservation, and their outcomes are a subject of more substantive debate. However, it is undeniable that they have enabled the organisation of the Dalit castes, given an impetus to mobilisation and organisation of other castes in subsequent years, and more importantly, created a critical space and voice within State organisations that can speak for the excluded. While stories of extreme oppression, crime, and denial

of opportunity to those who are highly vulnerable abound even now; the fact that State agencies including police are constitutionally bound to investigate and deliver justice is no small matter.

The second shift, i.e. the transformation of the agency is 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 atrocities as a crime, demands for effective budgetary allocation for the Dalits, the exposition of how practices of exclusion and discrimination are embedded in systems and institutions, the evolution of an entire discipline of Dalit Studies that takes inspiration from racial studies, the rising associationism among Dalit businesses, the increase in several Dalit castes articulating and visualising themselves in a disaggregated way, the emerging genre of

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films and other cultural forms that give an expression to the hitherto faceless and amorphous Dalits, all illustrate the emerging power of the Dalit voice, and perhaps point the attention of society to more critical voices and concerns that have been invisibilised. A Dalit is no longer content to be a passive victim but seeks to be an active interlocutor in events. Moreover, this is seen as a

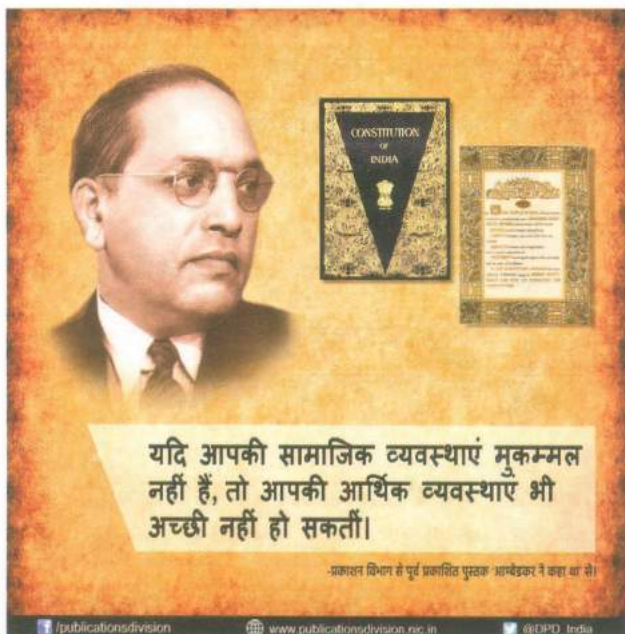
We may be very far from a casteless society but we have definitely moved the needle from a society in which caste was an accepted dispenser of privilege to one where such dispensation of privilege on the basis of birth is contested and challenged.

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, for one needs to recognise that we are far from an equal society. It should be recognised that the lower castes and several sections of Dalits bear the unfair burden of these inequalities. Within this structure, Dalit women bear these burdens even more. Furthermore, some of the dreams as articulated at the time of independence are turning out to be sour. For example, Dr Ambedkar viewed cities and urbanisation as possible sites of liberation for Dalits from tradition and suffering-bound villages and rural societies. As urbanisation becomes a significant phenomenon, it is seen that cities only shift the domains of caste expression. Thus, certain 'unclean, insanitary' occupations are considered to be exclusively practiced by Dalits, thereby perpetuating the tradition. Similarly, the predominance of Dalits in slums in the cities can be seen as an expression of their legacy of spatial exclusion from the villages. The dream that cities are a force of liberation by their very nature is proving to be wrong.

We also need to be aware that while some of the meanings of what caste means in social discourse have



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blurred and transformed, there are ways in which the imagination of caste has become even more entrenched. To illustrate, some studies show that the digital space is highly casteist. Elections at all levels of the government accept and build on caste equations and mobilisations. Caste is ever-present and visibilised in even more domains of our everyday life but what needs to be noted is that visibilisation is a progression over invisibility, perpetuated neglect, and systematised division. 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 one, given its deep embeddedness in our society. A review of our efforts in the last seventy-five years indicates that we have been successful in changing the contours of the caste question. We have not been as successful in creating effective alternate principles for inclusion and in the distribution of opportunities. However, the track for a positive change has certainly been set in motion. □

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 visionary Atmanirbhar Bharat 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 ascendency and help it attain the goal of a USD 5 trillion economy by 2024.

Leveraging the demographic dividend relies on the requisite skilling of the country's workforce. Recognising this, the Government established a dedicated Union Ministry in 2014. The objective of the Ministry of Skill Development and Entrepreneurship (MSDE) is the coordination of skill development efforts across the country, integration of demand and supply of skilled manpower, and upgradation of skills and encouragement of innovative thinking. Responsible for numerous schemes that seek to ensure that India's youth are not only prepared to enter the workforce but also to answer the changing demands of a modern job market, MSDE manages short-term schemes like the Skill India Mission, Pradhan Mantri Kaushal Vikas Yojana and various other long-term training initiatives that promise to train an aspiring Indian populace not only to qualify for potential opportunities but also to excel in them. Furthermore, under the Ministry, the number of Industrial Training Institutes (ITIs) has grown by over 40 per cent and is currently at more than 15,000.

Skills are generally classified under three broad categories: transferrable or functional skills that can be deployed across multiple industries; attitudinal skills that define personality 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 serve to train a cadre of ambitious professionals across all three types of skills.



The author is a researcher, Strategic Investment Research Unit, Invest India. Email: aarushi.aggarwal@investindia.org.in

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 short-term skill training qualitatively and quantitatively through strengthening institutions, bringing in better market connectivity, and enhancing the inclusion of marginalised sections of society. Launched in January 2018, SANKALP will run through March 2023.

SANKALP is focused on three key result areas. These are institutional strengthening at central, state and district levels; quality assurance of skill development programmes; and inclusion of marginalised populations in such programmes. Institutional strengthening aims to bridge the gap between the skill development efforts of different States and de-centralising capacity building. Accordingly, capacity building initiatives are distributed across all entities involved in planning, implementation, and monitoring of skill-building, from the Panchayati Raj institutions to the newly constituted District Skill Committees (DSC), State Skill Development Missions (SSDMs), and at the national level with National Skill Development Corporation (NSDC), National Council of Vocational Education and Training (NCVET), and other bodies.

The second component of quality assurance is intended to improve the employability of trainees. Therefore, SANKALP focuses on infusing quality in training and learning in Technical and Vocational Education & Training (TVET) by ensuring that the educational and vocational training curricula adopt a market-driven approach through the guidance of master trainers and industry endorsement. The training of potential teachers is emphasised and standardised through a committee focused on creating an efficient course structure for learners.

Finally, SANKALP strives to provide an equal platform to all sections of society, particularly to individuals from historically marginalised communities. It achieves this through a two-fold approach: the first understands the challenges faced by these sections of society and develops pilot programmes to address these challenges, while the second builds a bottom-up approach, with the participation of skill development machinery at the State and district levels that can account for India's diverse social, geographic, and economic characteristics. Some of the programmes undertaken include

a gender action plan that seeks to augment women's inclusion in skilling and the labour market, skill training on gender inclusion, and prevention of sexual harassment at the workplace, and skill development and entrepreneurship pilot programmes for persons with disabilities.

Skill Development

The National Skill Development Mission was launched in July 2015 on World Youth Skills Day. In many ways, the mission became the hallmark of youth skilling in India and through its ambitions, seeks to help Indian youth to develop personally and shape their personalities. Skill India Mission, as it is popularly known, provides the institutional capacity to train a minimum of 300 million skilled people by 2022 and has initiated a convergence across sectors and States in skill training activities for India's job seekers. Seven sub-missions also act as building blocks for achieving the overall objectives of the Mission. These sub-missions are responsible for institutional training, infrastructure, convergence, trainers, overseas employment, sustainable livelihoods, and leveraging public infrastructure.

The mission is committed to providing sustainable skilling that endures a beneficiary's lifetime. The emphasis has been on the creation of an end-to-end implementation framework for skill development that provides life-long learning. This includes the incorporation of skilling in the school curriculum and aligning employer/industry demand and workforce productivity with trainees' aspirations by creating a framework for outcome-focused training. Furthermore, the mission seeks to build capacity for skill development in the unorganised sector where there have traditionally been few opportunities for skill training or upgradation. This can adversely impact an individual's career growth trajectory. Therefore, through this comprehensive 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 overseas employment for which they will be trained through specific programmes that are mapped to global job requirements and benchmarked to international standards.

Inspiring Knowledge

The Pradhan Mantri Kaushal Vikas Yojana (PMKVY), now under its third mode, is a flagship scheme of the Ministry of Skill Development & Entrepreneurship that aims to train Indian youth between the ages of 15 and 45 to take up industry-relevant skill training and secure a better livelihood. Implemented for the Financial Year

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

2020-2021, PMKVY 3.0 has a financial outlay of Rs 948.90 crore for eight lakh beneficiaries who will be counselled through online information/counselling platforms, helplines or district level skill information centres. The Scheme is particularly targeted towards marginalised groups including transgenders and people with disabilities. At present the Scheme has over four lakh enrolled candidates while another nearly four lakh candidates have already been trained.

The PMKVY support training in soft skills, entrepreneurship, and financial and digital literacy. It is aimed at benefitting candidates in schools or college dropouts and unemployed youth who are trained according to the National Skills Qualifications Framework (NSQF). Training duration can range from 150 hours to 300 hours, depending on the job role. Post-training, 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 recognising 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 upskill to meet industry requirements.

These services are administered through the Pradhan Mantri Kaushal Kendras (PMKKs), aspirational model training centres, established 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 Government of India has rightly identified India's strengths and determined a goal for the country that leverages these strengths. It has also started a path that helps the country bridge the gap between its capabilities and its ambitions. As India strives to gain its rightful place in the family of nations, it is dependent on the calibre and abilities of its future generations who will drive this rise to pre-eminence. The government's measures to skill and train these future leaders are, therefore, of paramount relevance. □

Endnotes

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5. <https://www.skillscan.com/sites/default/files/Three%20Types%20of%20Skills%20Classification.pdf>
6. <https://sankalp.msde.gov.in/#/web/about/SANKALP>
7. <https://www.msde.gov.in/sites/default/files/2019-09/National%20Skill%20Development%20Mission.pdf>
8. As per 8 December 2021. <https://www.pmkvyofficial.org/dashboard#>
9. The National Skills Qualifications Framework (NSQF) organizes qualifications according to a series of levels of knowledge, skills and aptitude. These levels, graded from one to ten, are defined in terms of learning outcomes which the learner must possess regardless of whether they were acquired through formal, non-formal or informal learning. <https://www.nielit.gov.in/content/nsqf>



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 delves 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 readers 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 manner, is a form of communication. It is usually the representation of cultures, achieved principally through visuals. Visuals that are aided with nostalgia. It is also an indicator of the distribution of political and economic power of society as has been noted by many authors. Architecture or architectural design principles often characterise the aspirations of a society and, therefore, they give birth to different schools of thought. This can be seen in post-independence India, where 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 moving towards modernism in architectural thought. But in this attempt to create something different, something unique, and something modern, many times 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. First being the industrial revolution, second, aftereffects of being colonised for more than a century, and third, the internal struggle for individual 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 these ideologies.



The author is a heritage consultant and independent researcher based in New Delhi. Email: baserajaya@gmail.com



Indian Institute of Technology, Delhi

Architecture has its political use, 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

Unfortunately, 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 national 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, comfortable, 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 elements to the existing settings. This was by means of town planning techniques and architectural styles that the Indians were not familiar with. To create this thrust, the British used European architecture – Classical, Romanesque, Gothic, Renaissance and Baroque – to produce images that would represent them and their authority. Until 1857, they were traders trying to create wealth. In the first half of the 19th century, they had four important ports in India – Surat, Bombay, Madras, and Calcutta. With the growing importance of Bombay, Surat saw a decline, but compared to it, the rest were all to be considered new towns that grew around these ports.

Now under the Crown, in the latter part of the 19th century, a rise of the British imperial power is witnessed. Lord Curzon of Kedleston's term as the

Viceroy from 1899 to 1905 is seen as its apex. This is also the period of growing Indian nationalism. Interestingly, imperialism and nationalism, both opposite sides of the spectrum, develop simultaneously by responding to each other. Building activities were increased in native cities to strengthen the grip of the imperialistic masters 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 openly negated. Unfortunately, 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 the name of economic development and planning were carried out to the architectural

The aftermath of the events of 1857–58 was particularly devastating for Delhi. Catastrophic changes in the name of economic development and planning were carried out to the architectural landscape of Shahjahanabad (Old Delhi). Gradually, the water channel that characterised Chandni Chowk was also lost.

landscape of Shahjahanabad (Old Delhi). The habitation around the Red Fort was cleared out and buildings demolished irrespective of residential or religious relevance. The railways were introduced, piercing through its center– the building of the station completely changed the integrity of the glorious medieval city. Gradually, the water channel that characterised Chandni Chowk was also lost. A loss that continues to change forms till date. The other areas in Delhi under the British were the Civil Lines, where the middle-class population resided, and the cantonment, where the military

men and their families were housed, rank notwithstanding.

Industrialisation led to the growth of philanthropists who were the predominant patrons of architecture in the larger commercial cities under the British i.e., Bombay, Calcutta, and Chennai. The educated middle class is viewed as largely responsible for setting the ball rolling on the nationalistic movement in India. Education was opening wider doors in 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-1870 when the middle class took the initiative to set up institutions with the help of government grants in aids.

In the late 1800s when Ramakrishna Mission was founded under Swami Vivekananda (1863–1902) to raise consciousness around Hinduism 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 endeavoured to bring together new spatial orders with spiritual orders. But it was Mahatma Gandhi's philosophies that had a more lasting impact.

By the 1920s, due to the limitations in the ideologies of swadeshi and nationalism, revivalist art emerged. But it was getting difficult to progress intellectually because of its restrictive nature and many are known to have broken away from it to experience a freer style. Madhavi Desai in her book writes, "While *nationalism in architecture prior to the 1940s tended to favor revivalism over reform, that is not the whole story. Many changes were taking place within India in response to the changes in the world around it. Institutions were being reformed and new indigenous building types were beginning to appear in response to changes in society. These types were modern although often cloaked in traditional or Revivalist facades which, while easing the psychological stress caused by change, obscured their innovative nature from the casual glance. Temples, perhaps the most conservative of all building types in India, exemplify these changes.*" Some examples of this are the

The first 50 years of the 20th century were marked with fast-paced events resulting in faster-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.

Sarvajanik Mandir, Lakshmi Narayan (Birla) Mandir, and the Swami Malai Mandir in Delhi. All these temples do not follow the Hindu tenets of building and the use of the *Vastu- Purusha mandala*. They, without restrictions, experiment with the *sikhara*, *vimana*, and *gopuram*.

Moving on, the first 50 years of the 20th century were marked with fast-paced events resulting in faster-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.

With independence, there emerged a new zeal to create an image of India that was different from the previous one. The ideas of this image came from Mahatma Gandhi and Jawaharlal Nehru –and both couldn't have been more different. On one hand, Gandhi hinged his ideas on traditional Indian experiences, while on the other, to Nehru, 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 society. But in Nehru's opinion, the development and application 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.



L.D. Institute of Technology, Ahmedabad



Ariel view of the Teen Murti Bhawan: 2016



Ariel view of the Teen Murti Bhawan: 2021

In 1959, at the 'Seminar on Architecture' when a group of architects and policymakers met at Sahitya 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 resolutely chose modernist free expression over a state-driven revivalist style. Even though the course was decided, the buildings of this period project the nation's conciliation with its past and the formation of a strong identity for the future. If we look at two examples from Delhi, i.e., the Ashoka Hotel and the Vigyan Bhawan, both differ from the previous examples of revivalist architecture. Post-independence Nehru's idea about the nation's identity was to move toward modernism and the representation of modern architecture felt delayed in the Indian context. Therefore, he wanted to look into a certain past of Indian history from where he could pull out the best representations of India's glorious past and one that would neither be a part of the Hindu nor Muslim past. Interestingly, for the purpose of nation-building via visual representation and architecture, symbols, thoughts, and ideas from Buddhism were incorporated into the architectural vocabulary.

Both these buildings were and are public buildings. One is a hotel in the diplomatic enclave in Delhi, while the other is an international 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 notice change post-independence. Via these buildings, the inkling was to undertake non-verbal communication with the world about the shift in India's ideologies. Importantly also, as historians have noticed that the articulation of history of the Ashokan, Mauryan period is predominantly based on sculptures. But these buildings hardly

use sculptural specimens to articulate their purpose or being. The idea this period is used to project is the coming together of the northern part of the country. The Mauryan period provide Nehru with ideas that he wanted to interpret to link it to the modern state. The acceptance of the Ashokan symbol as the Nation Emblem is also stemming from the same understanding.

While Le Corbusier and designed Chandigarh, there was 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. Jugal Kishore Chhury designed the Indian Institute of Technology campus (1961–84) and the Jawaharlal Nehru University Campus (1973+) was designed by the CPWD and C. P. Kamalide show influences from Chandigarh. B. V. Doshi's design for the L. D. Institute of Indology (1957–62) in Ahmedabad shows influences of Le Corbusier's prismatic forms. Some designs use the formal vocabulary of Le Corbusier, so much so that one might think that they were prepared in his office. The Akbar Hotel (1965–69) and the highly creative Shri Ram Centre (1966–69) in New Delhi designed by Shiv Nath Prasad and the Inter-State Bus Terminus (1969–71) designed by Rajinder Kumar are two examples.

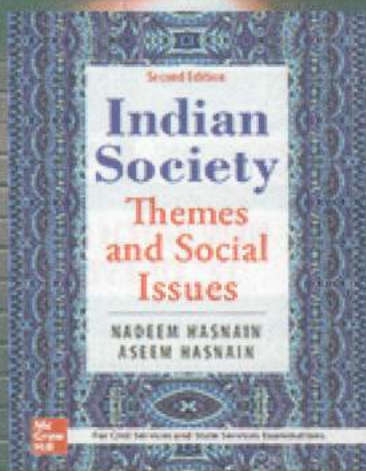
The articulation of architecture till the 1980s/90s has been difficult and the change now continues into the 2020s. The vision of modernism is fast-changing, especially in the context of Delhi. With the planned redevelopment/relocation of Teen Murti Bhawan and the Central Vista that includes, National Museum, Indira Gandhi Centre for the Arts, and other government office buildings around the Rajpath, India is heading towards a new vocabulary. One that is in its nascent stage and will unfold gaining clarity and individuality in the years to come. □

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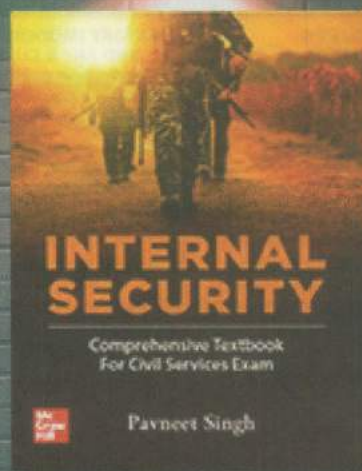
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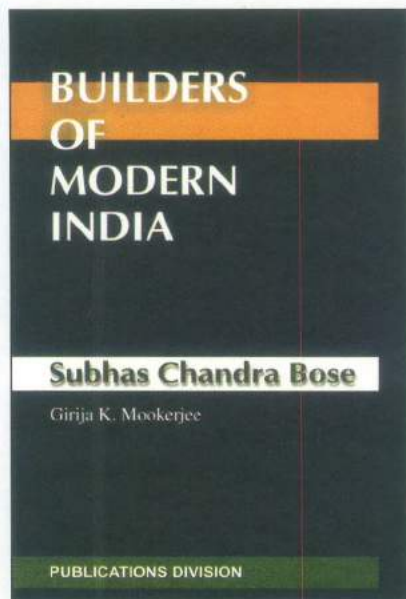
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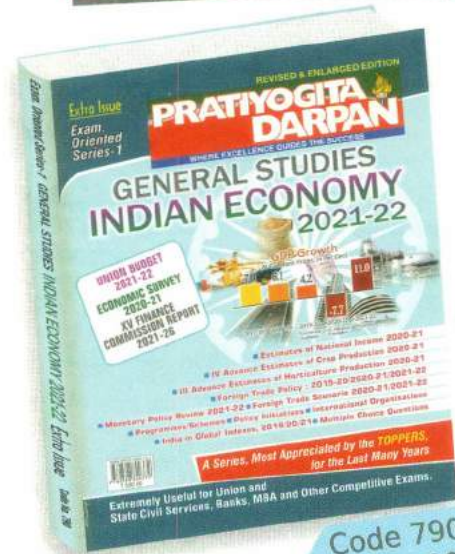
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