

Make planning fashionable again

The withdrawal of the Indian state from economic decision-making has had consequences on industry



JAYAN JOSE THOMAS

Economic planning is not considered fashionable today. Nevertheless, contemporary economic debates will have much to gain by revisiting the ideas on planning, championed in particular by Jawaharlal Nehru.

As is well known, India under Nehru's leadership inaugurated a strategy for industrialisation of the country in the early 1950s. This involved the setting up of public sector units (PSUs) in diverse areas of manufacturing; research institutions in cutting-edge technologies of the time such as space and atomic energy; and centres of higher learning, including the Indian Institutes of Technologies (IITs). All of these by a poor country, which was still struggling to find its feet amidst the multiple blows it had to endure during the early years after Independence.

Challenging the orthodox

But that was not all. By consciously entering into sectors such as machine building and nuclear research, which needed capital and technology more critically than labour, India was also challenging a deeply held orthodoxy in economic theory. From the time of David Ricardo, a galaxy of economists had argued (and many still argue) that countries should develop industries based on their comparative advantage. According to this theory, a labour-surplus country like India should be limiting its industrial development ambitions to labour-intensive sectors, such as garments or leather. After all, the theory would ask, why should a country like India produce machines or pharmaceuticals domestically, when such products can easily be imported from advanced countries?

During the colonial period, the British government in India had indeed been putting the theory of comparative advantage into practice – to the disadvantage of most Indians. In his book *The Discovery of India*, Nehru described how the colonial government systematically strangled Indian entrepreneurship. Writing from his prison cell in Ahmedna-



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gar Fort in the early 1940s, Nehru argued that the fundamental requirements for a modern India included “a heavy engineering and machine-making industry, scientific research institutes, and electric power.”

The programmes launched in India from the 1950s onwards to build indigenous capabilities in capital- and technology-intensive sectors, despite the general poverty of the country, became a model for other developing and Third World nations. The debates around Indian planning provided a fertile launching pad for the evolution of development economics as an important sub-discipline.

It will only be reasonable to argue that the foundations for India's diversified economic base had been laid during the planning years. The successes that India enjoys today in the information technology and knowledge-intensive sectors owe much to the research and educational institutions that were built during the early decades. At the same time, however, planning did very little to remove the hurdles to the growth of agriculture and small-scale industries. India's record during the post-Independence period in implementing land reforms and ensuring primary education for all has been rather unimpressive. As a result, the benefits from state-led

development have so far reached only a minority of Indians.

India's commitment towards development through planning had begun to diminish from the early 1990s itself – much before the Planning Commission was formally dismantled in 2014. After the introduction of economic reforms in 1991, public investment, especially on agriculture and industry, has been on a decline in the country. PSUs have begun to be valued only for the returns they bring as commercial entities. There has been little recognition of the important role that PSUs can play as creators of new technologies and knowledge, particularly in fields in which the private sector may have little interest or capabilities.

The disregard for planning and the general withdrawal of the state from economic decision-making have had important consequences on Indian industry. India is today one of the largest markets in the world for a wide range of goods, whether passenger cars, mobile phones or food products. Despite the emergence of such a large domestic market, the record of Indian manufacturing in absorbing the large labour reserves in the country remains abysmal. The imports of machinery, transport equipment, electronic goods and all their components have

been rising continuously in India from the 2000s onwards. This trend has not been reversed after the introduction of the ‘Make in India’ initiative.

Planning in a globalised world

Planning is not incompatible with markets and globalisation. On the contrary, a developing country trying hard to stay afloat amidst the turbulence of a global economy requires more, and not less, guidance thorough industrial policies. The successes achieved by East Asian countries such as South Korea in manufacturing are, to a great extent, the result of strategic planning over several decades by their governments. China is gradually shifting its economic base from low-wage industries, and is now emerging as a global leader, even ahead of the U.S., in several new technologies, including artificial intelligence and renewable energy. These Chinese achievements owe much to the careful planning and investments made by its government, particularly in the area of science and technology.

The employment challenge that India faces – close to 15 million waiting to be absorbed in the industrial and services sectors every year – is possibly bigger than that faced by any other country (except China) in the world. It cannot be resolved with the technologies that foreign companies bring into India, which tend to be labour saving. What India requires, on the other hand, are technological advances that create new economic opportunities and absorb – not displace – labour. Consider, for instance, breakthroughs in biotechnology that may find new commercial applications for our agricultural products, or electric vehicles and renewable energy solutions that depend less on imported material.

India's research institutions and our PSUs should engage in the creation and dissemination of such technologies. The country's industrial policies should be able to enthuse young and educated entrepreneurs from rural areas to make use of these technologies to create new jobs. And, for all these, planning should be brought back to the centre of our economic discussions.

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The boundaries of ethics

He Jiankui, who claims to have made the world's first gene-edited babies, deserves to be rapped but not condemned



JACOB KOSHY

In November, Chinese researcher He Jiankui set off a storm when he claimed that he had created the world's first babies, a pair of twin girls, genetically edited with CRISPR-cas9. He said that the twins had genes now that protected them from HIV. Ideally this should have been a laudable scientific advancement. But Mr. He has been condemned, not only by peers in China but by geneticists, biotechnologists and ethicists worldwide. Mr. He broke the scientific and regulatory protocol by not vetting his experiments, which involved embryos and hopeful parents, by his organisation's ethics committees. He also expounded on his work to non-scientists before submitting his work for peer-review. These are enough grounds to invalidate any medico-scientific investigation, however novel and groundbreaking. Yet the greater consternation is that an ethical red line has been transgressed.

Defining what is permissible

The current international consensus is that editing ‘germ line’ (or reproductive) cells of healthy humans is unethical and should only be used as a last resort as it could mean introducing unknown and potentially harmful changes in subsequent generations and even entire populations. While the principle of ‘do no harm’ pervades scientific practice, particularly in light of the early 20th century's European and American experiments with eugenics, it shouldn't be forgotten that ethical norms in science aren't framed in a higher moral plane. What is permissible and ethical is also influenced by business interests, concerns among countries that they might lose a competitive advantage, and how medical advances have actually progressed.

It might seem that the Space Wars of the 1960s between the U.S. and the Soviet Union hark back to a bygone era, but the U.S. has on many occasions expressed concerns about China shrinking its scientific dominance. The National Science Foundation's Science and Engineering Indicators 2018 report says, “The U.S. still leads by many S&T measures, but our lead is decreasing in certain areas that are important to our country ... from gene editing to artificial intelligence ... and it's critical that we stay at the forefront of science to mitigate those risks.” When China announced its first CRISPR-led human trial in 2016, *Nature* quoted cancer immu-

notherapy expert Carl June as saying, “I think this is going to trigger ‘Sputnik 2.0’, a biomedical duel on progress between China and the United States.” Private companies in both countries have spent billions on the prospects of gene-editing. Thus where cash is already riding on a technology that's still many years away, those who develop tools towards realising these goals can often justify their ventures, however ethically problematic they may be.

Various scientific experiments

Harvard geneticist George Church is on a project to resurrect a version of the extinct woolly mammoth. The purported reason for ‘de-extinctifying’ this animal is that the Asian elephant is endangered and susceptible to a herpes virus. Therefore, having a new closely related species, sans the virus, could mean saving it. There's also a global warming kicker. The new species would live in the Siberian permafrost and punch holes in the snow and prevent tundra permafrost from melting and releasing greenhouse gases. While Professor Church agrees that these are speculative ideas, it would be naïve to assume that his work is of interest only to elephant conservationists. Every single step towards recreating the mammoth will inform understanding on how to safely and effectively alter cells to delete harmful genes and eventually promote ‘healthy ones’ in humans.

Before Robert Edwards and Patrick Steptoe were awarded the 2010 Nobel Prize for pioneering the technique of In Vitro Fertilisation (IVF), they were accused of meddling with nature, and no further public funding for their research was allowed.

The New York Times reported that a ‘three-parent baby’ (incorporating DNA from three people) was first created in the U.S. in the 1990s and no permissions were granted by the authorities for this. The doctors were denied public funding but there was no worldwide condemnation and no compelling reason other than infertility in some patients and educated guesses that motivated the doctors.

The history of IVF shows that there was no demonstrable case made for the necessity of test-tube babies and neither were there years of evidence from, say, primate studies for scientists to conclude that IVF babies would be as healthy or no more at risk from infections than naturally conceived babies. The evidence for its suitability and safety only emerged over time. Assuming that Mr. He's done what he claims, he deserves to be rapped but not condemned or vilified. He's broken a red light, not crossed a rubicon.

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SINGLE FILE

Publishing with impact

How Indian journals can compete with international ones

SHUBASHREE DESIKAN



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When publishing scientific research, the impact factor of a journal is an important consideration. Impact factor refers to the number of citations to articles published in that journal over the previous two years divided by the total number of articles published in the journal over the previous two

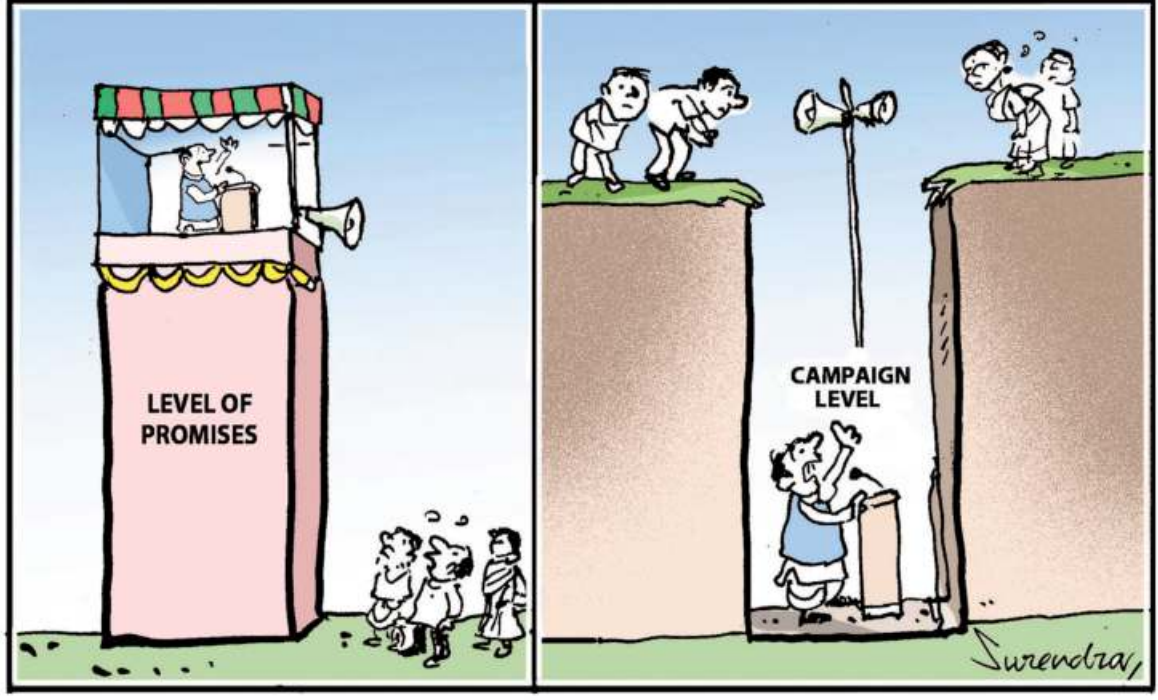
years. Indian scientific journals have a much lower impact factor than their international counterparts. If *Science* has an impact factor of about 41, *Current Science* in India has an impact factor of about 0.8. *Nature Physics* has an impact factor of about 22; the Indian journal of physics, *Pramana*, has an impact factor of about 0.6. One primary cause for this low impact factor is that not many scientists choose to publish their quality work in Indian or ‘national’ journals. While there are arguments that the impact factor alone should not be considered, we have no better metric of quality at the moment, and until such a metric evolves, we cannot ignore the impact factor.

Subhash Chandra Lakhota, Indian National Science Academy senior scientist and Distinguished Professor at the Banaras Hindu University, is among the exceptions. In 1971, when he started his career, Professor Lakhota made a resolve to publish equally in international and Indian journals. He has maintained that stance for over 45 years by publishing papers in national and international journals alternately. According to him, the terms ‘national’ and ‘international’ are misnomers in this context, because they imply that one set is inferior in some way to the other. A cytogeneticist of repute, his own career has not been hurt by his choices.

Unfortunately, his confidence is not shared by most scientists who seek to publish only in international journals. The main reason for this is that most selection committees – whether for faculty positions or awards or promotions – only count the number of publications in international journals, especially ones like *Nature* or *Science*. This is not true in other countries. For selection committees in Japan, it is imperative that candidates publish some papers in Japanese journals. The same holds true for countries in the EU. Unfortunately, there is no such incentive for Indians. The obsession of selection committees with international publications disincentivises Indians from publishing in Indian journals.

Though many Indian journals have a good editorial and peer-review process, they still do not see themselves as ‘international’. Apart from the processes, even the software used for submission and editing needs to be upgraded, says Sunil Mukhi, professor at the Indian Institute of Science Education and Research, Pune. If these systems and processes are put in place, scientists from other countries can be actively invited to publish in these journals, which will make these journals interesting for the international community. Also, as Professor Lakhota says, selection committees should pay attention to what is published rather than where it is published.

The writer covers science for *The Hindu*



NOTEBOOK

Reporting in the time of fake news

It is getting impossible for reporters to understand voters' choices

DEEPU SEBASTIAN EDMOND

My first encounter with fake news was so mundane that it is a blur. It happened during the 2014 Lok Sabha elections. I was in Bihar's Vaishali constituency waiting for a campaign rally to start and struck up a conversation with a group of youngsters. My curiosity had been piqued by the way the boys sat around, talking to each other in a hushed tone. It took a while, but one of them divulged the cause of their excitement. He said that people of a certain religious community had killed those belonging to his in a nearby town. He even let me listen to his news source: an audio clip he had received via Bluetooth on his phone.

I had been in the region for a few days and had never heard of such a massacre. Local journalists hadn't either. But the boy argued that the killings had

indeed taken place and that the mainstream media was hand in glove with the perpetrators. I tried to push back a bit, but the boys had made up their mind: they would vote to protect their religion.

The fact that I cannot recall the name of the town where this no-incident took place is another indication of how seriously I took this interaction at that point. Which was a shame. This was a problem that most reporters faced on the ground.

I was better prepared when the Assembly elections took place in Jharkhand in 2014 and then in Bihar in 2015. WhatsApp usage had exploded by then and so had the reach of disinformation. But it was not easy keeping up with fake news. One had to be a member of WhatsApp groups sharing such information and the phenomenon had evolved so much that

disinformation was tailored to target finely sliced and diced demographics. It was impossible to get a complete picture.

Even tougher was to understand the effect that fake news was having on voters. Often, people declined to share what they had consumed on social media: voters would rather present themselves as rational beings than creatures of emotion. It would take hour-long interviews to trace voting choices back to a set of inflammatory fake news posts received on WhatsApp. And all of it would be useless if a WhatsApp blast of fake news on the eve of polling could have the potential of changing voting patterns.

Elections have become more opaque as a result of social media tools used by political managers: globally, pollsters have gone wrong in recent years

as targeted messaging has become more accurate.

Disinformation can be even more secretive. It is after all a meeting of minds of the politician's desire to remain in the shadows and her intended target's validation of her prejudices. This does not mean that, as another general election season rolls in, journalists have to be aghast at the prospect of playing catch-up with fake news all over again. However, there is a difference this time: news is aware that its antithesis exists.

This means we journalists will have to actively reach out and engage with voters with whom we don't necessarily agree. It means those uncomfortable hour-long conversations in which we try to situate the importance of fake news to voting choices, like we do for gender, caste, religion and other identities.

FROM The Hindu. ARCHIVES

FIFTY YEARS AGO DECEMBER 4, 1968

Naxalite woman leader arrested

Miss Ajitha, said to be a top commander of the Naxalite group which attacked the Pulpalli wireless station recently, was apprehended along with eight others in the Kottiyur forest early this morning (December 3) and taken to the Mananthody police station. The police are reported to have seized from Ajitha and others Rs. 1,500 in cash, a transistor and some jewels. Miss Ajitha admitted to the police that “revolution has failed.” During the interrogation by the police at Mananthody police station, she is understood to have confessed that she had participated in the attack on the Pulpalli wireless station, but that she had no part in the attempt to seize the Tellicherry police station two days before the Pulpalli attack. Ajitha (23) is the daughter of Naxalite leader Kunnikal Narayanan. Ajitha's mother, Mandakini was arrested in the Kumthala forest in Cannanore district last evening.

A HUNDRED YEARS AGO DECEMBER 4, 1918.

Foodstuffs and Prices. The Control Measures.

Disappointment has been expressed because the appointment of a Foodstuffs Commissioner has not immediately resulted in a fall in the prices of food-grains. But it is obvious that any attempt to control wholesale prices in a time when supplies are short must be a difficult and dangerous operation, if it is not to result in driving supplies underground; also that in a country of the size of India arrangements must move slowly. Moreover, in view of the known shortness of supplies, for the crop failure is probably unprecedented in its extent, no general considerable fall in prices can be immediately expected. The main source of supply will be the Province of Burma, with its large exportable surplus of rice. Under the orders of the Government of India licenses for the export of rice from Burma have been cancelled and exports of foodstuffs to countries overseas are being restricted to moderate quantities and in the main to countries where there is a resident Indian population.

CONCEPTUAL

Polygyny threshold model

ECOLOGY

This refers to the hypothesis that the practice of polygyny, where multiple females choose to mate with a single male, is the result of the desire to achieve access to resources held by dominant males. Accordingly, societies in which resources are concentrated in the hands of a few males should witness more polygyny. The hypothesis was first proposed by American ecologist Gordon H. Orians in his 1969 paper “On the evolution of mating systems in birds and mammals”. The model has also been used to explain the prevalence of polyandry in certain societies where resources needed for male survival are under the control of dominant females.

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