The Journal of Governance

SPECIAL ISSUE ON
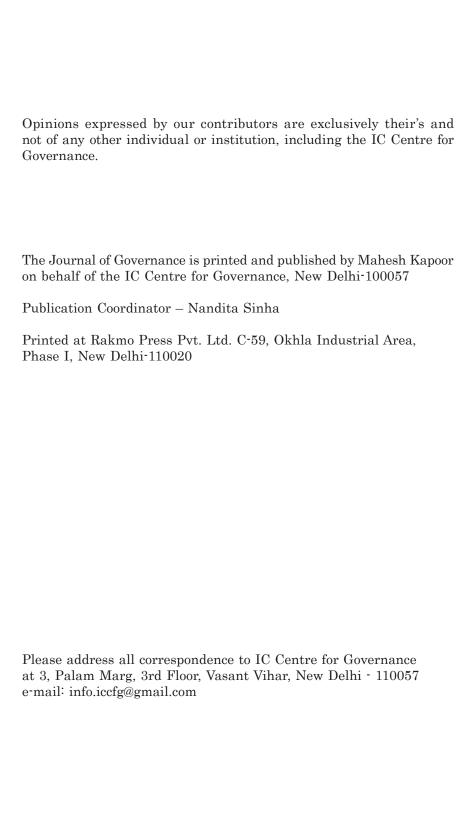*INDIA'S DEVELOPMENT CHALLENGES AND STRATEGY OPTIONS*

IC Centre for Governance
NEW DELHI

The IC Centre for Governance has been set up with the objective of collective thinking and acting on important issues of governance. It believes that public governance is too serious a matter to be left entirely to the state and that the involvement of civil society is not only desirable but also essential. The Centre seeks to strengthen the capacity of civil society and government for ensuring good governance.

IC Centre for Governance
New Delhi

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OUR CONTRIBUTORS

EDITORIAL

"If we stop thinking of the poor as victims or as burden and start recognizing them as resilient and creative entrepreneurs and value conscious consumers, a whole new world of opportunity will open up."

— C K Prahalad

The headline news about the Indian economy, as announced in the Economic Survey of 2022-23, is that a new growth cycle has begun in financial year 2021-22. International organizations like the International Monetary Fund have also endorsed government's optimism. According to them, India is expected to be the premier country to continue demonstrating robust economic growth in the near future.

This should have been an occasion for a pat on the back. Against the background of the slowing down of the world economy, it is no mean achievement. The resilience of our economy despite severe odds is indeed laudable. However, in the midst of the welcome euphoria, it cannot be denied that India is faced with a host of development challenges some of which appear quite intimidating. It is not unusual for a country of India's size – the largest democracy where the old coexist with the modern and great effluence with extreme deprivation.

That's why this issue of the Journal is devoted to the development challenges which the country is or should be battling with. Simultaneously, the IC Centre organized a series of monthly lectures where acknowledged experts in diverse fields made their contributions on topics ranging from economic and fiscal challenges to ethical and governance challenges. We are grateful for their seminal thoughts on the subject.

Having witnessed the emerging scene for more than half a century from my experience as a civil servant, I take the liberty of adding a more pedestrian view keeping with the concept of 'every citizen as a consumer-producer'.

Though I am not an economist, it appears to me that among all the daunting challenges, the foremost test is to make growth more inclusive. The well-being of our people can be increased by lifting the bottom 50% of our people and producing more goods and services with fewer resources. Economists seem to subscribe to the theory that India is in the throes of a K shaped growth. While the pandemic dealt a blow to all sections of the economy, it was the bottom of the income pyramid that was hit the most. Experts have argued that until this part of the population does not improve its lot, growth cannot be termed even.

Till now, productivity enhancement has been achieved through innovation, technological progress and R&D. However, it has been seen that the benefits of technology advancement are largely captured by a small group of players i.e. some firms and workforce segments of the highly skilled professionals. In many cases it leaves large productivity gaps between globally competitive companies and the rest of the economy. It results in lifting the top rather than raising the bottom.

Over the decades, many development strategies have been tried at the national and state levels with varying success. I think the time has come to try inclusive micro strategies to complement macro policies. Recently, the Prime minister also exhorted BJP grass root workers to make growth projects as mass movement and to improve every village to make India a developed country by 2047. A few years ago, as chairman of a government appointed one man committee on MSMEs, I had also emphasized on providing facilities in every block to raise the productivity of micro enterprises through nurturing centres. The same logic could apply to agriculture and other sectors.

In this context, an interesting suggestion of creating a network of village level companies was put forward by Vikram Mehta. To quote:

"*A joint venture is set up named 'India 21st century development Inc'. The shareholders of this joint venture are companies – Mahindra and Mahindra, Tata, Hindustan Unilever, CIPLA, Wipro, HDFC, the panchayat of a group of villages and an NGO working in these villages. The single point*

*objective of this JV is to create income generating opportunities for the poor. The members of the JV collectively identify and define the opportunity. This is not difficult because there is a broad consensus about what is wrong and what needs to be done. The challenge is implementation. Each member of the JV has a distinctive strength. Mahindra and Tata are renowned for their project management, designing and engineering capabilities. Wipro is the leader in IT and It services; CIPLA is knowledgeable about health and has done cutting edge research in this area and HDFC is well regarded for its innovative approach to financial management. The village panchayat has the local knowledge about issues and NGO with its direct hands-on experience can facilitate the definition of these issues. Mahindra and Tata can help managing the project, Wipro can establish connectivity and bring IT services to the people; CIPLA can look to enhancing health services; HDFC would ensure financing. This work would be done collaboratively and the endeavour would be to ensure that the sum of everyone's effort would be greater than the contributions made individually."**

To me, this seemingly outlandish idea seems fascinating. It is something like the TVEs of China of the nineties. This is an example of taking development to the grass roots and improving overall productivity of the society. In the Indian system, the corporates leave the bottom 50% to the governments and non-profits as they do not consider the poor as part of their responsibility. The owners and managers of business are not excited by business challenges that have a humanitarian dimension. It is hard to find managers who want to work for the bottom 50%.

The bottom 50% challenges the drivers of innovation and opportunities to recognize this market – how to combine low cost, good quality, sustainability. This population cannot be exploited for new opportunities without radical rethinking about its capabilities and resources. An entirely new perspective is required to create profitable production in this population.

The constituents of the bottom 50% are either unemployed or have low paying jobs. Helping them to elevate themselves is a business opportunity to do good. To do so effectively, two interventions are crucial – provide access to credit and increasing the earning potential

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*In the book *'Leapfrog India'* edited by Suresh Chandra

of the poor. Commercial credit has traditionally been denied to them. Why this has not been achieved in full measure despite Mudra loans and subsided credit schemes of the Central government is not understandable. There are more than 60 million small and micro enterprises in the country, but micro lending institutions have failed to reach them.

A casual survey of the roadside enterprises – service enterprises like shoe repairers, auto repairers, vegetable and fruit sellers, flower sellers, and manufacturing enterprises like eating joints – will expose the weakness of our commercial banking system in servicing the micro enterprises. Besides, there are obvious challenges like aggregating, standardizing, packaging, creating supply chains, both for the raw materials as well as the finished products.

In my view, the large corporates and multinational corporations should broaden their economic base and share it more widely. They must play a more active role in narrowing the gap between rich and poor. They are capable of leveraging their managerial resource to find local solutions and generate wealth at the lowest level of the pyramid.

The challenge is to marry local capabilities and market knowledge with known best practices. Multinationals entering into joint ventures with small operators can create value chains in remote rural areas provided a developmental approach is pursued.

All of us must take the lead to make this development miracle happen. It cannot be left only to the government, though governments can contribute through favourable policies. The corporate managers need to be emotionally persuaded. The challenge involves a resource and managerial initiative from a host of sections – local bodies, civil society organizations, financial institutions, domain experts, and entrepreneurs.

Prabhat Kumar

Arun Maira

India's Development Challenges and Strategy Options*

There should be no doubt that India has development challenges and India needs new strategies. Even though some statisticians are trying to prove with numbers that we are doing well, it must be noted, of course, that other statisticians say that they are wrong.

Not only India, but the world also needs new strategies to guide its progress. The world is facing challenges that the old strategies of progress are unable to resolve. In fact, these intractable problems have been created by the persistence of the old strategies. The problems include violent conflicts within countries and amongst them, run-away climate change, and increasing inequalities within countries and amongst countries. The range of systemic challenges is described in the 17 Sustainable Development Goals (SDGs). All countries are facing these challenges, albeit in different forms and in different degrees.

The characteristics of these challenges are that they are systemic, and they are inter-related. You cannot solve one alone. For example, removing carbon from energy systems in haste can make livelihoods even more difficult for many people. Trying to solve the problem of sanitation on scale in India, before solving local problems of water, has affected the education of girls in many districts of the country, which is an imperative for all-round social progress.

Systems are interconnected. Fixes in one can back-fire and make others worse.

Albert Einstein said, "The significant problems we face cannot be solved at the same level of thinking we were at when we caused them." Einstein led a revolution in the physical sciences in the twentieth century along with other Nobel laureates—Nils Bohr, Werner Heisenberg, and others. With radically new concepts of uncertainty and relativity, they overturned the paradigm of Newtonian mechanics which had ruled science and technology for two centuries.

Similarly, we need new paradigms for development policy and for economic growth. We must not carry on with the strategies of economic growth we have been pursuing in the last fifty years.

Underlying all global economic, social, and political problems are two universal problems:

1. The sustainability of our Natural environment and climate change.

2. Inequality in powers of governance at international, national, and local levels. People must be included in the decisions that affect their lives.

In fact, the problem of climate change which affects everyone cannot be solved without addressing inequality in governance. We need new ideas in economics and new models of governance to stop the Tragedy of the Commons and to obtain the Promise of our Commons.

India's challenges

How is India doing? I was invited by the Prime Minister of India in 2009 to serve on the Planning Commission as a Member. I was surprised by the invitation, but delighted of course. I was delighted because I had always wanted to serve the country. I was surprised because I was not an economist, or a former civil servant. Dr. Manmohan Singh explained that he had selected me precisely because I was not a trained economist or civil servant. He said we needed some out of box strategies because India's economic policies and five-year plans were not solving the country's basic problems. Economic

growth was high, no doubt. In fact, India had for some years been "shining", as the National Democratic Alliance (NDA) had claimed, and was "the world's fastest growing free market democracy", as the United Progressive Alliance (UPA) had. However, the growth was not inclusive, nor environmentally sustainable. What India needed, he said, was a plan for faster, more inclusive, and more sustainable growth. And this was to be the theme of the 12th five-year plan.

Dr. Singh gave me the challenge of thinking about economics, and about policymaking, from an outsider's perspective. The Planning Commission also gave me a perch from which I could listen to many views and learn from diverse people. I learned from development economists in other countries, and from economists in my own country who the Establishment shunned. I listened to policymakers and planners in our government and to policymakers and planners in other countries. And, most of all, I listened to the people of my country in various forums, to their suggestions for how growth could become more inclusive and sustainable. When my five-year term with the Planning Commission was over, with the change of government from UPA to NDA, I wrote what I had learned in my book, *An Upstart in Government: Journeys of Change and Learning.*

I began my learning journey in the Planning Commission in 2009, at a very interesting time in the history of economics. A global financial crisis had caught economists and policymakers in the West unprepared. Queen Elizabeth felt compelled to ask a gathering of economists in London why governments should keep turning to economists for guidance when they don't seem to know what is going on?

A scramble began to find a "new normal" for economies. A high level, international commission chaired by Noble Laureate economist Michael Spence brought together 22 policymakers, academics, and business leaders to examine various aspects of economic growth and development. Montek Ahluwalia, Deputy Chairman of India's Planning Commission was a member. It published its Growth Report in 2009.

Spence, presenting the findings in New Delhi, said that prevalent liberal market economic theories explained how to make economic

growth faster. But they don't explain how to make growth inclusive at the same time. The models assumed that macro growth lifts all boats; and wealth will trickle down as it accumulates. However, trickle down does not happen automatically. In fact, as Thomas Piketty and Oxfam revealed, wealth had been flowing upwards since the 1990s with the ideology of "leave it to the market and get governments out of the way" that pervaded economic policies from the 1980s.

Assessments of the growth patterns of countries in 2011-12 revealed that the growth of the Indian economy, though amongst the fastest in the world then, was the least environmentally sustainable, and the least inclusive too. The growth of countries in South Asia, S.E. Asia, and BRICS, was compared using the international Sustainable Economic Development Assessment framework (SEDA). It measures growth along three tracks: economic growth, inclusion in growth, and environmental sustainability. The assessment revealed that, with every unit of Gross Domestic Product (GDP) growth, India's natural environment was being damaged more than in all other countries. Ground water levels were dropping fastest in India; soil quality was degrading; and Indian cities were the most polluted.

Every unit of India's GDP growth was also producing the least number of additional jobs compared to all these countries. This was an ominous warning. With its vast population of young people, who were expected to provide a demographic dividend to India's growth, the economy must generate jobs for them. Unless they are employed and earn sufficiently, they will not provide the required big boosts to consumption and savings.

Sadly, the warnings from SEDA were not heeded. The paradigm of first more economic growth, and then we will see how to redistribute its benefits, continued. India's economists continued to follow the global economic paradigm. More capitalism, less socialism. GDP has grown but low growth of farmers' incomes and overall under-employment have become the Achilles Heel of the Indian economy.

I will highlight three insights obtained from research into why economists and policymakers have been unable to find solutions for growth which is inclusive at the same time as well as environmentally sustainable.

Wrong models

The first insight is that economists are using wrong models.

A project was undertaken by the Planning Commission in 2009 to develop an up-to-date model of the Indian economy. Several research organizations in India, each of whom had a model of the economy, were invited to share their models, with the expectation that a combination of them could provide a more reliable guide to India's policymakers and economic forecasters.

Economists aspire to model complex socio-economic phenomena in the way physicists model natural physical phenomena. Using mathematical equations derived from their models, physicists can make remarkably correct predictions. There were two physicists in the Planning Commission in 2009—Dr. Kasturirangan, former chairman of Indian Space Research Organization (ISRO, and me. Montek Ahluwalia invited both of us to a meeting in which the economic research organizations presented their models. Montek wanted to know if we could help improve the modelling process.

Dr. Kasturirangan and I were surrounded by economists. Equations and numbers flashed across the projector screen. We wondered what the models were trying to represent. We whispered to each other that the economists were lost in the trees and had lost sight of the forest.

A similar meeting had been organized at the Santa Fe Institute in New Mexico in 1987. There Kenneth Arrow and Brian Arthur, Noble Laureates in economics, had invited Murray Gell-Mann and Phil Anderson, Nobel Laureates in physics, to compare notes about methods of modelling complex systems. An insight from the meeting was that economists are unable to get a handle on the behaviour of economies because their models are fundamentally flawed.

Let me explain this.

There are four types of complex systems.
1. Rigid complex systems
2. Complex adaptive systems

3. Complex self-adaptive systems
4. Complex chaotic systems

Engineers design very complex systems, like automobiles and aeroplanes, with hundreds of thousands of interacting parts.

Yet, they can forecast the behaviour of the systems they design, and they can also design ways to control them. This is what economic policy makers also try to do.

However, there are two fundamental differences between engineered systems and economies. One is that machines do not have the ability to evolve themselves; where as systems in Nature, as well as social systems, have an ability to evolve by themselves without an external designer re-designing them.

Systems in Nature and socio-economic systems are complex adaptive systems, not rigid systems, as machines are.

But there is a difference between complex adaptive systems in Nature and complex adaptive systems formed with human beings in them. Natural systems, like animal species, evolve themselves in response to their external environment. They do not have any ambition to redesign and exploit the natural systems around them. They are happy to live and let live.

Physicists make models of complex systems in which atoms and molecules and bits and bytes have no emotions.

Economists also presume that the units of social systems, i.e., human beings, are purely rational. This makes it easier for them to make mathematical models. But human beings have passions and ambitions. By excluding these messy realities, economists can make their equations compute. However, their equations can never predict what the future will be. American statistician Nate Silver points out that forecasts of GDP growth since 1968 by the Survey of Professional Forecasters have been right only 50% of the time—no better than tossing a coin.

The mathematised models that economists apply cannot provide solutions for complex social problems. They are founded on the wrong model of complex systems. Economics needs a paradigm

shift. It must be founded on a model of a complex self-adaptive system, in which power and politics are forces that change societies, and also change the structures of economies.

Systems Action

New paradigms may arise from new thinking. But new paradigms become reality by actions. The prevalent paradigm for acting on complex problems is to break them into parts and improve the parts separately. Governments are broken into silos, each dedicated to a complex problem, such as health, education, industry, labour, urban and rural systems.

Corporations also break themselves into verticals to make management easier. Large Non-governmental organizations (NGOs) do the same. Thus, the pervasive theory for action on scale in all sectors is to break complex systems apart. And then ministries and departments, each focused on only one part of the system, compete with others for budgets and recognition.

The health of any complex system can be improved only when all the parts work harmoniously together. Therefore, new models of organization are required to solve the complex problems spread in the 17 SDGs, and to turn the Tragedy of the Commons into the Promise of the Commons. These models must be founded on the principles of cooperation not competition, and integration not division.

In 2009, Elinor Ostrom, a woman, was awarded the Nobel Prize in economics. She was the first woman after sixty men had already won the Prize. Moreover, her work was unusual and not considered a part of mainstream economics. She was recognized for her research, most of it in less developed countries, into how communities govern themselves.

Ostrom was invited to the Planning Commission soon after she won the Prize. She said that her insights had been obtained from research with communities in India. In fact, she had come to India on that trip for meetings with local community organizations and NGOs.

Let me step back to the SDGs. The SDGs describe 17 sets of global problems, including several types of environmental, social,

and economic problems. All 17 problems do not appear in every country, and when they do, they do not appear in the same form. For example, problems of the oceans are immediately life-threatening to island countries but not to land-locked countries yet. Problems of inadequate opportunities for decent work (SDG 8) are much more acute for countries in the Global South than in the rich North.

No country has only one of the SDGs problems. Every country has at least six or seven. Let me do a little mathematics. In how many different forms can a permutation of seven problems out of a possible seventeen appear in a global system? The answer is 98 million. Let's focus and simplify a bit. Let's say only four SDGs require simultaneous attention in any country, state, or city. This will reduce the number of possible configurations of the global problem to 57,000. Clearly one solution cannot apply everywhere. One size does not fit all.

The mathematics of complex systems proves that local systems solutions is the only way to solve the complex systemic problems we must solve very urgently. The present theory-in-use of top-down problem solving is conceptually flawed. It does not matter how smart the expert or manager on top of the system is. Complex systemic problems that appear in many places require local systems solutions cooperatively found and implemented by communities.

Listening

So far, I have given two imperatives for meeting India's development challenges. The first was a new paradigm of systems thinking. The second, a new paradigm for systems acting. Let me share the third now.

A child's honest observation is often a sharp wake-up call, as was a child's observation in the fable of the emperor's new clothes that the emperor, strutting proudly before his people, was naked.

My grandson, Viren, who lives with his parents in the USA, visited us in India twice. Once in 2008, when he was five years old, and I had not yet joined the Planning Commission. The second time in 2010, when he was seven and I was in the Commission.

On his first visit he was troubled by some very visible indicators of poverty in India. He saw people sleeping, cooking, and eating on the roadsides in New Delhi, India's capital city. His mother explained that there are lots of poor people in India, who do not have money to live in a house with bedrooms, a kitchen, and bathrooms which richer people like his family could in the US or his grandparents could in India.

Two years later, when he was seven, his family visited us again. I had been in the Planning Commission for a year then. We drove along the same parts of Delhi once again. Viren exploded. "What is the government doing? Counting daisies!'

His father asked him, 'Counting daisies? What do you mean?' Viren replied, 'There are so many poor people. Does the government know? Why is the government not doing anything for them?' It was a surprising observation because the Planning Commission was engaged in a public debate then about how many poor people there were in India and where the poverty line should be drawn. His father said, 'Viren, pipe down! Dadaji, your grandfather, is in the government now. He is in the Planning Commission'.

When he returned to his school in the US after his holiday in India, Viren wrote a short book on the Planning Commission of India. He speculated on why the government was not doing enough to improve the lives of poor people in the country. His book was a subtle piece of advice to his grandfather and to the government of India.

He concluded his book with a description of what, in his mind, the Planning Commission should be, but was not. He wrote, "The Planning Community (he even referred to the Commission as a Community) is a place where all the poor people of India can come, and there will be someone there to listen to them, and then they will not be poor anymore."

I have reflected deeply on Viren's child-like, yet profound, advice. Poverty has material dimensions. But poverty has social dimensions too. When people are listened to, their dignity is restored. Their views are respected. They feel included in the governance of the system.

The world is being divided into fragments by narrow domestic walls, as Gurudev Tagore said. Knowledge has been broken into fragments of specialised silos. People are not listening to each other across the walls. Higher knowledge in any science means knowing more and more about less and less. Experts in economics don't listen to experts in other social sciences.

Policymakers don't listen to the people. Social media, now de-humanised by artificial intelligence, has torn the social fabric apart. It is disconnecting human beings from themselves and from each other.

Economists, and other experts attempting to solve complex developmental problems are not listening to people. People have been converted into numbers in their models. The models are out of touch with human realities.

Our Prime Minister has coined a new alliteration for India's destiny this Independence Day: It is Democracy, Demographics, and Diversity.

Our Diversity is a fact. Our Demographics is a fact too, not easily altered. Democracy is an aspiration. The essence of democracy is the willingness of all citizens to respect citizens who are not like themselves. To listen to them respectfully and to take care of their needs also, not only their own selfish desires.

Our Demography can be a dividend if all young people are engaged in dignified work with sufficient incomes. On the other hand, our Demography can be a disaster for the economy and also society if young people do not have dignified work with sufficient incomes. Their frustrations can drive them to violence. We are seeing many signs of this, in the increase in thefts and rapes and brutal murders of older persons in our cities. And in the ease with which youth are becoming fodder for campaigns of communal hatred.

Our rich Diversity, and our aspiration to remain a Democracy, will produce a demographic dividend only if development becomes more inclusive. Systems science says that devolution of governance to local levels in substance, not only in form, is the only way to make growth more inclusive and sustainable. Therefore, I would change the three Ds for India's development strategy, to ensure that our

Demography produces a dividend, and not a disaster, to Demography, Democracy, Diversity, and Devolution for Development. 4D for D. Demography, Diversity, Democracy, *and Devolution* for Development.

I conclude by restating the three imperatives for meeting India's development challenges.

1. An application of the science of complex self-adaptive systems, and with it a reform of economics.
2. Local systems solutions cooperatively developed by communities to solve global systemic problems.
3. Listening to people not like ourselves.

Listening may seem like a very simple thing. So is breathing. Yet we know that the practice of good breathing can tone up the very complex system of the human body and mind.

Similarly good listening to people not like ourselves will tone up complex social systems.

It is a time to heal society. Each of us knows a truth, but not the whole truth. We must learn to listen to people who are not like ourselves. Listen to why they think differently to us. That way, we will see the world in new perspectives and understand the system around us. To strengthen our democracy we must listen to what matters to people not like ourselves, and together create a world that is good for everyone.

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Sanjeev Sanyal, Aakanksha Arora and Srishti Chauhan

Beyond Master Planning: Guided Evolution

This paper looks at the need to rethink India's post-independence urban philosophy. Most Indian cities of today are the result of a particular kind of master planning derived from the ideas of Le Corbusier who thought of buildings and hence cities as "machines for living in". This mechanical view of cities contradicts the lived experience of rapidly evolving urbanization in India. Yet, despite decades of failure, we have persisted with the same rigid top-down approach of master planning and zoning implemented through stringent regulations and building codes.

In this paper, we argue that a more fluid approach needs to be used to account for the fact that cities are Complex Adaptive Systems. In particular, we argue for an urban strategy driven by the following three elements- (i) shifting to Form-Based Codes from land use-based master planning, (ii) Adoption of mixed land use and (iii) creating a digital twin of India to be able to move to constant monitoring and active management of the ever-evolving cities. This is not to say that we should do away with regulations and move to laissez-faire with non-intervention; instead, what we need is more flexible regulations along with active management.

Introduction

What should be the ideal approach to planning our cities? Should it be laissez-faire with little intervention as the core philosophy or heavy master planning with a top-down view from the 'planner'? Cities are ultimately a reflection of some underlying ideology and theoretical influence which eventually impact the way they evolve and function. To understand the issues related to urban planning, we need to delve into how our cities are planned and the thinking that dominates them.

India's cities post-independence look and feel the same, characterized by uniform box-like structures that give the illusion of order from an aerial view but are part of a haphazard urban sprawl on the ground. On the contrary, many cities in pre-colonial times such as Indore, Mysore, Varanasi, and Jaipur have had distinct identities that reflected their cultural heritage and climatic conditions through the use of excellent building designs, aesthetic appeal, and indigenous construction materials. Even during the British rule, we have seen some of the iconic buildings like the Victoria Memorial in Kolkata, Gateway of India in Mumbai, and Rashtrapati Bhawan in Delhi. So, how did our cities end up like this post-independence?

This is because urban planning in India since the 1950s has been driven by the thinking of the creation of *'Cartesian Utopia'*- assuming that there is an ideal endpoint for each city. The goal of each master plan is to lay out the perfect plan and then it is a matter of enforcing it. This is hardwired through grand and long-drawn master plans which have focused on fixing land use for various activities. The singular focus on great design in the master planning approach has generated sub-optimal outcomes in urban spaces, as reality quickly outruns the plans.

This kind of urban view emerged from a reductionist approach where a city is perceived as a machine. It is the idea that the city is made up of distinct parts. Each part is then meticulously designed to fit a pre-defined frame with neat segregation. This has given way to the mechanism of zoning in our planning. This view derives its roots from Le Corbusier's idea of *"houses as machines for living in"*[1] that is built around ordered symmetry and mechanical standardization. He perceived architecture with a mass production spirit[2] and pushed for geometrical ordering of the built environment with minimal ornamentation. For instance, his vision of Paris as a *'radiant city'*[3] in the 1900s was to restore the "dying thing because its planning was not in proportion of geometrical one-fourth" (Corbusier, 1935). He

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[1] Le Corbusier, Towards a New Architecture, London: Architectural Press, 1946
[2] https://mcdonough.com/writings/buildings-like-trees-cities-like-forests/
[3] P.Le Corbusier (1967). The Radiant City. New York: Orion Press

proposed 24 skyscrapers right in the city centre but was met with heavy criticism from planners who argued that it would demolish the architectural history and the light conditions in the city centre and the plan was eventually scrapped. Later, projects inspired by his ideas created mundane and failed spaces such as the U.S. housing[4] development in the1950s, Dutch neighbourhoods of Bijlmermeer[5] and Singapore Housing Development Board (HBD) slab and grid facade flats in the 1970s.

However, Le Corbusier continues to be the poster child of modernist planning and is venerated in India for his contribution to the city of Chandigarh. This reputation is despite the fact that his design of a utopian city has produced alienating living spaces devoid of street life (Fitting, 2002). Moreover, with a very high land-to-people ratio, blurred authority relationships, and complex decision-making structure (Kalia, 1985), it turned out to be an expensive city designed primarily for administrators while producing little value to its inhabitants. In fact, nearby area such as Mohali, outside the realm of Corbusier plan, has attracted greater 'urban buzz' with the presence of diverse structures such as a cricket stadium, offices for IT sector, and educational institutions.

Master Planning in India and its failures

The key document used for urban planning currently is the *'Master Plan'*[6] which is a blueprint or future layout of the city mostly based on the principle of Euclidean zoning, i.e., classifying land parcels into residential, commercial, industrial, special areas, roads, open spaces, etc. The master plan fixes the land use of the city for decades. As an illustration, Delhi's Master Plan 2021 distributes land use such that the majority 45-55% is allotted to residential areas followed by recreational spaces (15-20%), public/semi-public facilities (8-10%), and commercial and industrial areas at 4-5% each.[7]

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4 https://orangeticker.wordpress.com/2013/03/05/le-corbusier-how-a-utopic-vision-became-pathological-in-practic/

[5] https://failedarchitecture.com/the-story-behind-the-failure-revisioning-amsterdam-bijlmermeer/

[6] Master Plan is also called as Development Plan in some states

7 https://dda.gov.in/sites/default/files/inline-files/Master_Plan_for_Delhi_2021_text_report.pdf

The master plans freeze land use for decades and take an obsolete macro view while failing to account for informalities, population projections, infrastructure requirements, and churn in the cities. One, it is not easy for anyone to predict these trends for such a long-time horizon, and second, the process of formulation and then implementation of the Master Plan itself takes so long that some of it gets outdated even before its implementation. As a result, it generates sub-optimal outcomes and the on-ground reality bears no resemblance to the on-paper plans. It is evident in actual land use turning out quite differently from the plans amidst informal construction within cities, non-compliance to regulations, mushrooming of slums in all major cities, etc. As Friedrich Hayek has aptly said, *"Order generated by design can far outstrip plans men consciously contrive."*[8]

The problem in Indian cities is not a lack of design; on the contrary, the problem is the excessive focus on creating a perfect design while ignoring the evolving dynamics of the city. The urban regulatory frameworks are excessively prescriptive based on a top-down view that somewhat resonates with the five-year planning approach. While it has largely been done away from India's economic thinking, unfortunately, it still dominates our present-day urban thinking.

Various studies have shown evidence of how actual land use completely deviates from planned use. One such example is the Gandhinagar New Capital Periphery Control Act enforced in 1961 that froze urban development for 40 years and promoted unauthorized settlements (Bhayut and Mittal, 2020). Another is the case of Dispur, a suburb in the capital Guwahati where the Master Plan did not incorporate the future growth and extension prospects of the suburb which significantly led to congestion in the area. All of this suggests a lack of vision and suggests that if the present norms are flouted by the majority even with the current level of stringency, then the rule itself incentivises non-adherence as a matter of poor design.

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8 https://www.mercatus.org/media/document/order-without-design-chapter-1

Pethe et al. (2014) present its evidence in the case of select areas in Mumbai. For example, the development plan for the city passed in 1991-94 which was in practice till 2014, provided for 43% of the land use for industrial use and 18% for institutional use such as charitable trusts, educational institutes, etc., whereas only 3% land was demarcated for commercial use. Even at the time of plan preparation, 50% of the city's population lived in slums; yet, it was not properly factored into the plan with just 36% allotted to residential areas.

As the city underwent sectoral transitions leading to rapid commercial activity, residential development compared to commercial space witnessed a decline, and eventually land use ended up with greater mix use, with the majority of the people living in slums. As a result, the 2010 actual land use differed significantly from the proposed development plan where industrial use comprised 26% of the total study area with commercial use and undeveloped land forming 14% and 17% of the land respectively. Therefore, the land use envisaged in the master plan was quite far away from the on-ground reality.

These regulatory restrictions are greatly under-optimizing our cities' potential and operational efficiency and affect the management of the city amidst the rapidly evolving economic and civic requirements. These plans also apply standards and design requirements generically, in a *one-size-fits-all* manner, throughout the entire community. This chokes the dynamic fluidity that needs to keep the cities alive and adaptive and strips it of its very essence. To address these drawbacks, there is a need to relook at the way we think about urbanism.

What is the solution?

As discussed in the previous section, rigid regulatory systems are clearly inefficient and have failed to produce optimal urban outcomes. The question that arises then is: what should be the ideal approach to planning our cities?

Can Laissez-faire with absolute non-intervention, i.e. purely market driven, be the alternative? We don't think so. Laissez-faire has its own set of issues especially with the provision of public

goods. For instance, there will not be sufficient development of infrastructure, common-use areas etc., if left only to the market. Hence, the Government has to make provisions for them. Moreover, there will be market failure in terms of implementation of safety regulations for fire, use of chemicals, etc. It cannot work without a regulatory mechanism. Therefore, some form of basic rules are needed as guiding principles.

Then, what is the alternative? We suggest **'guided evolution' approach to urban planning** which is somewhere between dominant stringent regulations and no regulations. **This approach does not argue that we should do away with regulations and move to laissez-faire with non-intervention—instead, it says that what we need is more flexible regulations along with active management.**

Cities are ever-evolving organic ecosystems (Batty, 2009) like forests, where the whole is greater than the sum of its parts and the structures emerge from the bottom up. Cities are complex non-linear dynamic systems with temporal, visual, spatial, scaling, and connected elements. As also pointed out by Patrick Geddes,[9] cities should not be treated as a fixed architectural product. Hence the approach to urban planning should envisage the creation of a design or plan allowing for evolution and emphasis on active management through constant iterations. This allows the market forces to play out within an evolving overall vision of the city.

In fact, this type of evolving approach has shaped some of the iconic cities in the world that have evolved to be the dynamic and vibrant places that they are today. For instance, Paris' reconstruction in the 1800s by Baron Georges-Eugène Haussmann is considered the turning point for the city. He rebuilt a part of the city by replacing old narrow streets and crowded neighbourhoods in the city centre with long, wide avenues, squares, and grand boulevards coupled with fashionable apartments. Planners across the world aspired for the neat demarked spaces of the city centre which were viewed to

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9 https://questionofcities.org/patrick-geddes-urban-planning-for-social-and-cultural-renewal/

be developed out of a clean slate. Although it is commonly known that this created a rift based on social class, what most people don't recognize is that apart from the city centre, the rest of the city flourished and evolved on its own which contributed to what Paris is today. This only worked because the remaining city continued to have other characteristics and structures such as Montmartre, Left bank, and old buildings like Notre Dame, Louvre, etc. Thus, Haussmann added to an existing ecosystem and is not the father of a greenfield city. The city acquired its character through the existing forms via the process of evolution.

The importance of diverse spaces can be seen in the case of London's Canary Wharf which was once an abandoned low-lying port that later developed into a leading financial centre. This is attributed to tax incentives for business, the removal of planning restrictions, and the development of connecting transport to the main city by the authorities (Brown, 2017). A similar transformation has been seen in South Manhattan's Meatpacking district, from crumbling buildings and crime-ridden abandoned streets in the 1980s to glittering nightlife and commercial spaces in 20 years. This was due to the introduction of mixed land-use features that included diverse spaces such as art galleries, business organizations, restaurants, luxury apartments, etc. (Yami and Phillips, 2017).

Therefore, what matters is not just having a great design but focus on having basic regulations in place along with an emphasis on active management and iterations in line with the needs as we go along, which the current form of rigid master planning cannot achieve. In this paper, we propose that there is a need to rethink urban planning through the principle of *'Guided Evolution'*.

What needs to be done?

In the previous sections, we discussed how master plans lay rigidities in cities with an erroneous view of assuming them as machines whereas they are complex adaptive systems that evolve over time. Most vibrant cities around the world have moved away from the traditional line of thinking. India also needs to relook the entire urban planning process in India and the planners need to move away

from a 'One size fits all' approach for all kinds and types of cities and rethink urban planning in terms of Guided Evolution.

This can be done in various ways. We suggest three key steps in this direction. First, there is a need to move to form-based codes which focus on the intended form and character of a place as an organizing principle, not focusing entirely on its use rather than use-based planning which forms the basis for master plans. This involves prioritizing the compatibility of uses, rather than segregation of uses. The second is permitting more mixed-use zones. The diverse mixed-use neighbourhoods that combine, residential, commercial, and recreational spaces make the city more dynamic and vibrant. Lastly, to move from only planning and lagged implementation to continuous monitoring and active management, it is important to assess the real on-ground picture instead of what appears on the master plan. This can be done by creating a Digital twin of the city using the latest technology. A digital twin is a 3-D model of the city from above and under the ground level that replicates the physical features of all the elements of the urban ecosystem. Each of these is discussed in this section.

- **Shift to form-based codes from land use planning**

Form-based codes (FBC) is a planning and zoning tool that is used for regulating development using physical form rather than land use segregation as the organizing principle for the code. Form-based codes focus mainly on the physical character of development, particularly how it relates to the public realm that everyone shares instead of what use it is put to. These are a comprehensive set of codes, norms, and guidelines for the development of a public space.

Unlike conventional codes focussed on micro-management of activity, FBC envisages the intended form as well as look and feel of a place (or context) as the organizing principle or framework of the code, not the use imagined by the planner. This approach regulates a series of important elements not just to create a good individual building, but to create a high-quality place. Some of these elements include urban design standards, signage standards, vehicular access, frontages, landscaping, fencing, wall heights, streetscape design, etc.

They address the relationship between the public realm and building blocks along the streets.

These codes prioritize compatibility of uses rather than segregation of uses and are applied with a bottom-up approach specific to local contexts instead of city-wide uniform application. This helps to identify the needs of the local community in comparison to just ensuring enforcement of compliance. Various cities across the world have used Form Based Codes, such as Miami, Leander, Texas etc. One such example where an attempt was made to use form-based codes in India is from the Indian Railways redevelopment projects such as in Bijwasan, Dwarka.[10] In this project, the surrounding areas were integrated via pathways, allowing for flexibility and diversity in the actual use of sub-plots with the co-existence of shops, services, apartments and rental housing, hostels, retail, offices, hotels, hospitals, shopping malls, theatres, co-working spaces, etc., except for hazardous and highly polluting industries.

- **Adoption of mixed land use**

Renowned urbanist Jane Jacobs argued for diverse, mixed-use neighbourhoods that combine residential, commercial, and recreational spaces. She believed that this mix fosters a vibrant and dynamic urban environment, where people can live, work, and socialize in proximity. One of Jacobs' most famous concepts is the idea of *'eyes on the street'* (Jacobs, 1993). She argued that active, well-used public spaces and streets with a mix of uses encourage natural surveillance, making neighbourhoods safer and more vibrant.

Take the example of Singapore, which over the last fifteen years has deliberately clustered a wide range of activities in its city centre to create a buzzing urban concentration. This includes a new business district, malls, residential towers, a casino, a new management university, a sports hub, theatres, botanical gardens, re-using heritage buildings as museums, integrating the informal sector, and even a Formula One track. Contrast this with how Indian planning has traditionally seen mixed use as undesirable and messy. This silo

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[10] http://irsdc.in/sites/default/files/03b-Guidebook%20of%20Form%20Based%20Codes-R2.pdf

approach meant that Delhi-NCR's response to hosting a Formula One event was to build a dedicated racetrack at Buddh international circuit in Greater Noida while Singapore just used its existing city roads.

Similar to Singapore, what shaped present-day New York was Manhattan's famous 'street grid' plan of 1811,[11] which includes just parallel avenues and streets crossing at right angles in an unbroken grid that provided flexibility and accommodated the automobile, subway system, electricity grid, etc. and allowed growth and evolution of the city over time. It presented a case of organized complexity as self-organization took place from the bottom-up within the grid with diverse neighbourhoods and mixed building types co-existing together.

The German city Frankfurt has steered clear of master plans and instead has adopted 'no nuisance zoning' which mandates that some specific heavy and polluting industries need to be located away from the residential areas. The city planning is more flexible and localized (Peterek, 2021).

• **Digital Twin: Creating a live map of the city**

If the urban planning policy will move away from merely designing the plan and its implementation to continuous monitoring and active management, there is a need for a tool that complements this approach. Since the on-ground reality of cities is very different from what was planned for, to make any improvements in urban spaces, the first and most important thing is to understand how the city exists at present and not on the dated master plan.

This can be done by creating live maps of cities, essentially like a Digital twin, which is a multi-dimensional virtual model. This digital twin is like a 3-D model of the city from above and under the ground level that replicates the physical features of all the elements of the urban ecosystem, for example, underground utilities like electricity cables, optic fibres, sewage pipes, and surface-level infrastructure

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[11] https://www.smartcitiesdive.com/ex/sustainablecitiescollective/how-we-ve-ignored-complex-simplicity-manhattan-street-grid/149551/

like street networks, buildings, etc. This can complement the first two steps by helping create more evidence-based and flexible plans.

Many cities around the world like Singapore,[12] New York, Auckland, and Valencia are already making use of the digital twin technology. In fact, even before digital technology was introduced, Singapore's Urban Regulatory Authority developed a physical twin (presently housed in the Singapore City Gallery) to keep track of on-ground developments and changes.

The Digital twin enables real-time monitoring and intervention that optimizes planning through visualization, processing, simulations, scenario-building, and analysis of complex georeferenced data. This could be very helpful in better city management in areas such as waste and water, disasters such as flooding, energy consumption, security monitoring, pedestrian and traffic mobility improvements, and infrastructure management. This can also be a rich source of data for various applications by a multitude of public and private agencies. Of course, differential access can be provided such that only government agencies have access to more sensitive information.

Conclusion

India is rapidly urbanizing with the second largest urban system globally, comprising of 11% of the world's urban population living in cities. Its urban population is further projected at 675 million by 2050. Cities are the primary drivers of economic growth and for India to achieve the middle economy benchmark, our cities need to realize their true economic potential while being sustainable, inclusive, vibrant, and quality-rich. Hence, there is a need to think about urban planning very seriously.

Until now, planners have tried to achieve the ideal end state of a city through a pre-conceived utopian view of how the city should look and feel that is hardwired through rigid mapping and regulations. This kind of tight-fisted outlook has derailed cities' progress and has created various sub-optimal outcomes as discussed in the paper. So,

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[12] https://www.gim-international.com/content/article/singapore-s-journey-towards-a-nationwide-digital-twin

there is a need to rethink urban policy in terms of 'Guided Evolution', which involves active management rather than just rigid grand design.

The role of planners and policymakers is to create attractors such as infrastructure, public spaces, iconic buildings etc. that act as enablers of evolving city forms and make the cities more dynamic and vibrant. Once these attractors are put in place, the planning should be limited to a few simple and universal rules to nudge the agents in the system to generate well-ordered urban spaces. The planners then need to actively monitor the evolution and constantly iterate based on information and feedback.

In order to achieve this, we propose a few things that need to be done:

— switching to form-based codes to understand the physical character of the public realm with various interconnected elements in harmony;

— adopting mixed land use by allowing diverse activities to co-exist and thrive in tandem with the evolving needs of the city;

— creating digital twin of the city to develop 3-D models to enable dynamic monitoring, simulation and management of various components of urbanism such as transport, housing, economic activity, and more.

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R.A. Mashelkar

Future of Technology & Technology in Our Future

As we stand today, many paradigm shifts are taking place in the world as it moves from superpower bipolarity to multipolarity, as industrial capitalism shifts to green capitalism and digital capitalism, as information technology creates 'netizens' out of citizens, as aspirations of the poor get fueled by the increasingly easier access to information, as nations move from 'independence' to 'interdependence', and as national boundaries become international and the concept of global citizenship evolves.

While all this is happening, rapid advances in technology are radically transforming our lives. This essay captures the essence of the rapidly changing landscape. We just focus on three exponential technologies, which will be life changing.

First is the digital transformation of our lives and work due to the advent of the emergence of a smart physical world. The new world is going to be smart, interconnected, intelligent and responsive.

The second is the advent of the new biology, which will transform agriculture, life, and the economy in an unimaginable way.

The third is the new energy for creating our green future, which is so crucial for going net neutral and saving the planet.

This author has contributed his thoughts on global fora[1,2]. While drawing heavily from these papers but also many new learnings due to the rapid changes in the technology landscape, a fresh view of the rapidly changing future has been taken, both that of the technology as well as that of humanity.

This paper is written in a series form. We project here only the

global scenario as a first part of the series. This will be followed some time later by the second part that will show as to how India is responding (and should respond) to this change.

As technological advances take place, it will be very important to seriously look at the issues (societal, legal, moral, political, policy level) that will either aid or hamper human progress.

The Digital Transformation of Life & Work

Spectacular digital transformation of our lives, the way we live, work, think, act, and so on is already for us to see. The possibilities of the creation of a new digital world are truly bewildering since the changes are so transformative.

There appear to be as many as 25 technology trends that will shape the decade of 2020s and beyond.[3,4,5,6]

These include 5G, affective computing, artificial intelligence (AI) and machine learning, autonomous vehicles, big data and augmented analytics, block chains and distributed ledgers, cloud and edge computing, computer vision, cryptocurrency, cyber security, digital platforms, digital tweens, digitally extended realities, drones and unmanned aerial vehicles, edge computing, facial recognition, genomics and gene editing, intelligent spaces and smart places, internet of things (IoT), mass personalisation, nanotechnology, natural language processing, new materials science, quantum computing, robotic process automation, robots and cobots, voice interfaces and chat bots, wearables and augmented humans and 3D & 4D printing.

We highlight key features of some but not all the above.

First there are enablers which will help accelerate the digital transformation progress.

The first enabler is the networks. Massive changes are taking place as the power of the network increases as we transition from 2G to 6G.

The 2G and 3G eras were all about human-to-human communication through voice and text. 4G heralded a fundamental shift to the massive consumption of data, while the 5G era has turned its focus on connecting the Internet of Things (IoT) and industrial

automation systems. In the 6G era, the digital, physical, and human world will seamlessly fuse to trigger extrasensory experiences.[7]

5G is a new generation of wireless connectivity that supports a 100-fold increase in the number of simultaneous connections while improving speed (100 times faster than Long Term Evolution or LTE/4G), latency, and reliability (an improvement from 20 milliseconds to less than one millisecond with 99.99% reliability).[8]

Faster digital connections, powered by 5G and the IoT, have the potential to unlock economic activity. Adoption of 5G in mobility, healthcare, manufacturing and retail could increase global Gross Domestic Product (GDP) by $1.2 trillion to $2 trillion by 2030.[9]

6G (sixth-generation wireless) will pave a way for always-on and zero-lag communications at a potential rate of 1 terabyte per second.[10] For 6G wireless to become a reality, it must overcome several technical hurdles, such as connecting terahertz spectrum to hard, optical transmission lines, etc.

The second enabler is the emergence of Web 3.0, which is a game changer.

Web 1.0 (1990-2005) was about open protocols that were decentralised and community-governed with most of the value accruing to the edges of the network, namely users and builders. [11]

Web 2.0 (2005-2020) was about centralised services run by corporations with most of the value accruing to a handful of companies.

Web 3.0 will combine the decentralised, community-governed ethos of Web 1.0 with the advanced, modern functionality of Web 2.0. Web 3.0 will be built largely on three new layers of technological innovation: edge computing, decentralised data networks and artificial intelligence. Web 3.0 will be the internet owned by the builders and users, orchestrated with tokens.[12]

Web 3.0 is a a leap forward to open, trust-less and permission-less networks; 'open' in that they are built from open-source software created by an open and accessible community of developers. The network itself allows participants to interact publicly or privately without a trusted third party so it can also participate without

authorisation from any governing authority. Web 3.0 will be spreading the data centre out to the edge, and often right into our hands.

Web 3.0 will help us to return to highly personified human centric interactions like in the good old times in a village, but it will be a 'global' village as it will be delivered at the 'global' scale of the internet and fuelled by ever increasing power of human-machine interaction enabling technologies.

AI - The Game Changer

AI is one of the biggest and fast changing and all-encompassing tech trends. It is so fast changing that by 2024, AI-generated speech will be behind more than 50% of people's interactions with computers.[13]

An upcoming explosion in AI applications is set to augment nearly every aspect of human–machine interaction and power the next level of automation, both for consumers and businesses. Applied AI will further disrupt research and development through generative models and next-generation simulations.

Around half of all existing work activities could be automated in the next few decades, as next-level process automation and virtualisation become more commonplace. This will spur powerful changes to the future of work, labour costs, and public policy.

The McKinsey report[14] predicts that by 2025, more than 50 billion devices will be connected to the Industrial Internet of Things (IIoT). Robots, automation, 3D printing, and more will generate around 79.4 zettabytes of data per year.

As advanced simulations and 3-D or 4-D printing continue to dematerialise processes and make them virtual, dramatically shorter development cycles will become possible, for example, by the integration of design and product development through visualised simulations of optimised prototypes.

It is reported that in 2019, more than 8.5 billion data records were compromised.[15] Trust architectures will help in the fight against cybercrime. Trust architectures both mitigate risk and, for companies in certain industries, increase it.

Blockchain, which uses distributed ledgers, is emerging as a powerful approach to building a trust architecture. Blockchain is a type of Distributed Ledger Technology (DLT), a public network with a shared ledger without central authority, controlled by economic incentives for nodes to update the ledger.

This will reduce the cost of complying with security regulations, lower the operating and capital expenditures associated with cybersecurity, and enable more cost-efficient transactions, for instance, between buyers and sellers.

In the years ahead, societies and businesses will look at disruptive technologies to change the way we live, work, interact, and indeed transform human existence.

Augmented Humanity

In the future, human capabilities will be elevated by a mix of established, emerging technologies, what is now being referred to as "Augmented Humanity".

Augmented Humanity, through interaction between the digital and physical worlds, allows "technologically enabled humans" to unleash their full potential and perform at levels they could not reach without technology.

Such humanised interactions between humans and machines will be leveraged by technologies such as ingestibles, implantables, injectables, biometrics, brain-computer interfaces, affecting computing, wearables, augmented reality (AR) and virtual reality (VR), and smart devices.

How will the augmented humanity technologies disrupt the word?

Here are just a few illustrative examples:

AR and VR will revolutionise the traditional mental health industry by allowing mental health professionals to deliver an immersive experience to their patients.

VR technology will enable professionals to learn new things about human cognitive functions while leading health providers toward better treatments and outcomes. As the technology becomes

more accepted and accessible to people, individuals lacking time or financial resources will use VR for self-therapies and personalised mental health treatments delivered at home.

Smart wearables have enabled the "quantified-self" phenomenon, in which end users and tech makers share an interest in self-discovery through datafication.

The wearable industry is transitioning activity trackers to health platforms. By quantifying our sleeping pattern, the Oura ring instigates actionable insights for health improvement through datafication, which can avoid health conditions linked with diabetes, cardiac disease, or Alzheimer's.[16]

Brain-computer Interfaces

Brain-computer interfaces (BCI) will engage in cerebral activity and support human functions.

BCI is a communication pathway between the brain and an external device. It translates human brain activity into an external action via neural commands, enabling humans to control machines without the physical constraints of the body, just by using their minds.

BCI can help restore functional impairment in people with illnesses such as motor system disorder, intellectual developmental disorder, memory loss, and mobility deficits.

In the future, amputees could directly control sophisticated prosthetic limbs and people with impaired movement could use integration between exoskeletons and BCI to restore their movement functions.

It will be possible to better understand human emotions expressed in their voices, faces, text, and other behaviours to micro-target individuals in extremely highly personalized ways.

How far will the New Biology take us?

The following specific life-extending developments are expected to be potentially achievable:

- Almost everyone will have their own DNA sequences. This will give access to a vast database that describes the risks,

therapies and best practices based on the characteristics of their own specific genes.

- Mitochondrial DNA will be replaced when damaged by disease or aging.

- Most genetic disorders will be curable through gene therapy, which by 2050 will be a mature technology.

- Age damaged immune systems will be replaced by using fresh cells grown from patient's own bone material.

- To replace diseased or worn-out organs, doctors will grow new ones from a patient's own cells.

- Tissue regeneration will take place without rejection. This will be made to happen, by creating, manipulating, and transplanting pristine cells from a patient's own body.

New Trends in New Biology

We've seen multiple trends come to fruition at the intersection of bio and digital exponential technology that is causing a bio revolution, which will have a significant impact on economies, our lives and livelihoods. This is tantamount to a new industrial revolution in human history.

Confluence with AI, automation and DNA sequencing has created a revolution that promises the development of gene-therapies, hyper-personalized medicines and genetics-based guidance on food and exercise.

The origin of this exponential change was triggered before the pandemic. Human Genome Project for sequencing human genome was set up in 1991 and finished the task in 2003, for around $3 billion.[17] Now, it would cost $300.[18] That's a huge exponential decay in cost.

There is Moore's Law for bio, thanks to the exponentially rising power of computation; machine learning and AI are transforming many areas of bio pharma and healthcare; the ability to not just "read", but "write", to bio, including CRISPR (even in just a decade) has been truly disruptive.

CRISPR: The Game Changer

Emmanuelle Charpentier and Jennifer A. Doudna won the Nobel Prize in 2020 for CRISPR, the "scissors".[19] CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeat. The CRISPR system is a sophisticated defence that bacteria evolved to disarm invading viruses, similar to the way fungi developed penicillin to protect themselves against bacterial infection.

The CRISPR system is empowering the scientists to alter human and other genomes with great benefits, such as repairing gene mutations that cause damaging diseases like cystic fibrosis.

CRISPR has fundamentally changed the thinking about what's possible. For example, it took more than 30 years to develop the first effective vaccine for Malaria and that too with an efficacy of only about 50 percent against malaria in the first year, dropping in subsequent years.[20] CRISPR system will make it possible to develop much more effective vaccines in the next five years. Indeed, CRISPR can lead to a new suite of tools called programable medical therapies; it could greatly accelerate the development of therapeutics for new viruses and prevent the damage due in future pandemics.

CRISPR can lead to breakthroughs in creating plant varieties that can withstand the effects of climate change. CRISPR may also create a cure for blood diseases like sickle cell anaemia ad beta thalassemia.

The Magic of mRNA

Just as impactful as CRISPR is the phenomenon of messenger ribonucleic acid (mRNA), whose true potential was realised as a result of the pandemic challenge.

Moderna's vaccine, which was designed in 2 days, was further developed, tested and deployed within a year, a record time[21]. This vaccine is based on the messenger RNA, called mRNA, which is a piece of ribonucleic acid that carries information about the amino acid sequence of a specific protein from the deoxyribonucleic acid or DNA (where all that information is stored) to the ribosome, where in the cell, different proteins are synthesised. To explain it in simple words, one can view mRNA as a Universal Serial Bus or USB

device that cells use to pass information from the computer (DNA) to another device, such as the printer (ribosome).

The virus sequence was published in January 2020.[22] Then the race began to create a vaccine, which enabled the development of proteins that would bind to the spikes of the virus. The goal was to prevent it from binding to human cells thus rendering the virus harmless. mRNA technology won the race.

Essentially, this revolutionary mRNA technology instructs the human body to make the vaccine itself. The magic of mRNA technology may bring a paradigm shift in the pharma industry. Its potential is being examined to treat heart diseases, cancer and other infectious diseases. While transformative, mRNA technology has been in the making for over 20 years, but it took a pandemic for it to be adopted successfully.

The potential of the Bio Revolution is expected to go much beyond health. As much as 60 percent of the physical inputs to the global economy could theoretically be produced biologically.[23] Examples include agriculture (genetic modification to create heat or drought-resistant crops or to address conditions such as vitamin-A deficiency), energy (genetically engineered microbes to create hydrogen from biomass or even biofuels), and new materials (artificial spider silk and self-repairing fabrics). Those and other applications feasible through current technology could create trillions of dollars in economic impact over the next decade.

As with artificial intelligence, facial recognition, and other digital technologies, the society should play an active role in drawing the ethical lines in new biology and its applications. Only then can we ensure that the world maximises the potential of these remarkable innovations for the good of the humanity.

Rapid advances in synthetic biology, regenerative medicine, immune therapy, etc. will have a major impact on both the extent and quality of life in future. The field of 'synthetic biology' is developing ways to build living organisms. Simple bacteria can be made routinely by inserting synthetic genomes into empty cells. These organisms will not merely duplicate their natural predecessors

but will incorporate whatever traits their designers wish to include in them. From triggering an immune response to conveying new genetic material into human cells to repairing hereditary diseases to carrying out industrially useful chemicals – the promise of synthetic biology looks very high indeed.

We have moved from preventive medicine (vaccines) to curative medicine (antibiotics), to predictive medicine (gene therapy) to regenerative medicine (stem cell therapy).

Regenerative Stem Cell Technology

The stem cell technology is another disruptive technology. When the embryo gets developed, its own cells are only general-purpose building blocks. They can become any kind of specialized cells that the body needs. These stem cells and their versatility make them uniquely important for clinical therapy. If one has a heart attack, stem cells have the potential to replace the damaged tissue, turning eventually into a specialized heart muscle as needed. If there is spinal damage, stem cells can potentially replace the lost nerves and restore the ability of a paralyzed patient to walk. It can create a paradigm shift in the way diabetic patients are treated. Stem cells can become pancreatic islet cells, thus enabling a diabetic patient to have a normal supply of insulin.

Emerging novel immunotherapy

Immunotherapy is the treatment of a disease through leveraging the patient's own immune system. In cancer treatment, newer potent T-cell mediated therapies eliminate or slow the growth and spread of cancerous cells by preventing the tumor from evading immune detection. An important component to the success of these therapies is the identification of patients with T-cell infiltrate at the tumor micro-environment at baseline. This is primarily done through predictive immunoassays which can lead to the development of optimized rational immunotherapeutic combination regimens that are tailored for each patient.

Emerging and novel immunotherapeutic approaches can leverage a patient's immune system to eliminate or slow the growth and spread

of cancerous cells. New advances in tumor biology are enabling the development of newer potent T-cell mediated therapies. These can prevent the tumor from evading immune detection. Experimental T-cell immunotherapy comprises multiple modalities including checkpoint inhibitors, which work to defeat a cancer resistance mechanism that causes immune cells to see a tumor as 'self'. This enables the immune response to defeat the cancer cells on its own, as well as therapeutic vaccines.

While existing chemotherapy or even newer oral drugs have a powerful initial effect on tumor shrinkage, the durability of these responses is often short and the tumor begins to grow again and starts to spread. The durability of responses with immunotherapy, on the other hand, can last much longer, due to the induction of an ongoing immunological memory. The targeting of cancer cells for an indeterminate length of time and making it a potential tool to transform cancers into something akin to a chronic disease would be a great breakthrough!

It is possible that in the near future, that the use of precision medicine (using personalized therapeutics) may shift from the current dominant role of chronic targeted therapies to a more subsidiary role in enhancing the activity of immunotherapeutic agents. Immunotherapy may form the backbone of the majority of the cancer management regimes.

Age Extension Technology

An upcoming field is age extension technology and the study of the fundamental processes of aging, which could advance so much that considerable progress would be made in preventing, delaying, or reversing the aging process.

A combination of several methods helps in this process. These will include growing new organs by using stem cells and tissue engineering, ingesting a mix of proteins and enzymes that will increase cell repair mechanisms, regulate metabolism, reset the biological clock, and reduce oxidation, using gene therapy to alter genes that may slow down the aging process, and using mono sensors to detect diseases like cancer before they become a problem.

These and other anti-aging therapies will make life spans of over 100 years commonplace. More importantly, based on the animal studies underway at the moment, it appears that quality of life will not suffer as it does today, and it will be possible to retain more vigorous mid-life health and energy.

New Energy and Getting to Net Zero

Sense of Urgency

It is obvious that the steps taken in the decade ahead will be crucial in determining whether or not we avoid runaway climate change. An average global temperature rise above 1.5 or 2°C would create risks that will have disastrous consequences. At an emission rate of 40 to 50 gigatons of carbon dioxide (CO2) per year, the global economy has 10 to 25 years of carbon capacity left. [24]

Progress and Challenge Ahead

2020 was a record year for renewables. Globally, 260 gigawatts of renewable energy capacity were added in 2020, exceeding expansion in 2019 by close to 50% – and breaking all previous records.[25] More than 80% of all new electricity capacity added last year was renewable, with solar and wind accounting for 91% of new renewables.[26]

According to the International Energy Agency (IEA) Solar power will be the new king of electricity supply and looks set for massive expansion.[27] Projects with low-cost financing that tap high quality resources, solar photovoltaic (PV) is now the cheapest source of electricity in history. This includes being more cost-effective than coal and gas in many countries today, including in the largest markets – the United States, European Union, China and India.[28]

Solar will reach, in many parts of the world, a levelized cost of energy that will be so affordable that it will make it unbeatable compared to fossil fuels.

But we must continue firmly on the innovation path even in solar PV. In that sense, it is heartening to see a shift from first-generation to second-and third-generation solar technologies. Perovskite Solar Cells are third-generation solar technologies.

Conventional silicon solar cells are most effective at using the photons in the red, lower energy end of the solar spectrum.

Perovskite solar cells, however, effectively utilise the high energy photons at the blue end of the solar spectrum.

The first perovskite solar cells were announced just 10 years ago. But those early lab prototypes were incredibly unstable and had an efficiency of just 3.8%.[29] The current efficiency record for Perovskite Silicon Tandem Solar Cells is 29.52%, held by Oxford PV.[30]

Though perovskite solar cells have become highly efficient, several challenges such as stability, efficiency degradation, life-cycle cost etc. need to be addressed for making it a competitive commercial technology.

The other important innovation is around how best to integrate solar into our homes, businesses, and power systems. This means better power electronics and a greater use of low-cost digital technologies.

New technologies addressing the rapidly growing need for clean-energy generation will include systems for smart-energy distribution in the grid, energy-storage systems, carbon-neutral energy generation, and fusion energy. These new technologies will have broad applications in power sector, transport and buildings and infrastructure.

The transition to renewables, efficiency and electrification can drive broad socio-economic development.

Jobs in renewables would reach 42 million globally by 2050, four times their current level, through the increased focus of investments on renewables. Energy efficiency measures would create 21 million and system flexibility 15 million additional jobs.[31]

Socio-economic measures to maximise the benefits of the energy transition include industrial policies, labour market interventions, educational and skills development and social protection programmes.

Green Hydrogen for Our Green Future

Hydrogen (H2) is the lightest and most abundant element in the

universe. Hydrogen was given new impetus in the 1960s by space travel, which relied heavily on hydrogen as an energy store, and in the 1970s as a consequence of the energy and oil price crises, when the search began for alternative energy concepts.[32]

Hydrogen technology is now gathering strong momentum as a key energy vector after decades of false starts and debate about its safety and viability. Key drivers for this are: falling production costs, technological improvements, a global push toward decarbonisation and expanding potential end-markets. The global shift toward decarbonization backed by government financial support and regulation is supporting this momentum.

There has been an exponential growth in H2 deployment globally in the last few years. Around 75 countries representing over half the world's GDP have net zero carbon ambitions[33] and around 31 countries have formulated national H2 strategies.

As of June 2021, 359 large-scale projects are announced worldwide totalling about $130 billion (bn) direct investment. Europe remains the centre of hydrogen development accounting for 80% of new project announcements and United States Dollar (USD) ~100bn investment committed from public and private players. Total estimated investment by 2030 for the hydrogen value chain (including original equipment manufacturers or OEMs and government targets) amounts to USD ~500 bn.[34]

Hydrogen production varies in terms of raw materials and end products. Over 99% of hydrogen is currently made using fossil fuels.[35] Grey Hydrogen Produced from natural gas is the most widely used method to produce hydrogen today. It produces carbon dioxide as a by-product. Blue hydrogen captures and stores most of the carbon dioxide output. Green hydrogen is produced by water electrolysis with various types of electrolysers, in which zero-carbon electricity is used to split water molecules into hydrogen and oxygen molecules.

Current renewable technologies such as solar and wind can decarbonize the energy sector by as much as 85 percent by replacing gas and coal with clean electricity.[36] Other parts of the economy,

such as shipping and manufacturing, are harder to electrify because they often require fuel that is high in energy density or heat at high temperatures. Green hydrogen has a great potential in these sectors. Green hydrogen and fuels derived from it (e.g., ammonia, methanol, aviation fuels) can replace higher-carbon fuels in some areas of the transportation sector, industrial sector, and power sector. H2 as an energy buffer or storage can potentially solve intermittency problem of large-scale renewables.

Long-distance and heavy-duty transportation, industrial heating, and heavy industry feedstock together comprise roughly 15% of global energy consumption.[37] Adoption of hydrogen, a clean energy source, in these sectors will be a game changer.

Hydrogen economy has the potential to generate $2.5 trillion in direct revenue. Total market potential could reach $11 trillion by 2050.[38]

What should be the technological advances to realise the potential of green hydrogen? Again, affordability is the key bottleneck for mainstream adoption of green hydrogen, since it is not yet cost-competitive, at $3-7.5/kilogram in comparison with traditional carbon-intensive methods of hydrogen production that cost as little as $1/kilogram at the low end.

Recent technological advances and early demonstration projects[39] are changing the cost dynamics significantly. With hydrogen production costs falling, transmission and distribution costs are the next frontier when it comes to reducing delivered hydrogen costs, and we need technology breakthroughs here.

There are aspirational targets that are being set up by both nations and corporates.

For instance, '10-10-10' is Europe's Energy Ministerial Target, which implies 10 million Fuel Cell Electric Vehicles (FCEVs) and 10,000 H2 fuelling stations over the next 10 years.[40]

'H2 under 2' is Australia's hydrogen strategy, which stands for production cost of below Australian dollar (AU) 2$/kg of hydrogen.[41]

"1-1-1" from the United States Department of Energy (US

DOE), is the first Energy Earthshot, launched June 7, 2021— Hydrogen Shot— and seeks to reduce the cost of clean hydrogen by 80% to $1 per 1 kilogram in 1 decade.[42]

Reliance Industries chairman Mukesh Ambani has set 1-1-1 target for Green Hydrogen in India, meaning India to become the first country in the world to produce Green Hydrogen at less than $1 per kilogram in a decade.[43]

All such aggressive targets augur well not only for the development of new breakthrough technologies that will shift the price performance envelope but also for deployment with speed and scale.

Energy Storage - The Holy Grail of Clean Energy

Increased adoption of renewable energy also poses several challenges. Intermittency is the key challenge. Solar and wind power is not available when it gets dark, or if the wind stops blowing.

Typically, most utility grids do not store energy because it is very expensive. Some utilities rely on fossil fuel burning plants to meet energy demand during peak hours which have a higher carbon footprint. Therefore, interest in grid-scale energy storage has grown significantly in recent years. Energy storage offers a potential solution to the variability of certain forms of renewable energy generation. It also offers a low-carbon alternative to natural gas peaking plants that provide the grid with a fast-ramping, flexible resource.

A wide array of storage technologies has been developed for energy storage. Pumped hydro-power, batteries, thermal energy storage and mechanical energy storage are widely used technologies for energy storage.

Lithium-Ion batteries are currently the most preferred and have a wider range of applications as compared to other rechargeable battery types due to benefits such as higher energy density, negligible issues of loss in storage capacity on continuous usage and minimal self-discharging.

Flow batteries, liquid metal batteries, compressed air and liquid air have been considered promising for long-duration storage.

Declining costs in available technologies have propelled forward the interest in energy storage like never before. The price of lithium-ion batteries has fallen by about 80% over the past five years.[44]

Long-duration energy storage system can store energy for more than 10 hours. It is considered as the Holy Grail of clean energy. In July 2021, the US Department of Energy launched an effort to push down costs of long-duration energy storage by 90 percent by 2030 as part of its Energy Earthshots Initiative.[45]

McKinsey study[46] suggests that Long Duration Energy Storage (LDES) deployment could result in the avoidance of 1.5 to 2.3 gigatons of CO_2 equivalent per year, or around 10 to 15 percent of today's power sector emissions. In the United States alone, LDES could reduce the overall cost of achieving a fully decarbonized power system by around $35 billion annually by 2040.

For getting to net zero, three questions are important.

First, for the world to maintain public support for climate action it is important to make sure that the costs of energy transition must be affordable. Decarbonising energy use in time to avert catastrophic climate change requires intensified international co-operation, financial mobilisation, strengthened institutions, and broad policy cohesion.

Second, emerging economies like India, Brazil, and South Africa – which have done much less to contribute to climate change than the rich countries but are affected the most, must continue to reduce poverty without emitting greenhouse gases. Again, it comes to affordability, so that they don't have the challenge of a trade-off between growth and a liveable climate.

And third, the current generation will have to adapt to a warmer climate. The effects of higher temperatures—more frequent droughts and floods, the desiccation of farmland, the spread of crop-eating pests—will hit farmers hard, especially those in low-income countries. So, in addition to making green energy affordable, we need to accelerate innovations like high temperature resistant seeds that will help the poorest farmers grow more food through breakthrough technologies by using the likes of CRISPR technology that we earlier alluded to.

Making Technology Work for Global Good

All the technological advances and breakthroughs described are exciting and promising. However, in order to ensure that the promise of these technologies meets its full potential, there will be several challenges—social, cultural, political, policy level, etc.—that will have to be dealt with.

We must also deal with widespread public apprehensions about the possible consequences of altering plant and animal DNA. The point can be best illustrated by the current GM crops debate. With reference to GM crops, different nations have adopted different strategies. Some use 'preventive' policies. No matter what, they do not allow GM crops. Others use 'permissive' policies. No matter what, within the next so many years, fifty percent of their crops will be GM crops. But the right policies are those that are 'promotional but precautionary'. While using the most rigorous scientific validation, we must be promotional too.

Some Final Thoughts

The human mind will continue to explore. How was the universe born? Is there life in outer space? Can aging be postponed? What secrets do genes hold? Will we ever understand how the apparently useless DNA in the human genome contributed to our evolution? As our understanding of the DNA world improves, will we turn to the RNA world? May be build an organism based on RNA in the laboratory? Will we ever understand how decisions are made, imagination is set free or what consciousness consists of? Will we be able to identify the neural correlates of our thinking?

In the meantime, the only way of thinking for all the citizens in the world is this. By using this enormous power of exponential technology, can we assure an exponential reduction in inequalities? Can we do a 'just' transition to creating a carbon neutral word? And most importantly, can we create a happy world, where there is a smile on the face of every human being, and not just on some privileged few?

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The Challenges Before the XVI Finance Commission

The Finance Commission of India plays a critical role in the financial administration of the country, as delineated in Article 280 of the Indian Constitution. This constitutional mandate ensures a systematic and equitable distribution of financial resources between the central government and the states, addressing one of the most crucial aspects of federalism in India. The rationale behind establishing the Finance Commission lies in maintaining a balance of fiscal powers and responsibilities between the different levels of government. The Constitution mandates the formation of a new Finance Commission every five years, or earlier if deemed necessary by the President. This periodic revision allows for adjustments in response to the evolving economic and fiscal environment of the nation.

Article 280 outlines the composition, duties, and powers of the Finance Commission. It stipulates that the Commission shall comprise of a Chairman and four other members appointed by the President, with their qualifications and selection process potentially being determined by Parliament. The primary duty of the Commission is to make recommendations to the President on various financial matters. These include the distribution of net tax proceeds between the Union and the States, principles for grants-in-aid to states from the Consolidated Fund of India, and measures to augment state funds to support local bodies like Panchayats and Municipalities. The Commission also addresses any additional financial matters referred by the President. In performing its functions, the Commission is empowered to determine its procedures and has powers conferred by the Parliament, ensuring its effective operation in the realm of

financial governance. This setup not only promotes fiscal federalism but also ensures that financial resources are allocated in a way that addresses the unique needs and circumstances of different states, thus contributing to the overall economic balance and growth of the country.

The union government has recently established the XVI Finance Commission (16th FC). This analysis delves into four pivotal challenges confronting the 16th FC, offering a comprehensive and formal exploration of each.

Firstly, we examine the terms of reference for the 16th FC, scrutinizing its unique aspects compared to preceding Commissions. This evaluation is crucial for understanding the evolving scope and impact of the Commission's mandates.

Secondly, the discourse shifts to scrutinize the allocation of state shares in the divisible pool of taxes. The revolutionary increment by the 14th FC, raising states' shares from 32% to 42%, represents an unprecedented surge in vertical tax devolution. This leap, juxtaposed against the modest increases recommended by the 12th (30.5%) and 13th (32%) Finance Commissions, prompts a critical inquiry into the sustainability of such a high percentage. It raises questions about the necessity of either elevating or reducing this share, challenging the 16th FC to reassess this pivotal fiscal parameter and make bold, future-impacting decisions.

The third area of focus pertains to the governance of local bodies, as stipulated by Articles 243-I(1) to 243-I(4) of the Constitution. The systemic lapse in the timely appointment of State Finance Commissions (SFCs) and the lackadaisical approach of states towards implementing their recommendations have led to a disjunction in fiscal governance at the local level. This predicament poses a fundamental question: should the Union Finance Commission intervene in augmenting local bodies' revenues when states falter in their constitutional obligations?

Fourthly, the discussion extends to the Union Finance Commission's role in directly funding local bodies. While constitutionally mandated to advise on augmenting state funds to

support municipalities, the Commission has historically devolved funds directly to local bodies. The necessity and propriety of this practice are under scrutiny, questioning whether this trend should persist or be realigned with constitutional directives.

Fifth, the 16th Finance Commission of India faces a complex issue with its population criterion. The 15th FC used 2011 census data for state expenditure needs, deviating from the long-standing practice of referencing the 1971 population figures. Particularly affected were the states, notably in southern India, that have effectively controlled population growth, viewing this change as penalizing their successful demographic management. The previous commission's criteria, which assigned significant weight to population alongside other factors like area, forest and ecology, income distance, and tax efforts, disadvantaged states with higher human development indices but lower population growth, leading to a reduction in their financial shares. The ToR of the 16th FC has not mentioned any base year for the population. Hence, 16th FC will also have to take a call on the population criterion which it intends to use.

Terms of Reference (ToRs) of the XVI Finance Commission

The constitutional mandate of the Finance Commission is to advise the President on a financial framework that ensures equitable tax proceeds distribution between the Union and the States. It includes detailing the methodology for apportioning the net tax revenue and determining the principles for grants-in-aid from the Consolidated Fund of India to the States. Furthermore, the Commission is empowered to consider any matter specifically directed by the President that serves *"in the interests of sound finance"*.

In 1992, a significant amendment to Article 280 of the Constitution expanded the Commission's responsibilities. It now includes providing recommendations to the President on bolstering the Consolidated Fund of a State, with the intention of reinforcing the financial health of Panchayats and Municipalities, following the guidance of the State Finance Commission.

Clause 280 (2) (c) introduced the flexibility for the President to request the Finance Commission to examine additional issues,

emphasizing the importance of the Commission's ToR in shaping its agenda. These ToRs are not only procedural but critical in aligning the Commission's recommendations with the nation's evolving financial landscape and priorities. They serve as a conduit through which the Commission can address the contemporary financial challenges and opportunities, fostering a fiscal environment conducive to sustainable growth and equitable resource distribution.

The ToR of the 1st FC was the least expansive one. The ToRs of 2nd FC also mandated the Commission to recommend the States which need assistance by way of grants-in-aid of the revenues of those States under article 275, and the sums to be paid to those States, having regard, among other considerations, to the requirements of the 2nd Five Year Plan. Thereafter, the 5-year plans figured some way or the other in ToRs of every FC. Thus, FC became a tool to aid states on the five-year plan front.

The 6th Finance Commission's ToR was comprehensive, addressing equitable tax proceeds distribution, principles for grants-in-aid, and financial assistance for states, with a focus on states' revenue resources up to the financial year 1978-79, maintenance of capital assets, and the upgrading of administration in backward states. It also examined the feasibility of a national fund for natural calamity relief and reviewed states' debt positions and relief policies, emphasizing efficient fiscal management and economic expenditure.

The 7th and 8th Finance Commissions continued these themes but updated the financial review periods to reflect the respective times. They maintained a focus on the principles for distributing estate duty and additional excise duties, with the 8th Commission also exploring revenue potential from unlevied taxes and duties. Both Commissions were tasked with ensuring efficient fiscal management and examining states' non-plan capital gaps, reflecting the government's intent to promote fiscal discipline while addressing disparities and improving infrastructure and administration standards across states.

The 9th and subsequent FCs began to adopt a more normative approach, assessing receipts and expenditures, encouraging financial discipline, and linking expenditure to revenue decisions. The concept of a national insurance fund for calamities was introduced in the 9th

FC's ToR.

The 10th and 11th FCs continued to focus on fiscal deficit reduction, maintenance of capital assets, and resource mobilization but also began to address the standards in non-developmental sectors and suggested linking grants to progress in implementing fiscal reforms.

The 12th and 13th FCs took the fiscal reforms further, with a focus on debt sustainability, macro-economic stability, and the impact of the Goods and Services Tax (GST). They also explored new areas like management of ecology, environment, and climate change.

The 14th and 15th FCs stressed maintaining a stable fiscal environment and fiscal consolidation roadmaps. They also considered the impact of GST and provided for performance-based incentives for states. There was a shift in population data usage from 1971 to 2011 for the 15th FC, which indicated a move towards recognizing recent demographic changes.

The ToR for the FCs have indeed become more comprehensive over time, with each commission building upon the scope of its predecessors to address the contemporary economic and fiscal challenges facing India.

The Terms of Reference for the 14th and 15th Finance Commissions showcased an evolved grasp of India's fiscal dynamics, emphasizing the importance of managing state and central debt prudently, equitable subsidy allocation, and encouraging states through incentives to enhance fiscal discipline and revenue collection. These terms also ventured into assessing the fiscal implications of the Goods and Services Tax and environmental fiscal reforms, alongside advocating for advancements in public financial management.

Contrastingly, the 16th Finance Commission's ToR signify a shift, eschewing numerous constraints in the guise of fostering prudent financial management, potentially providing broader latitude for the Commission's evaluative and recommendatory roles. The ToR of the 16th FC, by adhering closely to the Constitution's mandate, appears to provide a broad framework that allows the commission the flexibility to explore fiscal

challenges, including the impact of policy decisions such as freebies on state finances, and the future revenue streams of resource-rich states amidst global shifts towards net-zero targets. This flexibility might enable the 16th FC to craft recommendations that are both responsive to immediate fiscal needs and anticipatory of future economic trends.

TORs of the XVI FC

The Finance Commission shall make recommendations as to the following matters, namely:

i. The distribution between the Union and the States of the net proceeds of taxes which are to be, or may be, divided between them under Chapter I, Part XII of the Constitution and the allocation between the States of the respective shares of such proceeds;

ii. The principles which should govern the grants-in-aid of the revenues of the States out of the Consolidated Fund of India and the sums to be paid to the States by way of grants-in-aid of their revenues under article 275 of the Constitution for the purposes other than those specified in the provisos to clause (1) of that article; and

iii. The measures needed to augment the Consolidated Fund of a State to supplement the resources of the Panchayats and Municipalities in the State on the basis of the recommendations made by the Finance Commission of the State.

The Commission may review the present arrangements on financing Disaster Management initiatives, with reference to the funds constituted under the Disaster Management Act, 2005 (53 of 2005), and make appropriate recommendations thereon.

The Commission shall make its report available by 31st day of October, 2025 covering a period of five years commencing on the 1st day of April, 2026.

The evolution of India's financial relationship between the Centre and the States through various Finance Commissions illustrates a

dynamic fiscal federalism. Initially, the First Finance Commission assigned 50% of income tax proceeds to States, with subsequent Commissions gradually increasing this share, reaching 85% by the Ninth Commission. However, the Tenth Commission reduced this to 77.5%, citing the need for the Centre to maintain a strong incentive to collect income tax. Concurrently, Union excise duties were introduced into the distributable pool, starting with specific commodities like tobacco and expanding over time. The share of States in these duties also saw a progressive increase, with the Seventh Commission recommending a substantial jump from 20% to 40%.

The vertical distribution of Union taxes underwent a significant transformation following the 80th Constitutional Amendment. This amendment expanded the scope of shared taxes, leading to a nuanced approach in subsequent Finance Commissions. The Eleventh Commission, for instance, set the States' share in all Union taxes at 29.5%, considering additional compensations. The Twelfth and Thirteenth Commissions further refined this approach, focusing on equity and efficiency in resource distribution. The Fourteenth Commission, acknowledging the growing share of non-divisible cesses and surcharges, recommended increasing the States' share in tax devolution from 32% to 42%.

This shift marked a significant change in the Centre-State fiscal dynamics, moving towards a greater share of untied tax devolution to States. The Fourteenth Finance Commission's recommendation of a 42% share in tax devolution, encompassing a wide range of financial resources, represented a departure from sector-specific grants, aiming for more flexible and generalized financial transfers. This transition signified not only an increase in the aggregate transfer of resources but also a notable shift in the composition of these transfers, favoring untied tax devolution over earmarked funds.

The 15th Finance Commission, following closely on the heels of its predecessor, recommended a slight adjustment in vertical devolution, setting it at 41% of the divisible pool of taxes. This marginal one percent decrease from the 42% level suggested by the Fourteenth Finance Commission was primarily attributed to the reorganization of Jammu and Kashmir into two Union Territories—

Jammu and Kashmir, and Ladakh—necessitating a recalibration of fiscal allocations to accommodate the changed political and administrative status of these regions.

Finance Commission	States' Share in Net Proceeds of Income Tax (%)	States Share in the Net Proceeds of the Union Duties (%)	State's Share in All Shareable Union Taxes
First	55	40 (3 commodities)	-
Second	60	25 (8 commodities)	-
Third	66.66	20 (35 commodities)	-
Fourth	75	20 (all commodities)	-
Fifth	75	20 (all commodities)	-
Sixth	80	20 (all commodities)	-
Seventh	85	40 (all commodities)	-
Eight	85	45 (all commodities)	-
Ninth	85	45 (all commodities)	-
Tenth	77.50	47.5 (all commodities)	-
Eleventh	-	-	29.5 (1.5 on account of additional excise duties in lieu of sales tax on sugar, textiles, and tobacco)
Twelfth	-	-	30.5
Thirteenth	-	-	32
Fourteenth	-	-	42
Fifteenth	-	-	41

Source: Finance Commission Reports and Reddy & Reddy (2019).

If one looks at the state's share in all shareable union taxes, there was a sudden spike in the 14th Finance Commission. The 14th Finance Commission was in support of the states' concern over increased Union Government expenditure due to overlapping functions, leading to reduced revenue for vertical devolution. The states argued that Union spending on state subjects has led to increased expenditure at the Union level for primarily state responsibilities.

A related issue which was flagged by the 14th FC was that of cess and surcharges. Their share in the Union's gross tax revenue increased from 7.53% in 2000-01 to 13.14% in 2013-14. States argued that it limited their rightful share in tax devolution. However, the Constitution prevented including cess and surcharges in the divisible pool. To address this, the Commission suggested increasing the share of the divisible pool to compensate states, dismissing the option of a constitutional amendment. Regarding overall transfers from the Union to the states, the Commission emphasized the importance of tax devolution as the primary resource transfer method, being formula-based and conducive to fiscal federalism. For specific state needs not met by formula-based transfers, supplemental grants-in-aid are necessary. In 2012-13, the aggregate resource flow to states represented a significant portion of the Union's gross revenues, indicating limited scope for increasing the share of aggregate transfers considering the Union Government's expenditure responsibilities.

In his "Note of Dissent",[1] Prof. Abhijit Sen, a part-time member of the 14th Finance Commission, outlined several reasons for advocating a states' share of 38% in the divisible pool of taxes, as opposed to the proposed 42%. He acknowledged the Commission's major shifts, including a substantial increase in tax devolution and steps towards "co-operative federalism", which he supported. However, Sen expressed concern about the implications of these changes, particularly the strain on the Centre's net tax resources, which

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[1] Finance Commission. (2014). XIV Finance Commission. New Delhi: Finance Commission. (pp. 262-265).https://tinyurl.com/mr2hdme2.

would shrink by nearly 1% of the Gross Domestic Product (GDP). He stated, "with the Centre's net tax resources shrinking by nearly 1% of GDP as a result of the higher devolution, implementing these shifts will require fairly drastic alteration to present arrangements." Sen was particularly worried about the disruption of existing plan transfers and the potential confusion in incorporating present plan expenditures in the Commission's assessment. He noted, "The recommendations regarding devolution and revenue deficit grants are bound to disrupt existing plan transfers, with likely very serious effects in the first year of the award period."

Sen's dissent focused on the adverse effects of abruptly increasing the states' share to 42%. He argued that such a hike would necessitate significant cuts in current plan transfers from the Centre to states, testing states' capacities to reallocate resources swiftly. Concerned about specific grants like the Normal Central Assistance (NCA), Backward Region Grant Fund (BRGF), and Rashtriya Krishi Vikas Yojana (RKVY), Sen emphasized their importance and the negative impact of their potential discontinuation. He said, "discontinuance of NCA may cause some small deserving States to receive less... by way of untied transfers in 2015-16 after our award than the actual that they are likely to receive in 2014-15." Recognizing the need for fiscal consolidation and the necessity to support vital public services, Sen recommended a more conservative approach: setting the share of tax devolution at 38% in the first year of the award period, with the possibility of revisiting this decision later. This recommendation was made in the context of preserving existing plan grants and ensuring a smoother transition in fiscal arrangements between the Centre and states.

As mentioned above, the 15th FC didn't fiddle with the overall percentage of share of divisible pool of taxes. Hence, the challenge in front of 16th FC is that if it would be courageous enough to change this number.

Recommendations in absence of recommendations by SFCs

The constitution stipulates that the Finance Commission has to propose *"measures needed to augment the Consolidated Fund of a State to*

supplement the resources of the Panchayats and Municipalities in the State **on the basis of the recommendations made by the Finance Commission of the State***."*

Since the implementation of the 73rd and 74th Constitutional Amendments, Union Finance Commissions have been allocating funds to local bodies, starting with the 10th Finance Commission. This Commission, however, made its recommendations without input from State Finance Commissions (SFCs).

The 10th FC allocated ad-hoc grants to Panchayati Raj Institutions at Rs. 100 per capita based on the 1971 rural population, totaling Rs. 4,380.93 crores. For urban local bodies, it provided Rs. 1,000 crores over five years (1995-2000), based on slum population ratios from the 1971 Census. The 11th FC increased these grants by 50%, allocating Rs. 10,000 crores for 2000-05, primarily for civic service maintenance, barring salaries and wages. Of this, Rs. 1600 crores per year was for rural bodies and Rs. 400 crores for urban ones. However, these recommendations by union FC did not benefit from the inputs of the states. The 11th FC highlighted that many SFC reports failed to address key constitutional articles or clearly outline resource distribution principles.

The Commission also noted delays in State Governments' responses to SFC recommendations, advocating for a six-month deadline for action reports submission to the State Legislature, and prompt implementation of resource transfer-related recommendations. 11th FC came down heavily on the composition of the SFCs. One should quote the 11th FC.

"..while some have made such provisions in the State Panchayat/Municipal Acts but many have left it to the State Government to prescribe these details by rules. This has led to a wide diversity in this matter, often missing some essential features. For instance, in some States, serving government officers are appointed as chairperson and members of the SFCs and that too in ex officio capacities. This puts limitation on the ability of the SFC to act as an autonomous body to make recommendations in a free and independent manner, as has been envisioned in the Constitution. Although the rule of delegation is a permissive provision, but in such cases where SFC has to make recommendation in matters which affect the

State Government, the State Legislature should itself make relevant provisions."

- 11th FC, (pp.74-75).

Similarly, 12th FC further raised the grants to the local bodies. It recommended a sum of Rs.25,000 crores (20,000 crores for Rural Local Bodies or RLBs & 5,000 crores for Urban Local Bodies or ULBs) for the period 2005-10 as grants-in-aid to augment the consolidated fund of the States to supplement the resources of the municipalities and the panchayats. This is equivalent to 1.24 percent of the shareable tax revenue and 0.9 per cent of gross revenue receipts of the Centre as estimated by the Commission during the period 2005-10.

Again, the recommendations of 12th FC were made in absence of proper recommendations by the SFCs. Going by the Constitution, the union FC cannot make recommendations for local bodies in the absence of the recommendations by the SFCs. But 12th FC also found itself helpless in the absence of these recommendations. It noted that both the data furnished by the states as well as the SFC reports failed to provide a sound basis for estimation of the required augmentation of the consolidated funds of the states. It, therefore, recommended grants on an ad hoc basis.

"States have often been not prompt enough to constitute the state finance commissions with the required regularity. In many instances, after the recommendations are received, decisions have been kept pending. Even grants recommended and earmarked for the local bodies by the earlier finance commission, having been received into the consolidated fund of the state, have not been passed on to the local bodies in certain cases."

- 12th FC, (pp.26).

The 13th FC's recommendations for local bodies included a two-part grant system: a basic grant and a performance-based grant. The basic grant equals 1.5% of the divisible tax revenue from the previous year, subject to adjustments based on final accounts. This grant is available to all states for the entire period of 2010-2015. A portion of this grant is specifically allocated to areas under Schedule V and VI, benefiting 16 states with a total of Rs 1,357 crores, which is about 2.3% of the total basic grant. The performance grant, starting in the

financial year 2011-12, is set at 0.5% for 2011-12 and increases to 1% for the remaining period up to 2014-15. The allocation of the performance grant to each state is contingent upon meeting a nine-point set of conditions. 13th FC adopted the concept of performance grants for local bodies. Needless to say, these recommendations were also made in the absence of proper recommendations by the SFCs.

"The experience of SFCs has not been found to be successful for a number of reasons. SFCs themselves are hampered by lack of data. Limited capacity and poor ownership by State Governments compounds this problem. There is little incentive for them to produce a comprehensive report. Further, or because of these reasons, states are not overly keen either to accept their recommendations or to place the Action Taken Report before the state legislature in a timely manner. This situation provides a further disincentive for SFCs to produce good quality reports. There is, thus, a need for State Governments to ensure that the recommendations of SFCs are implemented without delay and that the Action Taken Report is placed promptly before the legislature."

-13th FC, (pp. 171).

For the period of 2015-2020, the 14th FC set the total grant amount at Rs. 2,87,436 crores. Of this, Rs. 2,00,292.20 crores were allocated to Panchayats and Rs. 87,143.80 crores to Municipalities. This grant-in-aid is fixed for the entire award period. However, like previous FCs, 14th FC also found itself **"handicapped"**, "like the previous Finance Commissions, in using the supplied data **(from SFCs)** to determine the resource gap at the level of rural and urban local bodies"

"It was noticed that sometimes the State Governments rejected SFC reports without recording reasons. In some States, even when the recommendations were accepted, the timeframe for implementation was not specified in the Action Taken Report presented to the legislature. Some Chairpersons highlighted the fact that the financial recommendations get acted upon while those dealing with systemic improvements are seldom addressed. They pointed out that lack of coordination between the finance department and those dealing with rural and urban affairs hinders the implementation of measures for augmentation of resources suggested by the SFC."

-14th FC, (pp. 103).

Similarly, 15ᵗʰ FC recommended total grants to local bodies to the tune of Rs 4.36 lakh crores (a portion of grants to be performance-linked) including: (i) Rs 2.4 lakh crores for rural local bodies, (ii) Rs 1.2 lakh crores for urban local bodies, and (iii) Rs 70,051 crores for health grants through local governments. The 15th FC also raised issues with the SFCs. In fact, 15th FC also included a conditionality on accessing the grants for the local bodies, i.e., that all States which have not done so. States have been asked to "constitute State Finance Commission (SFC), act upon their recommendations and lay the explanatory memorandum as to the action taken thereon before the State legislature on or before March 2024." After March 2024, 15ht FC has recommended that no grants shall be released to "a State that has not complied with the Constitutional provisions in respect of the SFC" and few other conditions.

Finance Commissions have not got the benefit of recommendations of SFCs, as most State Governments did not constitute them in time and did not give due importance to strengthening this critical constitutional mechanism. Even now, only fifteen States have set up the fifth or the sixth SFCs. Several States have still not moved beyond the second or third SFC. The current Commission too faces a similar challenge in suggesting measures based on the recommendations of SFCs.

-15th FC, (pp. 177).

Decentralization in India has faced significant challenges over the past three decades, undermining its core principle of stimulating intergovernmental competition for maximum social welfare. Elections in Panchayati Raj Institutions (PRIs) remain irregular, and many states have experienced prolonged periods without local bodies. Despite some representation of weaker sections like Scheduled Castes, Scheduled Tribes, and women in PRIs, issues such as inadequate devolution of powers, financial constraints, and the practice of 'Rule by Proxy' persist.

Under the cooperative federalism paradigm, the union FCs have been giving grants to the local bodies so that the third tier has financial autonomy too. However, from the above discussion it is clear that this has led to the states simply ignoring their own responsibilities to local bodies. Thus, ongoing struggle suggests a need for reevaluating the role and effectiveness of State Finance Commissions (SFCs) in

empowering local governments.

State and Union Finance Commissions play a crucial role in the financial well-being of rural and urban local bodies (RLBs and ULBs), which often rely heavily on grants due to limited revenue-generating capacity. The SFCs are tasked with allocating resources and recommending strategies for local bodies to increase their tax and non-tax revenues. However, the effectiveness of SFCs is hindered by various issues. Many states have not established SFCs as mandated by the Indian constitution, resulting in a lack of financial oversight and guidance for local bodies. Additionally, operational challenges like resource constraints, lack of office space, and delayed report submissions further impair the functionality of SFCs. These deficiencies raise questions about the constitutional obligation of states to support local bodies and suggest that the next finance commission might reconsider granting funds to local bodies if SFCs continue to underperform.

As discussed above, the operational difficulties of SFCs are manifold. They often lack access to accurate and updated financial data of local bodies, leading to ad-hoc recommendations not based on thorough fiscal analysis. Furthermore, many states fail to act on the SFCs' reports, either by not presenting them before the state legislature or by delaying the implementation of their recommendations. This lack of action contrasts with the Union Finance Commission, whose recommendations are nearly always accepted and implemented by the union government. The failure of states like Bihar to release allocated funds highlights the disparity in commitment to local bodies' financial health. Given these issues, it is essential for states to not only adhere to constitutional mandates but also to ensure a more robust and effective decentralization process, where intergovernmental competition focuses on improvement rather than a race to the bottom.

Thus, an important question for the 16th FC would be to ascertain if it should at all give any grants to the local bodies of the states which have not adhered to the constitutional mandates around the State Finance Commissions.

Does the Constitution mandate union Finance Commission to give grants to the local bodies?

As described in the previous sections, ever since the enactment of the 73rd and 74th Constitutional Amendment Acts, the union FCs have given grants to the local bodies. However, constitutionally, the union FC has to recommend *"measures needed to augment the consolidated fund of a state to supplement the resources of the Panchayats and Municipalities in the State on the basis of the recommendations made by the Finance Commission of the State."*

It implies that the union FCs are not legally obligated under the constitution to assign funds to local governing bodies. Their role is not to directly distribute grants, but rather to suggest strategies that can increase the financial resources available in the Consolidated Fund of a state to supplement the resources of the Panchayats and Municipalities. This fund is a crucial component of a state's finances, as it is the primary account from which all government expenses are drawn. Thus, 16th FC should take a call if at all they should make any grants to local bodies directly.

Population Criterion

The population criterion in the 16th Finance Commission of India has become a contentious issue, particularly in the context of fiscal federalism and equitable distribution of financial resources among the states. This controversy primarily stems from the shift in the population data used for determining the expenditure needs of states.

In the 15th Finance Commission, a significant change was made where the population figures from the 2011 census were referred to, rather than using the 1971 population numbers, which had been the standard practice until then. This shift was seen as contentious, especially by states that had successfully stabilized their population growth rates. Many of these states, particularly in southern India, viewed this change as a 'penalty for good performance' in population control.

The criteria and weights assigned for horizontal devolution in the

previous 15th Finance Commission included 15% weight each for population and area, 10% for forest and ecology, 45% for income distance, 2.5% for tax and fiscal efforts, and 12.5% for demographic performance. This methodology raised concerns among states with higher human development indices and lower population growth. In the fiscal redistribution process based on population weightage, these states faced a reduction in their shares, leading to discomfort and disagreement with the proposed criteria.

As the 16th Finance Commission continues its work, it must navigate these complexities and find a balanced approach that accommodates the diverse demographic dynamics and development needs of Indian states. The challenge lies in formulating a fiscal redistribution mechanism that is equitable, acknowledges the efforts of states in controlling population growth, and aligns with the broader goals of national development and fiscal federalism.

Conclusion

In conclusion, the Finance Commission of India, established under Article 280 of the Indian Constitution, plays a pivotal role in managing the country's fiscal federalism. Its constitutional mandate ensures equitable financial resource distribution between the Union and the states, addressing critical aspects of federalism in India. The Commission's evolution, especially with the establishment of the 16th Finance Commission, reflects the dynamic nature of India's fiscal federalism, adapting to changing economic conditions and policy landscapes.

The terms of reference of the 16th Finance Commission illustrate a broad, flexible framework, allowing the Commission to address contemporary fiscal challenges, including the impact of policy decisions on state finances and future revenue streams in the context of global shifts towards net-zero targets. This approach differs from previous Commissions, which were more constrained by specific guidelines.

One of the significant challenges for the 16th Finance Commission is the allocation of states' shares in the divisible pool of taxes. The substantial increase in states' shares to 42% by the 14th

Commission, a significant departure from previous increments, raises questions about sustainability and the need for reassessment. The 16th Commission faces the task of potentially revising this fiscal parameter in a context where states' fiscal autonomy has become increasingly important.

Another critical area of focus is the governance and funding of local bodies. The historical practice of the Union Finance Commission directly funding local bodies, despite its constitutional mandate to advise on augmenting state funds to support these entities, raises questions about the appropriateness and necessity of this trend. The 16th Commission must consider whether to continue this practice or align more closely with constitutional directives.

Moreover, the challenge of operational inefficiencies and underperformance of SFCs cannot be overlooked. The SFCs' role in allocating resources and recommending strategies for local bodies is crucial, but their effectiveness is hindered by various operational challenges and a lack of adherence to constitutional mandates by states. This situation poses a significant dilemma for the 16th Finance Commission regarding the direct allocation of funds to local bodies in states that have not complied with constitutional provisions regarding SFCs.

In sum, the 16th Finance Commission's recommendations will be instrumental in shaping India's fiscal federalism. It must navigate complex issues like the vertical division of taxes, funding local governance, and the role of SFCs, all while ensuring that its decisions foster sustainable economic growth, equitable resource distribution, and the overall financial health of the country. The Commission's approach and recommendations will thus be crucial in addressing the evolving fiscal landscape of India and ensuring a balanced and effective federal fiscal structure.

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The views of the authors are personal.

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J.S Rajput

Gandhi Remains Relevant in Reshaping the Global Future

The human endeavour to enhance the pace of growth and development in the third decade of the 21st century would also include a comprehensive focus on true progress. Human ingenuity that fathered artificial intelligence now faces it as a competitor! Growth and development must assist the progress of human beings and humanity. And who could be a better resource to comprehend the necessity of humane element in pragmatic terms than Mahatma Gandhi in the present-day world that is confronting wars, violence, distrust and hatred, uncertainty and apprehensions. The life, living and labours of Gandhi deserve a close scrutiny by the young professionals in the world that they are destined to shape during the next half-century, and more. A great visionary, he had expressed serious concerns in 1922 on how in independent India, four things could weigh heavily on people: defects in elections, injustice, treachery of the rich and burden of administration! Young professionals are now getting exposure to rich and researched theories on management and administration in institutions of high credibility and acceptability. In every sector, their expertise is necessary. Professionals working in India in varied sectors, and most particularly in civil service, would certainly be augmenting their own growth and enhancing the performance quotient of their efforts in several aspects, particularly in dealing with the 'last man in the line' that deserves empathy, sympathy, and human dignity for which he has waited for generations and centuries. Reflecting on the life and learning of MK Gandhi, one finds the sparks that pave the path to become a part of his universal and eternal mission of striving for a cohesive, dignified life for one and all. Adversities that he faced in life opened new horizons before

him, helped him universalize his outlook and innovate corresponding initiatives based upon human values that primarily included truth, peace, nonviolence, Dharma–the righteous conduct, and love. This paper, particularly prepared for teachers, administrators and young professionals in every field, reflects on certain instances and principles from the life of Mahatma Gandhi that could become the beckons of new ideas and strategies to achieve the goals they set before them. It could ignite the fire within the young to achieve excellence with dexterity and determination.

The Context

The young of the 21st century are already reshaping the world of tomorrow, which is transforming itself at a break-neck speed. This reshaping is taking shape in schools, universities, institutions, specialized laboratories, establishments devoted to higher education, research and innovations. This reshaping is taking place in production centres facing tough competition, and hence encouraging research in specific areas. Many positive things are happening that are encouraging the sharp young minds blessed with ideas and imagination, and they are keen to put their ideas to a reality test in the vast arena opening up before them, consequent upon advances in science, technology, and information and communication technologies (ICT). But there is also another side to this. Fresh challenges are emerging before the global community due to the breaking of the sharply sensitive man-nature bond. It has reached a stage where questions are being asked whether planet earth would survive if the rot is not checked. Never before have human beings had so much acquaintance with the secrets of nature, never before human beings were confronted with enormous challenges emerging out of climate change, global warming, varied kinds of pollution on one hand, and those of war, violence, fundamentalism, terrorism, insecurity, weaponization and mutual distrust, on the other. Where could one search for the ray of hope? For human beings, there is always a ray of hope; its young are the hope for a better tomorrow, a world of peace, the world as a family; everyone's fate is linked to everyone else. The canvas of ideas and action plans of the generations ahead shall have to be worked out around "one planet, one humanity, and one future"! They will have to

comprehend the how and why of human beings finding themselves in a mess! Numerous new ideas and possibilities are emerging from the minds of the young today who have learnt to 'live together, share together new knowledge and skills', and work together to make life better for one and all—in the spirit of "the world is but one family".

Ideas and imagination of the young may be taking shape in schools, institutions, universities, play fields, and also in some small corner of a room in the company of a personal computer. It could also be taking shape in farms and fields. These must never be impeded in anyway and must be encouraged. In the ideas and imagination of the young and in their competence, devotion and dedication, lies the ray of hope for humanity. One would like to put it like this: it is about preparing the young in a manner that transforms them from a 'person to a personality'. We have in history, torch bearers who paved the path for humanity to ensure how everyone could become 'humane' in words and deeds. It is in that context that people in a strife-torn world are making fresh attempts to understand the word, deeds and philosophy of those who tried their best to wean people away from hatred, wars and violence, who have prevented a large number of people in numerous generations to suffer hunger, poverty, humiliation, social ostracization, and made efforts to ensure human dignity.

Mohandas Karamchand Gandhi – Mahatma Gandhi – devoted his entire life for a mission through which he established the potential to transform the world and could lead the transforming world in a particular direction. His was a unique life in many ways, including the fact that he preached what he practiced! The world came to know him as the "Apostle of peace and Nonviolence". For MK Gandhi[1]: *"Truth is God. Devotion to truth is the sole justification for our existence. There should be Truth in thought, Truth in speech and Truth in action"*. *"God as Truth has been for me a treasure beyond price; may He be so for every one of us"*, he said. How could one reach the Truth that was God for Gandhi? He very

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[1] These quotes from Gandhi have been taken from the publication of 1946: 'Character and Nation Building' by M.K. Gandhi, as abridged by Valji Govindji Shah, published by Navjivan Publishing House, Ahmedabad, 1959

clearly enunciated his philosophy in pragmatic terms[2]: "*Truth alone is, being God himself. And the only means of realizing it is ahimsa of love. Without ahimsa it is not possible to seek and find Truth. Mere non-killing is not enough. One who follows the law of love must not be angry even with the perpetrator of the greatest imaginable wrong, but must love him, wish him well, and serve him*". What is generally ignored in interpreting these statements, is his comprehension of the realities of life. He clearly mentions that while one must love the wrongdoer, it would just not be acceptable to submit to his wrongs and injustice. It must be resisted, with all the might, but without resentment and ill will to the wrong doer! All that Gandhi preached, practiced, and put to action revolves around his firm and unshakeable conviction in Truth and Nonviolence—Satya and Ahimsa. Once these are understood, internalized, and put to practice, righteous conduct and love would just become an integral part of the personality. Young Mohandas had learnt a lot from his mother. She had told him that if you could save one life, your life is successful. More, the merrier. He never forgot it. He had given his word to his mother not to eat non-vegetarian food, and dexterously adhered to it. Some of the incidents, happenings and circumstances in his life could be recalled to realize that his responses were powerful and all-embracing.

The Scenario

20th century was the century of rapid change. There were scientific and technological breakthroughs, uprisings and struggles for freedom from alien domination. There were two world wars; violence was witnessed in its most heinous forms. The Atom was brought under human control; the first atomic explosion was conducted successfully on July 16, 1945 at Los Alamos, New Mexico. Yes, scientific knowledge was at its peak, also manifesting in corresponding technological gadgets that were evolving at the needed pace. Sadly enough, Hiroshima and Nagasaki also happened on July 6 and 9 respectively of 1945. Knowledge is necessary and its acquisition is an instinctive human pursuit, but something more than

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[2] Ibid

mere more knowledge and better technical gadgets is also necessary to prevent wars, violence and future Hiroshimas. It was realized that knowledge must be tested on the altar of wisdom, discretion, and above all, humanity and 'essential unity of all human beings'. And someone was performing his 'Experiments with Truth' as a migrant in South Africa – as the world was transitioning to 20th century – and later, in enslaved India. He had, as a United Kingdom-educated young barrister, faced a series of humiliations including physical assaults solely because the colour of his skin was different from those who had colonized South Africa. Before he set foot on the soil of South Africa, he was a barrierless Barrister who '*used to attend High Court daily whilst in Bombay, but cannot say that I learnt anything there*'. He tried getting a teaching job but was not accepted as he was not a graduate! He had already fallen in love with truth and justice to the deserving. He gladly accepted the opportunity to go to South Africa to assist a law firm owned by an emigrant businessman from India, a Gujarati by birth, Dada Abdullah, in briefing its lawyers and helping them communicate between Gujarati and English. After going through the papers, the young lawyer suggested outside the Court settlement. Both the parties were surprised. That was very much unlike a lawyer. The Civil Suit was decided by compromise. The main reason for his lack of success in the Courts in India after his return from United Kingdom was his resolve not to give up Truth under any circumstances. Every lawyer, then and now, knows the consequences of such 'obstinacy' very well, as the basic premise followed in practice is to 'defend one's client in every manner possible'!

A major event in South Africa related to MK Gandhi was the establishment of the Natal Indian Congress (1895). Upon his return to India in 1896, he had meetings with leaders like Tilak and Gokhale. He helped the British in Boer war in 1899, published Indian Opinion in 1903, created Phoenix Ashram in 1904, provided service to the injured in Julu Revolt and gave birth to the term Satyagraha in 1906. He launched Satyagraha against the Black Act in 1907, was attack by Mir Alam in 1908, wrote the 'Hind Swaraj' in 1909 aboard the ship, established Tolstoy farm in Johannesburg in 1910, went on the 7-day fast, and was arrested and released in 1913. He observed

the14-day fast in 1914, rendered services in the First World War, and returned to India in 1915. For Barrister MK Gandhi, South Africa was a fresh start, as life was hardly exciting before that point. It could have demoralized any young person. Instead, what a transformation was achieved in his persona by the then social, cultural and racial environment that prevailed in South Africa at that juncture of history!

A great admirer of Gandhi, Nelson Mandela, once made an extremely apt remark that 'you sent a young Barrister to us, and we returned a Mahatma to you'. Gandhi's actions and contributions could be divided into two major segments: South Africa from 1893 to 1914, and his return after 21 years to India on January 9 of 1915 until one of the most illustrious of human journeys on planet earth was cut short by an assassin on January 30, 1948.

His real transformation began when he reached the shores of Natal. Dada Abdullah, who had invited him to South Africa to handle his case, came to receive him; the young barrister Gandhi was keenly observing the scenario around, as he did all along and everywhere in life. He writes in his autobiography[3]: "*As the ship arrived at the quay and I watched the people coming on board to meet their friends, I observed that the Indians were not held in much respect. I could not fail to notice a sort of snobbishness about the manner in which those who knew Abdulla Sheth behaved towards him, and it stung me. Abdulla Sheth had got used to it*". Next, when he was taken to visit the Courts in Durban, the magistrate asked him to remove his turban. Yes, some categories of turbans were allowed, others were not. He moved out but did not remove his turban. The real, lasting and transformative humiliation came when the young Barrister was thrown out of his train compartment as those belonging to his race and skin colour were not permitted to sit there, and he was forcibly thrown out of the compartment on the railway platform.

The British-educated barrister with his first-class ticket was humiliated, beaten, thrown out of the train on the platform of the Pietermaritzburg railway station, and left to fend for himself on that freezing night. He pondered over it. Ordinarily, the first normal

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[3] M.K. Gandhi, An Autobiography; The Story of My Experiments with Truth, p. 98

reaction would be that of hatred to the perpetrator of the crime. But MK Gandhi writes about it[4]: "*I began to think of my duty. Should I fight for my rights or go back to India, or should I go to Pretoria without minding the insults, and return to India after finishing the case. It would be cowardice to run back to India without fulfilling my obligation. The hardship to which I was subjected was superficial – only a symptom of the deep disease of colour prejudice. I should try, if possible, to root out the disease and suffer the hardships in the process. Redress for wrongs I should seek only to the extent that would be necessary to the extent for the removal of the colour prejudice.*"

This incident offers a great revelation in what is character, what is compassion, and how one could take decisions even in the most provocative conditions without losing one's cool; maintaining his Buddhi and Vivek—wisdom and discretion. He extends and expands his horizons, thinks of wrongs being perpetrated on an entire race, or rather all races; and that day his own role emerges in all clarity before him: he shall devote himself to annihilate the inhuman practice of apartheid that discriminates amongst the creations of the Almighty, His children! The enormity of the practice of racial discrimination being inflicted on generations for no fault of theirs stood fully revealed to him. He knew what was ahead for him.

The Pietermaritzburg incident is indeed historic for humanity. MK Gandhi had noted that his co-passengers, belonging to the ruling privileged class had also protested against his humiliation, and had justified his occupying the allotted seat. Hatred is never universal, love is. People could survive without hate but not without love. Violence is not the way against violence. It has to be something else. Pietermaritzburg railway station remembers Gandhi; there are three long boards one of which states that this is the railway station where the seeds of Satyagraha were sown. So, how much of the credit must accrue to the man who illtreated barrister Gandhi! The importance of this transformative instance was best articulated by Mahatma Gandhi at a much later stage. One Dr. Mote asked him once[5]: "What was the most creative incident in your life"? In the words of Narayan

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[4] Ibid, pp. 104

[5] Narayan Desai, Gandhi Katha, Ahmedabad management association, Ahmedabad, 2011

Desai: "*Gandhi says that there have been many such instances in my life, but I would probably consider the experience I had at the Pietermaritzburg to be the most creative one. If there is one incident which has contributed to my growth the most, it is that. What is that incident? A very simple one. It is linked to tradition. In South Africa, only the whites could sit in the first-class in trains. Seeing a black person sitting there, a white man who entered the compartment went back. He brought about an official*". It confirmed his belief that humanity is all pervasive, and no race, religion, region, caste, creed or colour of the skin could deprive people of the human instinct to love others, serve others, and think of humanity as one intimately inter-connected organic creation.

Confronting the Colonial Mindset

The spirit of the struggle in South Africa could be comprehended in a nutshell. In 1890-91, 150,000 Indians migrated to this country unknown to them, in the hope of a better life than languishing in poverty in India. Most of them settled in Natal. This poverty was also man-made, inflicted upon a nation that was known to be highly prosperous before being colonized. Their presence in South Africa was resented and these people were despised by the white population, though they themselves were only migrants to the place. Romain Rolland[6] describes it: "*The white population resented their presence, and the government encouraged the xenophobia of the whites by a series of oppressive measures designed to prevent the immigration of Asiatics and to oblige those already settled in Africa to leave. Through systematic persecution, the life of the Indians in Africa was made intolerable, they were burdened with overwhelming taxes and subjected to the most humiliating police ordinances and outrages of all sorts, ranging from the looting and destruction of shops and property to lynching, all under the cover of 'white' civilization*". He had to confront a similar situation in Champaran district of Bihar where the exploitation of farmers forced into indigo plantation combined with several other atrocities touched his heart and led to the launch of his first major Satyagraha that attracted international attention.

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6 Mahatma Gandhi: The Man Who Became One with the Universal Being, by Romain Rolland

The Book

Whenever one attempts to understand the influences that helped MK Gandhi to present a revolutionary model of achieving human rights and human dignity for one and all, one comes across a couple of persons about whom he himself has mentioned in considerable detail. The first was his mother, and two great plays, Shravan Kumar and Raja Harishchandra, highlighting the devotion to parents and to Truth that made a huge impact on him. He became a great admirer of the famous Indian treatise Gita, which represents the great dialogical tradition of Indian knowledge quest. Writings of Tolstoy influenced him as he found his ideas very near to those of his own. John Ruskin's influence was really lasting and transformed him overnight to make an unprecedented move—move away from a cosy well-established lawyer's life to that of a labour in a farm away from urban life! MK Gandhi had read Ruskin's "Unto This Last" during a twenty-four-hour journey from Johannesburg to Durban; he could not get any sleep that night and was "determined to change my life in accordance with the ideals of the book"! In his Autobiography, he mentions the teachings of "Unto This Last" as he understood them to be:

"1. *That the good of the individual is contained in the good of all.*

2. *A lawyer's work has the same value as the barber's, as all have the same right of earning their livelihood from work.*

3. *That a life of labour, i.e., the life of a tiller of the soil and the handicraftsman is the life worth living."*

For Gandhi this was Sarvodaya – uplifting all in every respect – giving human dignity to one and all. One just cannot be happy if the neighbour is unhappy. It extends from family to the global family of nations.

The Last Person in the Line

His experiences emerged in continuity after facing humiliations himself, and witnessing the trampling of human dignity. And that was not confined only to the State; social, cultural and economic deprivations were also being inflicted by the select groups in the society, the elites! It was this level of deprivation that made Gandhi

devote his entire life to give due human dignity to every person. It would be relevant to refer to the Talisman[7] that he gave to everyone, and one could state without any reservations that if it is put to implementation, the shape of the world would be far different than that of today, in social, cultural and economic contexts:

"I will give you a Talisman.

Whenever you are in doubt or when the self becomes too much with you, apply the following test: Recall the face of the poorest and the weakest man whom you may have seen and ask yourself if the step you contemplate is going to be of any use to him. Will he gain anything by it? Will it restore him to a control over his own life and destiny? In other words, will it lead to Swaraj for the hungry and spiritually starving millions?

Then you will find your doubts and your self melting away".

Why was such an exhortation to every citizen necessary? The times of Gandhi were those of widely prevalent discriminations, inequality, and inhuman restrictions imposed on what were known to be the colonies. People were deprived of access to education, indigenous systems were replaced by transplanted systems that were meant to prepare necessary support personnel for the ruling dispensation. Shashi Tharoor[8] puts it in these words: "*At the beginning of the eighteenth century, as the British economic historian Angus Maddison has demonstrated, India's share of the world economy was 23 per cent, as large as all of Europe put together. [It had been 27 per cent in 1700, when the Mughal Emperor Aurangzeb's treasury raked in 100 million pound in tax revenue alone.] By the time the British departed India it had dropped to just over 3 per cent. The reason was simple: India was governed for the benefit of Britain. Britain's rise for 200 years was financed by its depredations in India.*" Not only this, the British left India with the literacy rate of 16 per cent, and female literacy rate of 8 per cent – only one of every twelve Indian

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[7] This talisman was being reprinted on every book for school education and teacher education mid-seventies onwards as the initial page in every book published for twelve-year schooling and also for teacher education by the National Council of educational research and Training, NCERT, the national body that advises the government of India on every matter connected with school education and teacher education.

[8] Shashi Tharoor, An Area of Darkness, P. 4

women could read and write in 1947.

Throughout his public life initiatives, he insisted on education being given top priority, and himself taught children in his Ashrams; he even learnt other languages to teach children in their mother tongue. In a letter written on January 24 of 1922, he mentions the gist of the concerns and also indicates what is the way out. He was always thinking of how India must manage and administer itself after independence:

"*We should remember that immediately on the attainment of freedom our people are not going to secure happiness. As we become independent, all the defects of the system of elections, injustice, the tyranny of the richer classes as also the burden of running administration are bound to come upon us. People would begin to feel that during those days, there was more justice, there was better administration, there was peace, and there was honesty to a great extent among the administrators compared to the days after independence. The only benefit of independence, however, would be that we would get rid of slavery and the blot of insult resulting therefrom.*"

"*But there is hope, if education spreads throughout the country. From that people would develop from their childhood qualities of pure conduct, God fearing, love. Swaraj would give us happiness only when we attain success in the task. Otherwise, India would become the abode for grave injustice and tyranny of the rulers.*"

Preparing for the Future

He practiced whatever he preached. He taught school children in South Africa and ensured they all get initial education in their mother tongue. He was essentially a lifelong learner and a lifelong teacher. What he wanted from education is evident in the following words[9]:

"*…But I had given the first place to the culture of the heart or the building of character, and as I felt confident that moral training could be given to all alike, no matter how different their ages and upbringing. I decided to live amongst them, all the twenty-four hours of the day, as their father. I regarded character-building as the proper foundation for their education and, if the foundation was properly*

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[9] Young India, July 5, 1928.

laid, I was sure that the children could learn all the other things themselves or with the assistance of friends." He elucidates the basic principle of education as progressing ahead from 'known to unknown'[10] :

"In my scheme of things hand will handle tools before it draws or traces the writing. The eyes will read the pictures of letters and words as they will know other things in life, the ears will catch the names and meanings of things and sentences. The whole training will be natural, responsive and, therefore, the quickest and the cheapest in the world." And further: *"Among the many evils of foreign rule, this blighting imposition of a foreign medium upon the youth of the country will be countered by history as one of the greatest. It has snapped the energy of the nation; it has shortened the lives of the pupils".*

In 1909 he had penned dexterously his ideas and analysis in a small booklet "Hind Swaraj" which was initially brushed aside as too idealistic and impractical, but later attracted global attention after a couple of decades. Same became the case with his model of education popularly known as "basic education" or Nai Talim. The focus was agriculture and rural India, that constituted the backbone of Indian economy and promised to be the only viable alternative to provide work and opportunity to earn a dignified livelihood to everyone. The pressure of modernization and several other factors have relegated it to the background. However, providing job opportunities to every deserving one remains a dream not only in India but also elsewhere.

A query is often raised by the young and the old alike: whether Gandhi is relevant or not! Further, the blame for slow progress and disproportionate distribution of the benefits of progress and development is often shifted to the doors of the State. Mahatma Gandhi understood India, and Indians, far more than his other illustrious contemporaries of the Indian freedom struggle. Action for inclusion was to begin at the grassroots level, at the individual level, at the village and community level. All of this practical philosophy was so precisely put in essence in a few words in a letter he wrote to Julian S. Huxley, the then Director-General of The United Nations

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[10] *Harijan,* August, 28, 1937

Educational, Scientific and Cultural Organization (UNESCO)[11]: "*I learned from my illiterate but wise mother that all rights to be deserved and preserved come from duty well done. Thus, the very right to live accrues to us when we do the duty of citizenship of the world. From this one fundamental statement, perhaps it is easy enough to define duties of men and women and correlate every right to some corresponding duty to be first performed. Every other right can be shown to be usurpation hardly worth fighting for.*" It is impossible to trace another statement that would integrate the concept of human rights and human duties and make it amply evident to the reader how implicitly the two are interlinked; one just cannot be thought of, or acted upon, without the living presence of the other!

The Ray of Hope

Access to good quality education and skill acquisition was dearest to his heart, as it was the only ray of hope for the deprived and the devastated to live a dignified life. The second half of the 20th century has witnessed the global acceptance of universalizing Education for All. This inherent and instinctive human right has been accepted by practically every country, and is a major part of the Universal Declaration of Human Rights under the United Nations. Gandhi applied the principle of 'Preach (only) what you Practice' in this case as well. In fact, he suggested a model of education that was suitable for implementation in India, keeping in view its social and economic contexts. It was an agriculture-based society, that was languishing in poverty, ill health and hunger.

Gandhi was the first to have given a taxonomy of education: to bring the best out of "head, hand and heart". It is also alternatively expressed as "Self, Society, and Nature", or "Body, Mind and Spirit". He wrote extensively on education, proposed a model, and got it implemented when during the British rule, state governments were formed in certain states. He was really concerned about the medium of instruction in schools, and had a very clear opinion [12] about it:

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[11] The Director -general of the UNESCO had asked Gandhi ji to offer his comments on the Draft of the Universal Declaration of Human rights charter, that was being readied for UN approval. Gandhi's reply was sent on May 25, 1947; it has become one of the most powerful statements ever made on human rights and duties.

[12] Young India, July 5, 1928

"*Among the many evils of foreign rule, this blighting imposition of a foreign medium upon the youth of the country will be countered by history as one of the greatest. It has snapped the energy of the nation, it has shortened the lives of the pupils*".

Growing Up

There were occasions when it was pointed out to him that there could be instances of some contradictions in his present and earlier views. He accepted it, and gave a great message to the young of every generation: people grow up by exerting themselves, they make their own analysis of the ideas and explanations offered by their illustrious predecessors, known and unknown, famous or otherwise. Growing up implies maturing up of thought, and intent for action. People had serious reservations about some of his ideas on nonviolence, celibacy, tastelessness, mechanization, industrialization, and much more. He had seen, analysed and lived life in all of its dimensions, tested these ideas and wrote on each one of them. Work, food and shelter are basic requirements for everyone, and must be available without any discrimination of any sort. His *Takali* and *Charkha* – the spinning wheel – represent the basic concerns that dominated India a century ago, and are not yet fully resolved. Dynamism is a necessary component of life. Every generation has its own aspirations, and must be prepared to give these a concrete shape. That is how human civilizations grow, ideas flourish and fructify, and humans progress and march ahead. On a couple of occasions, he very clearly removed the doubts:[13]

"*I would like to say to the diligent reader of my writings and to others who are interested in them that I am not at all concerned with appearing to be consistent. In my search after truth, I have discarded many ideas and learnt many new things. Old as I am in age, I have no feeling that I have ceased to grow inwardly or that my growth will stop at the dissolution of the flesh. What I am concerned with is my readiness to obey the call of Truth, my God, from moment to moment, and, therefore, when anybody finds any inconsistency between any two writings of mine, if he still has faith in my sanity, he would do well to choose the later of the two on the same subject.*"

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[13] Harijan, April 29, 1933

What is the takeaway from the life of a person who rose from ordinary circumstances in his days of schooling, education and growing up, to the towering stature of a person who became a global embodiment of truth, peace, nonviolence, love and righteous conduct? He was a voracious reader and learner. When in tough conditions, he expanded his horizons, developed the skill of perceiving smaller concerns on a larger, or rather global canvass. A wrong was to be resisted, injustice protested, but all without any ill-will or prejudice to the doer. It neither was, nor is easy, but he showed how he could do it in severe circumstances. Humanity shall continue to aspire to transform this planet as an abode of peace and universal human brotherhood. And in doing so, they shall always be guided by the Mahatma, his principles and their universality and eternity. Eventually, it has to be one planet, one family and one future.

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Kirit S. Parikh

Entrepreneurship-based Model of Development *
Start-Ups for Inclusive Industrialization

Start-ups are something that we all think are going to act like a magic wand in the world, or at least, in our country; but let me first concentrate on what inclusive growth is. It is not just industrial growth. It provides ease of living to all, and it gives equal opportunities to everyone. I think it requires access to quality public goods and services. This is extremely critical and, of course, it needs economic growth. Now if you look at the Indian economy since independence, you will get some idea of how far we have come. India was one of the poorest countries in the world. When the British left the country, Robert Clive was one of the richest men when he left the shores of India. I think our population at that time was 361 million, with life expectancy at birth being 32.4 years for men and 31.7 years for women. I think one can say that literacy was 27.2% for men and 8.9% for women. Our net national product was about $50 per capita and we had only about 18,000 doctors. Over the years, we have made a lot of progress and it's not just in the last 8 to 9 years. Every government builds on the shoulders of the previous government. We have made gradual, but definite progress and we have accelerated the progress—fortunately and hopefully, we will continue with this acceleration.

I think our approach to development is that each plan reiterated the same goal. And it is the consistency of Indian planning that our goal has never changed, nor has it ever been fulfilled (to eliminate

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poverty in 15 years). There is lot of progress, but not enough. And I think this has been accomplished through planning beginning in 1951, and that we had import substitution strategy in the early days. Growth requires capital investment and investment. These are the two major resources. These resources needed to be allocated optimally and this was done through permits and quotas, the license permit Raj; that was the logic behind it. I think a variety of redistributive measures were also introduced at various times in the government. Poverty had continuously reduced, but it still persists in a sense. I think inclusive growth requires robust economic growth and would stimulate economic growth, more capital, more skilled labour, more efficient organization. All these can really produce more output with the same capital and labour, or with double the capital and labour, the output doubles; if newer machines are more productive and workers more skilled, then the output is more than doubled. We call that as technical progress and technical change, and in most countries, technical change is the major driver of economic growth. I think way back in 1956, Robert Solow was the Nobel Prize winner, an economist at the Massachusetts Institute of Technology (MIT) who wrote an article about assessing total factor productivity that will take all the factors of production and see how their productivity is growing. Since then, many studies have been done on this and it has been observed that the start-ups bring in technical change and that is very critical. It is usually started by innovators. Successful ones become unicorns. A start-up which can raise a capital above US $1 billion is considered as a unicorn.

I think the Indian start-up economy crossed a major milestone as it has added hundreds of Indian start-ups to the unicorn club in 2022. I think over the years, these unicorns have raised over $99 billion in funding. And they have combined valuation of $347 billion. This isn't large, but compared to the Indian economy, this is a small element. The six Indian start-ups that feature on the global top 100 unicorn's list include BYJU's, Swiggy, Oyo Rooms, Dream11, Razorpay and Ola Cabs. You can say that these are the ones which really are big enough to be in the global 100 list. If you look at the unicorns in India, interestingly, 90 of the unicorn founders in the

US hail from India which is the highest number from any country. Israel is the second with 62, 52 from Canada, 31 from UK, 27 from China, 11 from Germany, 17 from France, 14 from Russia, 12 from Taiwan and 12 from Ukraine. These are the top 10 countries from which unicorn founders came to the US.

Why does the USA attract the best and the brightest from around the world? That is really a critical element. I think the most important element there is that there is meritocracy in the US in universities and institutes. Promotion of faculty is done not because of how many years they have spent, not by seniority, but by what they produce, what is the kind of research they have carried out and so on. The promotion is done on that basis. For example, even going from Associate Professor to Assistant Professor, they ask the person to make his own evaluation and consult almost ten international or external reviewers to suggest whether this man deserves to be a professor or not. I think that is a very critical thing because that clearly provides the right kind of incentive for the right kind of people to come to the top to teach. There is also freedom to think, differ, and disagree. This is also, in my opinion, very critical. Freedom from past hang-ups, to think out of the box, and a questioning attitude is encouraged during education and not just by rote learning and not by just attending classes for Indian Administrative Service (IAS), Indian Police Service (IPS), etc. The amount of damage these things have done to our educational system is enormous. They are also a democracy and not an ideological straight jacket. Scope for exploiting innovation is there because there is venture capital not just to finance but also to bear a part of the risk. Some 25-30 years ago, I told Mr Vaghul, who was the then chairman of ICICI, that if we want to encourage our innovators to start businesses, we should encourage venture capital fund systems. He at least started a venture capital fund from ICICI. But it did not take part in this. It gave loans to innovators without any collateral, but it was a fairly high interest rate. That didn't work quite as well.

How many of these attributes does India have? What can be expected where uniform good is concerned? I think we have the environment for creativity, we have democracy, we have multicultural,

multiethnic, multi-religious society, but there is also rote learning which is a tyranny of competitive exams and training institutes, and a rigid caste system that is crumbling only gradually. Entrepreneurial freedom has increased. Venture capital is now available. Unicorns are rising. Universities have time bound promotions, not merit-based. That is the worst part of it, and that free thinking and behaviour are under threat. That is another danger which is there; may be not in the next 10-15 years with people who are educated, but after that, we may find that creativity can be hindered by this. China does not have all these and yet, year-long study of think tanks by the Australian Strategic Policy Institute found that China leads in 37 of the 44 areas it tracked, with potential for a monopoly in areas such as nanoscale materials and synthetic biology. It is leading; it has done advanced research, and is developing this technology. The fields also include electric batteries, hypersonics and advanced radio- frequency communications such as 5G and 6G. The US was the leader in just the remaining seven technologies such as vaccines, quantum computing and space launch systems.

China's lead is the product of deliberate design in long-term policy planning, as repeatedly outlined by Xi Jinping and his predecessors. I think it is very critical that we have a couple of very dedicated and significant, concentrated efforts: Department of Atomic Energy is one, space is another; and here, we have seen significant progress. Though Atomic Energy has done many things by itself, but its progress, in my opinion, has been disappointing and it takes too long, and cost overruns are still there in setting up power plants. A small second-tier group of countries led by India and the UK follow this, and other countries that regularly appear in this group in many technological fields include South Korea, Germany, Australia, Italy and less often Japan. However, unicorn is not the only thing that you can bring. You can have unicorns for completely out of the box new areas and so on. But Kaizen is an approach; it is a Japanese word for continuous improvement based on the idea that small, ongoing positive changes can reap significant improvements. Typically, it is based on cooperation and commitment and stands in contrast to approaches that use radical or top-down changes to

achieve transformation. I had visited couple of factories the other day in Chennai and they had been using Kaizen and I was told that by just following the suggestions made by workers, the costs had been brought down by 15% in almost a couple of years and that employees' suggestions are vetted by a team and whenever adopted, the employee who suggested the idea gets a share in the additional profit that the company makes.

We do not really have many new manufacturing start-ups; our start-ups have so far been in services. But as I pointed out, one does not have to look at start-ups as only innovations. Kaizen, the Japanese word, can also even help manufacturing improve their performance. The world is so complex that we can only have leading innovation in only a few areas. We should then be able to freely import technology and also export technology.

Jugaad is seen all over India. In some sense, there is latent creativity of one kind or the other and even foreign technology needs to be adapted to local conditions. You cannot just import foreign technology and transfer it; you need to have some understanding, some adaptation and so on. But we have an advantage. I think we have a favourable demography. And whether India is going to reap demographic dividend or face demographic nightmare, in my opinion, is a significant question. We really need to really look at it. As per the United Nations Population Fund, the demographic dividend is the economic growth potential that can result from shifts in a population's age structure, mainly, when the share of the working age population from 15 to 64 is larger than the non-working age share of the population, 14 and younger or 65 and older. The reason is that the younger workers, the working population works and contributes to the growth and the production in the country, and the others are somewhat dependent on them. I think that is required so that our growth potential increases substantially.

A country with both increasing number of young people and declining fertility has the potential to reap the demographic dividend. I think we certainly have a huge potential in terms of reaping demographic dependence. The dependency ratio fell in India and you can see that in 1950, it was 5.9 with a life expectancy of 37 years.

Today, in 2018 rather, the dependency has become 2.24 and 69.2 years is our life expectancy. And it has gone even further. I have not put the latest numbers here. India's population will excel China's by 2027. Fertility rate is still 2.24 slightly above that is needed for stable population. But India's dependency ratio fell below 50 in 2018 itself, to 49%. And that means that more people are producing than people who are dependent on this production.

What is the scope for India? On the face of it, we should be reaping the benefit till 2055 because we should have smaller dependency ratio by then. For that, we need to create jobs. We need to create not only jobs, but they should be well-paying jobs. This requires skills, which require not only education but quality education. And the last, in a fast-changing global environment, with unprecedented rate of technical development, we need to have the kind of skilled workforce which can adapt, understand and innovate on what the world is doing. I think this is extremely critical. We need to have an education system and education, in my opinion, is really one of the biggest failures of the Indian growth story. What should have we done? We know of 'Each One, Teach One' – if in 1947, each one taught ten, with the fervour of independence, we could have made everyone literate within a few years. But we were too preoccupied with partition, its aftermath and other things, to give adequate attention to this. Sanjay Gandhi was right in really talking about pushing literacy and so on. But he was totally autocratic, and one could almost say, power drunk. He created more damage in some sense to the country's programmes of population control and so on. His cleaned up the Turkman Gate, Jama Masjid, where he displaced 700 people overnight without any warning, and the police firing also killed 150 people. And of course, we all know that his compulsory sterilization was enforced with such fervour by his followers, you could say, that people, young and old, willing or unwilling, were sterilized in many ways.

I think if we had spent $5 million dollars a year from 1970 to 1985, making education compulsory, female literacy would have gone up and fertility rates could have come down – and by 2000, we would have had a 100 million fewer people. This is based on a study that I had carried out some years ago, where I looked at the data from

the National Family Health Survey and tried to relate how much the fertility rate of a woman depends on education and other things. I found that education was one of the most significant contributors to reducing women's fertility. And this was in rural areas of UP and Madhya Pradesh. These are the two states I studied. It was clear that if we had done a little bit of compulsory education for females (and may be it required some resources like $5 million a year), in 10-15 years, female literacy would have been 100% and it would have certainly brought down fertility rate when these girls would come to fertile age. It would have really helped the country and by 2000, we could have had 100 million fewer or even much fewer people over the years. But we didn't do that. Anyway, that, in my opinion, was one of the greatest failures.

The talent of women in the country is not being fully utilised. The participation rate of women is very little. Even if we had provided women with the kind of education that was required, we would still have a problem as all kinds of social constraints are there that keep women in a *purdah* or *ghoonghat*, tied to the households. But I think there is still sufficient talent available and women's participation rate coming down is really a huge mystery and it has persisted for quite some time. I don't really know why this is happening. But I do believe that we need to get women a status of equality so that they can really come out and work. In China, women have virtually become equal and many of them don't want to have children. But they are working and they have their life. I think the same thing can be encouraged in India; not necessarily by not having children, but there are many other ways of being able to participate which can be encouraged. When I was in Austria 20-30 years ago, the government provided laws that a job of a woman, who is pregnant or going for childbirth, has to be protected and should be given back at the same level when she comes back. A government can facilitate such measures to encourage women.

But how do we get growth in tomorrow's world? I think we have many challenges here. One is the changing demographic working age. People are working beyond 65; they are working at 70-75 and someone like me at 88 years is still working. I think you can really

consider that this is an issue. Then, the changing nature of technology – technology is changing so rapidly that one needs to keep up with it all the time. Artificial intelligence (AI) and biotechnology will transfer the ecology of employment. It won't be easy to be employed if you are not appropriately skilled in some sense. And the jobs are disappearing. Computers, algorithms for robots are replacing humans in many, many activities in the world.

Have we missed the bus? Is demographic dividend obsolete and passé? I think we will need to be innovative and creative and that is what the whole theme really is – that we need to really foster start-ups. But start-up is a short form I use for innovation and creativity. How do we bring it to be inclusive? We cannot have start-ups built by only a few elites, to usher in an innovative society. We need to have it widespread all over the country – we need to have all kinds of things at the village level. The 73rd and 74th Amendments talked about a lot of decentralisation and giving powers to Panchayats. That is still extremely important. I think if we can do that, people will think differently, ask questions. The plans would be different and rural areas development would be different. 73rd and 74th amendments are very important, but we need to really make them really effective in some sense.

We have to recognise that we need to be innovative and creative. I think we really need to worry about freedom to think, differ and disagree. And that to me is quite critical if we want to have a creative population and no ideological straightjacket. We need straight scope for exploiting the innovation and venture capital not just to finance but also to bear part of the risk, help in the management, help in organization. These I think are absolutely critical elements. We need to do that.

I think Artificial Intelligence (AI) for entrepreneurs is an important issue. But I think what one can do is that if you compare the education that you get in an engineering college and the education that you get in Indian Institutes of Management (IIM), the IIM gets a lot of case studies and the teacher asks what should be done. They pose problems which are real life problems and the answers can be of various types and all of them can be correct. It is a question of

teaching people to be self-confident in their own analytics but also that we can learn from others. If someone suggests a different way which is better, one can appreciate that. I think it is a question of analysing the issue from different points of view, discussing it, and then understanding how to go about it. One is not passively listening to what is being said, but about really participating, which is very important. I can give another example. At MIT, one of the young professors had a course in which he asked the students to design a transport system for Boston, which will be useful for the 20th century. They produced a completely far out solution. That solution was then discussed all over. If you are involved in such things, you would certainly get ideas about solving problems and acquire some self-confidence as well.

People ask in the context of artificial intelligence that if all the jobs would require these skills, how do you ensure people in rural areas get jobs? We should give the kind of training that is required in rural areas also and the create the possibilities so that they could participate in these jobs. Jobs would be created in all areas and not in artificial intelligence alone. In my opinion, there would be diverse jobs in areas where artificial intelligence and training plays a huge role. Yes, there may be some issues, but we can work towards some solutions.

Do we have a fertile environment for creativity? I think we can see that we have many of these things. But as I said, free thinking and behaviour are under threat. Information Technology (IT) for education – can we use IT for improving our educational system and making it really widespread? It should not be that primary education is of quality in some few selected high-end schools and private schools, but it should be available almost everywhere in the country. We can think of a number of innovative programmes to do this. Kids with access to mobile phones get addicted to playing games. We are seeing this all over. We can use the mobiles for device learning programmes and make them available widely. We need to create a thinking, questioning and creative generation. There are programmes available. People have developed software and a very good set of programmes are available in Khan Academy, a non-profit

educational organization that has developed many teaching modules at different levels. You have Mathematics at level 1, level 2, and level 3 and so on. You can just download these from the Internet and see that you can really do a lot of things with it. I think this is possible. We need to use such tools to provide quality education to all in 5 years and not 15. This ideally should be the time frame. And here, one thing which is quite characteristic of Shri Narendra Modi is that he sets really high targets. He sets a target for 5 years, not 15. He makes people work hard to achieve this. I think this is something we could do and we could manage it.

People speak about the financial stress of Byju's and Oyo; that is something that we can deal with – it will not be easy, but if in the case of Byju's, for example, if they are going to encourage learning from learning software, then we can consider that this is a public service and that we could certainly support people like them. As I said, Khan Academy in the USA is completely a non-profit organisation, encouraging education. Byju's spent a lot of money for advertisements starring Shah Rukh Khan and may be ran into problems because of that. You need to do it as a public service, providing quality public services to all.

Similarly, we need to provide healthcare to all. It is equally important that you have healthcare because there is a severe shortage of doctors. The policy framework around medical education is not going to get fixed anytime soon and shortages will persist. How do you provide good healthcare to all? High income inequality means most doctors are in the top decile of income. It is hard for households with below median income to be able to afford a doctor. The shortages of doctors make this worse. I think you can somewhat understand this. Medical education somehow costs so much today that by the time somebody becomes a medical doctor and does his internship and so on, he has probably invested tens of lakhs of rupees there. With high income inequality, away from the top 50 cities, the quality of healthcare is, by and large, quite awful in the country. Some things can be done much better using modern technology. I think it is possible to do something. For example, IT can help catch up. You can have video consulting and quick diagnosis is possible

if there is a person at the local level, who has been given some of these modern equipments to take a blood sample and immediately get 40-50 results along with some other results. Even a watch can measure your electrocardiogram (ECG) and so on. You can get this kind of information without too much of medical training, it requires just a little bit of training. A health worker can do this and then immediately transfer this information to a doctor somewhere and get a diagnosis done. The number of people who need to be brought to a clinic would substantially be reduced. I think we could do this to provide clean medical service within a few years to a large number of people.

Vast data that is available has made machine learning very sophisticated and advanced. In the past, to make a statistical regression, there were trial runs done for 1000 people and the results would show that this is what happened and the 1000 people have varying characteristics and varying results. Today, you have data for not 1000 but tens of millions of people. You have Artificial Intelligence which is nothing but a very sophisticated regression type programme, called machine learning programme. You can easily correlate and filter out all kinds of characteristics and say, most likely, this is really going to be the diagnosis. I do believe that it is possible to do this provided we have a vision and we really think in terms of a concerted programme and give the necessary resources.

Countries which have done these are spending something like 6% of the GDP on health and education. We are spending around 4% and I think we need to step this up and we need to have a really concentrated programme which can provide all these things. As I said, IT for healthcare can really help. You can have remote measurement and as I said, an assistant can take blood samples and a bunch of other algorithms. The blood sample could ideally be given to a robot which would work out a number of tests on the spot. This would be given to a remote model that solves the problem by skilled human doctors, who can check it. With the help of this, a person at a remote location will within 30 minutes get Outpatient Department or OPD care which is vastly superior to what is available presently, after wasting almost half a day or a day going to a clinic and waiting

in overcrowded lines. These innovations can greatly help the OPD for problems which can be solved with medicines, without going to the hospital or clinic. That still leaves the big problem of going to the hospitals, which is somewhat harder to solve. However, one can think of even solving that once the overall load on hospitals is substantially reduced.

We can reap our demographic dividend if we can provide quality education to all now—rich and poor, boys and girls—and not 10 to 15 years down the line. We can make exporting easy and this is where I think IC Centre for Governance is very, very critical because our exporters face a lot of troubles. There are procedures and processes which they have to go through which makes them non-competitive in the international market. I think enormous improvement in governance is called for to increase the ease of doing business. I don't know today, but 5 years ago when I looked at it, if Coal India had to start a new mine in a field that was already allotted to it, it needed to take clearance from some 28 desks of different ministries and it would take them a couple of years before they could open the mine. These are the kind of hurdles in the path of a public sector. In the private sector, one doesn't know the situation.

The ease of doing business is also certainly a function of education and training. In the olden days, one would say that one learnt most of the things while being on the job and by learning. A lot can be learnt by on-the-job training. But today, people will not give that much time and with new technological changes and other things, it is going to be difficult to say that you can do everything. We really need to provide the kind of education and training which makes it easier to do things.

On the question of how we can get start-ups in rural areas, in my opinion, it is not necessary to get start-ups in rural areas. Start-ups can be anywhere as long as the enterprise they are starting can have activities in rural areas and where can be employed. It is a larger issue. You can't really say that it is one magic bullet that the start-up will do everything. It won't.

We need to ensure stable power supply 24/7 and clean cooking fuel for all – stable power supply is an important element for this

country and we have really done great damage to our power system by giving free power. Free power to people, to farmers and so on, has really put the finances of discoms, electricity distribution companies in a huge mess and they continue to make lots and lots of losses which are increasing. All efforts to bail them out are not really working. We have tried many projects in which we say, 'if you do this, I will do this' but it doesn't really work.

For example, when I was a Member of Planning Commission in charge of power, I saw that one of the problems was the large amount of Aggregate Technical and Commercial losses, AT&C losses. That is because there are a number of people stealing electricity and not paying for it. We now have a computerised billing system and we have record of all the customers stored in a computer. We can put a meter at the distribution transformer level and we can measure how much electricity is going into that particular transformer and can see how much electricity is being billed for the consumers connected to this transformer. We said for every district you cover, we will give you so much money as loan but for every district you cover, a part of it will be considered as a grant. Unfortunately, even this did not work and the reason was very simple. They said that they did not know who was connected to which transformer because the system had grown haphazardly. They needed to do a Geographic Information System (GIS) mapping of who was where and secondly, the distribution transformer does not work. People really damage it and so they were unable to measure these things. These kinds of things are going on and on.

After many years, we have brought down the AT&C losses to still around 16-17%. I don't know how long it will take to bring it to international level. But as long as these kinds of losses are taking place, as long as a large number of people are getting free electricity and the state governments are not compensating the discoms adequately for this or not compensating on time (because if they don't compensate on time, discoms have to borrow money and they have to provide for additional cost for their borrowing money and servicing those loans), the problems will continue. I think free power has been the bane of the economy and we seriously need to think about handling this.

When I was in the Selection Committee for the Chairman of the Central Electricity Regulatory Commission (CERC), I could not appoint anyone other than an IAS officer simply because the regulatory reports were drafted by IAS officers and they made sure that only IAS officers qualified. The committee had a majority of IAS officers. They wouldn't let me interview a senior IAS officer. They would say how we can ask questions to our seniors. I think with that kind of a system, obviously, the regulation is going to be bad. We need to fundamentally reform these laws.

How do we take the new IT things to the ground level? We have got Aadhaar and we have even got Jan Dhan, Aadhar and Mobile or JAM. Through all of these, and we can reach almost every village in the country. We started the rural electrification programme with Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY). The government has accelerated it, and now, it is claimed that 97% to 98% of the households are connected. The problem, as I said, is with our power distribution system. We are not able to supply good quality power round the clock which is the first thing. It is not difficult to do it provided we have some clear idea about how to do this. I think it is not impossible. We need to have the resources to provide every village level unit or maybe, begin with a cluster of villages unit first, along with the kind of equipment that will do this. We also need to train the village level health workers to do these things and more. It is possible to do this.

We should avoid ideological straitjacket and I keep repeating that because I feel that we are really going into a world where we may need to ask everyone to wear one. Otherwise, unemployment and social unrest will explode and we will have a demographic nightmare.

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Sachin Chaturvedi

Value and Ethics in Human Well-Being [*]
Time to Go Beyond GDP

People in development economics framework are overwhelmed by India's G20 Presidency and the emphasis on bringing in a new development paradigm. The origin of the G20 was in South East Asia on the Asian financial crisis and got elevated to the level of the head of the state in the Presidency of South Korea in 2010, when South Korea said that irrespective of what solution we find in the domain of finance, unless we bring in development into the centre, we would not be able to solve the financial crisis. This was after the collapse of Lehman Brothers and that's where the Sherpa Track came in. Otherwise, it was only the central bank governors and the finance ministers who were involved till 2010.

2010 onwards, after South Korean Presidency, this issue came in. This was also a summit where South Korea said that unless we bring in culture, issues related to development cannot be solved. This was in response to the World Bank study of the great miracle in South East Asia where the whole debate of market and state came in. They had said market can solve the problem and then the counter narrative came in, that market cannot solve all the problems and you need to bring in the state. This debate was revisited in 2010 during the G20 Presidency of South Korea where South Korea said that culture is important. In fact, in the next three years from 2010 to 2013 when the Sustainable Development Goals (SDGs) were negotiated, South Korea persistently asked for addition of one more goal after Goal 17,

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one that was dedicated to culture. They wanted local specificity to be brought in. I want to bring in this dimension in a slightly different context.

2015 was a unique milestone year for humanity where three major global agreements happened. There was the Paris Agreement on Climate Change. We had Agenda 2030, which is called as the Sustainable Development Goals Agenda and the third, which we don't talk about so much, was the Addis Ababa Action Agenda. In fact, in the series, Addis Ababa Action Agenda (AAAA) was the first one to be concluded. This was followed by the Paris Agreement and then came in Agenda 2030. Addis Ababa Action Agenda actually talked about the wherewithal that was needed for both Agenda 2030 and the Paris Climate Change Convention. It talked about three things. One was to bring in accountability and transparency in the form of global taxation, considering the whole illicit financial flows that are there from developing countries, particularly from Africa. India led that process in 2015 and got a working group created in the United Nations (UN) on the illicit financial flows and how it was governed. The Organization for Economic Co-operation and Development (OECD) scuttled it, but fortunately, the Agreement happened. All the African countries were on board and since G7 countries were not very appreciative, the process could not get much traction. But that global convention is very much still there. It was later, during Biden administration's initiative, that 15% minimum tax for multinational corporations was fixed, which was one agenda that was concluded in the Finance Track of the New Delhi Declaration of G20. It is also intrinsically linked with the idea of what we call 'good governance'; all the three elements of accountability, transparency and inclusion that are the components of good governance, were adequately addressed in the Addis Ababa Action Agenda.

International media and the G7 countries, when speaking about the Paris Climate Agreement in terms of emissions, very often say that certain countries including India, are polluting. Our argument has always been on per capita emission. And in the Conference of the Parties26 (COP26), when Prime Minister Modi went there, he placed the idea on the table saying that if you saw the size of our population

and the quantum of emissions that we are being accounted for, you would see that our per capita emissions are very low, and this is largely because Indians have a very different kind of lifestyle. Even though some people who are pretty rich and have lifestyles which are close to the northern lifestyles, generally, most people are quite frugal in their lifestyle. He talked about the idea of 'Lifestyle for Environment or LiFE', Lifestyle for Sustainable Development. This was the central concept in our approach in the recent G20 summit.

This approach has multiple facets to it, including the idea of social trust in a more market-friendly approach . In the Union Budget of 2019, the Finance Minister announced setting up of a Social Stock Exchange, largely for dedicated social enterprises. This is something which I think is extremely important when we talk of the concept of LiFE.

What do we mean by Lifestyle for Sustainable Development? The Prime Minister originally called it Lifestyle for Environment (LiFE) and he spelt out some principles of LiFE that the world should adopt. But during the G20 negotiations throughout the Presidency, China was opposed to all that we were proposing. In Varanasi, we had the Development Working Group meeting and China said that they would not agree to LiFE standing for Lifestyle for Environment. They said that there cannot be one lifestyle for protecting the environment and hence, cannot agree to this. Dr. Jaishankar, being the diplomat that he was, in the negotiation asked them if they were also opposed to sustainable development since they had already agreed to the Sustainable Development Goals. He asked if they would prefer that he replaced Lifestyle for Environment with Lifestyle for Sustainable Development. They agreed to this. That's why Lifestyle for Environment (LiFE), which the Prime Minister had proposed was changed to Lifestyles for Sustainable Development. In the G20 New Delhi Leaders' Declaration in Delhi, we came up with Lifestyles for Sustainable Development. The concept and approach was the same.

There are differences between Western philosophy and the Indian philosophy in terms of ideas and perspectives. From the philosophical framework focused on individual behaviour, we are now talking more in terms of community behaviour or societal

intervention that is needed to address climate change. The first principle of Lifestyle for Sustainable Development talks about people, it talks about community and bringing in community-led transition. This goes very close to the idea of Sufficiency Economy in Thailand. This Sufficiency Economy of Thailand talks in terms of the frugality element of Indian philosophy that has a Buddhist origin. This comes very close to the idea of South African philosophy of Ubuntu. This is also very close to the Brazilian and Peruvian idea of Sumak Kawsay. Another important dimension we talk about is the well-being of everyone. This idea of delinking individual advancement vis-à-vis societal is something that we have questioned, and this is the first element of bringing everyone along in this journey of economic development. We are trying to bring in the idea of taking everyone along in the process and that is where individuality and community action are on two scales. Solutions are possible because the first solution that we are thinking of is in terms of what SDG Goal 12 says in terms of Sustainable Consumption and Production (SCP). What are the ways we can bring in sustainable consumption and sustainable production? The idea of bringing in sustainable consumption and production, the idea of bringing in community, largely, comes in terms of our idea of decoupling the economic growth from environmental degradation. That is where we need to see what we have to do.

In a recent global Maritime Summit at Mumbai, there were air conditioned tents put up on the ground; the whole area was so jam packed with the tents that one could hardly see the sun. How Mumbai has lost biodiversity, how we are losing cities after cities for various development projects! We are seeing that development is bringing in degradation. That's where the ethical dimension comes in. One also needs to think about the impact of all the stages in the making of a product and that's where SCP-related interventions are important. In Latin America and Caribbean, and Sub-Saharan Africa, the material footprint was lower than the domestic material consumption by 17% and 32% respectively. You would find that more of the eastern countries had this dimension upfront. Polluting industries got transferred to the developing world throughout the

decade of 80s and 90s. We have also done econometric analysis of the trade at six-digit level to show how trade of developing countries became polluting product-intensive throughout the decade of 90s and the first decade of this century. We have empirical evidence to show how trade policies have not given the space policymakers required in the southern countries to decide on the way they want to go forward on SDG Goals 12 and 13. This constrained space for decision-making which we did not realise, was required to bring them in. The idea also gets traction, as mentioned earlier, in the G20 push that we gave to this alternative development philosophy of LiFE. The G20 push was accompanied with what were called the G20 High Level Principles on Lifestyles for Sustainable Development. In Varanasi meeting of the Development Working Group, we adopted these High Level Principles. Without going into the details of that, it largely brings in the Pro-Planet People idea that we have with social norms, and the idea of bringing in resource efficiency, social equity and environmental sustainability as the focus areas.

LiFE can be looked at more from our conceptual framework of value system. I think that value system brings in three elements absolutely clearly. First is the value system with which societies and subcomponents of societies are linked. The second is equity and the third is sustainability. The importance of linking values, equity and sustainability with finance and technology and what the disconnect between ethics and finance can do, was clearly reflected in the case of Lehman Brothers. That's why South Korea pressed for bringing in ethics with finance. But because this concept was not spelt out the way it was needed in terms of the G20 leadership of South Korea, we also missed the bus when the SDGs were being adopted and that's where we could not bring in communities, the interlinkages and individual responsibilities. The impact of that could be seen in our disconnect with the whole Agenda 2030 in terms of missing out on localization. This has another implication. The implication is that we are making comparisons at a national level. The matter also has to be looked at the level of sub-national entities, the states. Looking at the statistical system in Madhya Pradesh, what I found is true for many other states. It was noticed that right from 1971

onwards, 70% of the state GDP and other statistics were directed by the Ministry of Statistics and Programme Implementation (MoSPI) of the Government of India. The states do not have the capability to calculate coefficients that are needed to aggregate goods and services for which data is being collected. As a result, what would be the GDP of state is suggested by MoSPI and the states then work it backwards to bring in the 30% variation that they can. But there is a broad measure which is well-defined for GDP calculations.

This debate is huge and there are several people who are now discussing the statistical apparatus that we have. The important point there is in terms of bringing in localization of development backed by adequate statistics at the local level and taking that forward. From that point of view, we are missing out on a huge dimension of how we bring in new elements, and in what way we can help states that are trying to reduce wasteful expenditure or are trying to bring in an economy which is providing a scope for repairing etc. The trouble here is that these dimensions all indicate to the missing element of ethics because we have left out, as we call in our economics parlance, all the Access, Equity and Inclusion (AEI). If AEI principles are missed, you would find that more monopolistic powers would prefer to take economy in the direction where you do not have the right to repair, you do not have the right to reuse and you do not have the right to recycle. Whether it is an iPhone, or any product being used which is made by a company that has monopoly, you would not see scope for recycling. More and more efforts are being made in the world and more and more efforts are in terms of how we bring in the idea of resilience and values for well-being. You would find that the expertise that is needed is beyond economics. We need expertise that can be from other streams and this is the reason why in in the G20, there is a Working Group called T20 or Think 20 where for the first time, we got philosophers, sociologists and people from management background apart from economists. We also had urban planners in that group. We could see when we talk about resilient infrastructure, we are not talking about physical infrastructure alone and this is one big criticism of China-Pakistan Economic Corridor (CPEC). CPEC has come up in Pakistan connecting it with China. But Pakistanis

are onlookers for that corridor because they are not participative in that process. Wherever this has happened, we have alienated people from that physical infrastructure. Physical infrastructure embedded with social infrastructure is something that we have been pressing with the Asian Development Bank (ADB) for quite some time. You would be glad to know that now the statement that the President of ADB made in India is to bring in social infrastructure along with physical infrastructure. I think we would have to bring up where the needle of ethics would lie, for which organization, for which entity and for what policy? A Centre like the IC Centre for Governance can create public debate in terms of where ethics are important. In G20, several countries said that our ethics were different from their ethics; the European countries said that they are also linked with the religious faiths that were there and whether we can really have that. We had two sessions in terms of how different societies may have different ethical frameworks and different value systems, and from that point of view, what kinds of efforts were needed. We then said that the debate should go in the direction of well-being, because ethics should take us to well-being. Kuznets gave us the idea of the gross domestic product, and now we need to bring in the concept that is needed in terms of our idea of well-being.

The question arises: how do we measure well-being? What are the elements that are there? Is it something new that we are talking of? 2007 onwards, OECD has been bringing out papers in which we have suggested a way forward on how well-being should be measured. During COVID crisis, we have seen how air quality improved, how visibility of blue sky improved not only in Delhi but in many parts of the country. What are the ways in which we can measure our well-being and the ways in which we can enhance the scope of GDP itself? Fortunately, this is something we could convince our Prime Minister's Office (PMO) about, and if you recall, the Prime Minister's speech at the G20 focused on measuring GDP with human-centric value system. This is something where our emphasis was on both the human-centric development that we saw after SCP and other dimensions that the World Bank and the IMF pushed in, the disappearance of several other species at the

cost of our own development, not just biodiversity but the various facets of biodiversity. That dimension is something that we need to work out and we thought of all the five or six broad elements – the international financial institutions, domestic banks and finance sector, food and nutrition, the amount of effort that is needed for One Health and trans-species balance, the infrastructure financing and circular economy. In all these six elements, we need to bring in the needle of ethics. If it comes in, it automatically contributes to the idea of good governance and the elements of accountability, transparency and inclusion.

There is a huge pressure now on multilateral development banks to have what is now called as Office of Evaluation and OEs are becoming common. Even Asian Infrastructure Investment Bank (AIIB) which has Chinese credentials, has also been pressurised to have Office of Evaluation. This is to assess what is the impact and how development impacts are important.

How could well-being be a part of an impact assessment framework? I think that is inevitable. It would have to be factored in and we require 360Ú view of how beneficiaries are affected with the nature of intervention. The development projects are essentially displacing other species, including plants. This is something which we would have to balance somewhere. The claims from certain organizations that they supplement their development activities with other protective endeavours will have to be looked into.

It is a new branch of knowledge and France has gone one step further; they have added culture to it and the whole stream of cultural economics now is becoming a reality and I encouraged some of my colleagues to take it forward and understand it better. In India, our formal schools of teaching economics don't bring in culture at all. We are completely disconnected with that idea. But South Korea, as I mentioned earlier, are specialising in it because they can see challenges to their own social fabric, society, family being threatened by Western value systems which are eroding the base. They were declared developed country back in 1984 and they became a member of OECD. But now they are realising what is happening and for the last 10 years, South Korea is pressing certain measures.

They have launched several programmes. Now in France, in the last 3 years, several groups in different universities have come in which are bringing in the idea of cultural economics and bringing it at par with the mainstream teachings there.

With that approach, we get into the concept of focusing on an inclusive development order and that inclusive development order, in our view, addresses couple of things which are important. We thought of it in a different technology framework as well. In Research and Information System for Developing Countries (RIS), we have a dedicated work programme on new technologies. I do not know whether you noticed, but two years ago, China excelled with what is called as Synthetic Biology, and synthetic biology can give you advancements which are important in terms of how human species multiply. With synthetic biology, China could produce twin girls who are now 3 years old. And the genes of these 3 year-old synthetic babies have been amended in such a way that they will never get cough and cold in their life and they would never be affected with tuberculosis and typhoid. The world is watching these babies with great inquisitiveness as well as fear. This intervention by China led to a huge criticism in terms of bioethics. Several journals of medical biotechnology criticised it. China placed the concerned scientist in prison for two years. He is already out of the prison now and the babies are surviving.

A major meeting was held in Bhopal during the G20, and we said that a call for governance and ethics is extremely important for new technologies and new technological ventures that are coming in. This, I think, is important in terms of how we talk about trans-species balance because, as an example, two Chinese scientists in Singapore amended the popular Fugu fish and could multiply that. We need to bring on the table the ethical issues which are there in international financial institutions, to encourage science related governance and ethics, and think of how we can bring in these dimensions within the framework of the well-being that we are talking of.

We could convince the United Nations Secretary General about the idea of measuring well-being and on 22nd June, the Secretary General issued a special statement emphasising the need of bringing

in well-being measurements across the UN system by 2026. This is an achievement that we could ensure within the UN system. The major challenge is to convince national governments and state governments to amend the way they believe GDP would give them the results that are needed, and this is where several dimensions of GDP are of great significance in terms of well-being measurement, and there are some estimations that have been made. Simon Kuznets himself had said that GDP is not the best measure and we need to go beyond it. Several efforts were made. But the best effort, and I would very much encourage everyone to read it, is a 600-page report which Professor Dasgupta wrote for United Kingdom (UK) Treasury. It is on the UK Treasury's website, and it talks about going beyond GDP. Dasgupta Committee Report has laid out the broad framework of how we can measure these well-being indicators and he suggests that countries rich in biodiversity must quickly switch over to protect biodiversity, be that Amazon or Gangetic planes. But we need to protect biodiversity and bring that in as part of the ethical framework that should govern economic policymaking. How we can dovetail our economic development policy with the bottom line of ethical commitment, is AEI – Access, Equity and Inclusion. Inclusion means not just the citizens but also biodiversity and within biodiversity, all the species that are there. Defining inclusion this way, goes with the wider concept of ethics and its engagement. When we think of the LiFE and LiFE-related concept, some points come to mind: mindful and deliberate utilization, mindless and wasteful consumption, collective action, climate-friendly action, social norms, Pro Planet People, and circular economy.

How to operationalize these concerns? First and foremost is to deconstruct the way we approach macro issues and somehow, we have evolved a mental framework where we focus on too many aggregates and too many macro comparisons. That makes things easier. India is compared with Bangladesh, whether that makes any sense or not, but people do that. Look at Bhutan's Gross Happiness Index and you try to apply it in India. Those things cannot work because of the quantum that is involved. We need to see how it is working out at the disaggregated level. Ethical concerns have to be

specific to specific sectors and specific initiatives. There cannot be generic ethical framework for everyone. There is a need to pick and choose. That is why the idea of localisation is extremely important.

There needs to be a minimum agreement of the global institutions and agencies. This is where Addis Ababa Action Agenda gives you what is needed as all countries have agreed to it and you have some basis to work on. Sustainable Development Goals are also that kind of a commitment, even though people don't appreciate Sustainable Development Goal much. How are SDGs different from Millennium Development Goals (MGDs)? This question should come to our mind. Is it just a different framework or is it a different approach? Those of us who were part of the negotiations of SDGs can very easily tell that MDGs focused on quantitative goals. How many schools? How many hospitals, what kind of what length of roads? All the quantifiable numbers were part of the Millennium Development Goals. In SDGs, it is a shift from quantity to quality. What quality of education? For example, when you talk of what quality of education in India, the New Education Policy has given us that definition, that roadmap for at least Goal 4 to be absolutely clear. Similarly, what quality of health? Earlier, Allopathy was the only one. Now you have much more emphasis on what we call as alternative systems of medication. These days AYUSH (Ayurveda, Yoga and Naturopathy, Unani, Siddha and Homeopathy) is a household name and quality products are being made alongside consistent efforts to improve quality. That is where ethics come. Ayurvedic medicines, for example, should have the laboratories to test and certify them as safe. It cannot be blind promotion. Specific context is very important in the application of ethics.

Hundreds of studies in economic literature have pointed out time and again, that there are two sectors which hold extremely important position in our redressal of inequality – education and health. The amount of people who are pushed below poverty line because of the health expenditure is amazing and shocking. Very recently, there was a meeting in Kathmandu of South Asian countries where a Pakistani expert told the group there that 4% of their population has been pushed below the poverty line in the last one year. Can

you imagine this when the price of flour or atta has now multiplied 600 times in Pakistan? Nutritional security and health security are intertwined in the way you look at the sector. Education is also very important and includes skilling and reskilling. If we take care of these two sectors, health and education, we can reduce inequality to a great extent. This is the reason why NITI Aayog now has switched over to multidimensional poverty measurement. We do not go by income inequalities. Income inequalities may remain there but for bringing society at a minimum level of equality, education and health are the two important sectors. And that's why World Bank and many other multilateral development banks have amended their poverty elimination strategies which now focus on health and education in a major way.

The idea on holistic approach and motivation is extremely important. That is what is going to motivate private sector and this is where Mahatma Gandhi's idea of trusteeship comes in hand; the idea of socially-motivated enterprises. Sometimes, we think that private sector is all out for profit. That's not correct. In the United States, there is a 340% increase in socially-motivated organizations. Fortunately, the number of these socially-motivated organizations in India is going up. The Economic Times had brought out a special feature on socially-motivated enterprises. This dimension is multiplying and that's the reason I earlier mentioned finance minister's emphasis on bringing them to the Stock Exchange. Not many companies came forward. Now National Bank for Agriculture and Rural Development (NABARD) is doing it and with NABARD's help, 12 companies are now listed with the Securities and Exchange Board of India (SEBI). SEBI's guidelines have already been issued for purpose-driven and for-benefit enterprises. I think this would be a large contribution towards our idea of net zero growth that we want for India by 2070 and that's where the concept of we shaping our development destiny with ethics at the centre would come in.

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Surjit Bhalla

Indian Tax Collection – Too High or Too Low *

My mode of analysis and inquiry has been consistently, and heavily, evidence-based. What I find is that these days and especially during election season in India, evidence goes for a toss and people, academics, policymakers, wannabe policymakers, all indulge in exaggeration. My views have been expressed in the two recent articles that I have written, one on unemployment and female labour force participation and the other on whether our investment rate was too low. It turns out that the investment rate in the first half of this fiscal year, real investment, real Gross Domestic Product (GDP) is 35%, which is one of the highest ever. What some economists etc. have looked at is the nominal investment to nominal GDP, which I tried to document, is quite inappropriate. And the reason you would want to look at the real is because prices of capital goods in India and around the world have grown at a much lower rate than the prices of all other goods.

I am going to talk on taxes, tax rates and tax collections. Taxation is obviously central to development because you get taxes in order to finance public goods, in order to finance redistribution, etc. The conventional belief today in India is that tax rates, the tax collection, tax to GDP ratio as a measure, is too low and it needs to be raised in order to finance development. Other than the primary reason of development, it is said that we need to raise taxes because inequality is too high and therefore, we need to tax the rich more, or fiscal

deficit is too high and we need to reduce the fiscal deficit. Therefore, you need to raise taxes and improve things. There is a large belief that India is sui generis, which means we are unique. We have these problems, but the rest of the world doesn't have these problems. Take the issue of taxation. Every country is faced with exactly the same questions throughout history, whether to raise taxes, lower taxes, whether to control the fiscal deficit, not to control the fiscal deficit etc. And especially in this increasingly global world where information travels in an instant to all the seven billion people in the world, it is important to incorporate and learn from other countries, and other countries will learn from us, and we should get to know how other countries are tackling exactly the same problem. It does not matter whether you are an authoritarian government or a communist government or a socialist government or a capitalist government or a democratic government; all governments face identical problems. They have different solutions, but they all face the same problems. My approach is to look at the evidence of what is happening around the world. From there, I will understand whether our taxation is too high. I can't look at our own data in order to determine whether tax rates are too high or too low. I have to look at what other countries are doing.

Let's start with fiscal deficit. There is almost a universal belief among central bankers that fiscal deficits lead to high inflation. Therefore, we must decrease the fiscal deficit and therefore, we must raise taxes. I challenge anybody at any point to show me one study whether in India or outside, where there is any relationship between fiscal deficits and inflation. That's my first point: you can't argue for an increase in tax rates because the fiscal deficit is too high and the tax rates will lead to higher tax collection. It's not even clear if the higher tax rates will lead to higher tax collection. Even if you did have higher tax collection and a lower fiscal deficit as a consequence, we cannot say whether inflation will be lower or not. There is no evidence to that effect. You can ask any central banker about this; I have asked them to show me evidence where inflation has reduced by lowering fiscal deficit, where evidence is not at a premium. Whatever arguments you may have, but you cannot have the argument that the fiscal deficit needs to be reduced in order to control inflation. That

is the first thing.

Second, when we talk about taxes, generally, you must have seen that in the last 20 years, the tax to GDP ratio in India is only about 10-11%, broadly speaking. But that 10-11% refers only to central taxes. If you are a federal country where taxes are being raised and collected at different levels – centre, state, municipal, etc., then what is relevant is what the total tax collection is, and not the tax collection at the centre. And you would find that most of the quotations are about the central government's tax to GDP ratio. The reason economists might have done this is because, to a large extent, they have pressures; they have to work. They are lazy. Data actually does exist, has existed, and now it's even formalised by the International Monetary Fund (IMF), that they will collect the state, centre, municipal, social security data for all the countries in the world and come up with the aggregate tax and not the revenue of the government, because the government owns public sector corporations and they disinvest and get revenue. I am not talking about the government revenue to GDP ratio. I am talking about the tax revenue to GDP ratio.

Let's just look at what the story is with the tax to GDP ratio in all the countries of the world in different regions: advanced countries, the developing countries (Sub-Saharan, East Asia, South Asia), Middle East and North America, the standard World Bank classifications of countries and of aggregated data available at a country level. The data for all the countries individually is also available, but let us look at the aggregate data. The latest aggregate data is from 2019, which shows that the total average tax rate in all the countries of the world, all levels of government to GDP is 22% which includes social security taxes. Aggregate social security taxes in the world are about 5.5% to GDP. We don't have any social security taxes but that is the broad picture. We must not just look at what the tax to GDP ratio is, but we have to weigh it in comparison to what it is in developed countries, because most countries have a progressive taxation structure (that a richer country should have a higher tax to GDP ratio than poor countries). That is the correct way. When you do that, you find out that the tax to GDP ratio in the world is 25% and the social security taxes is 7.2%.

Now let's look at East Asia and South Asia as our peers, our comparators. In East Asia broadly, which is much richer than South Asia, the tax to GDP ratio in 2019 was 19.9% and 4.9% is the social security. In South Asia, it was just 16% and 0.2% social security. Let's keep that in the back of our minds as we go further— that basically what you are getting is in the range of something like 15% to 20%. I will now go to some particular countries. China, for example, is 22% to GDP and China excluding social security is 6.1%. I don't think we should necessarily take out social security; as countries develop, social security becomes an important part, should be an important part. Let us take another rich country, which is about twice our GDP level per capita, Indonesia, which is only 0.5% of GDP and the average of all taxes, including social security is 11.5%. Look at Philippines where social security is 2.6% and aggregate is 18%. Thailand's aggregate is 17% and social security is 1%. Let us now take Sri Lanka – 11.7%, Nepal – 18.9%, Pakistan – 12%, India is 17.6% in 2018-19 and then there was a dip in 2019-20. In India, 2019-20 is a bit different than the rest of the world because it includes 3 months just before Covid. I don't know why it was there to control inflation, but we had very low inflation. It was not a relevant year for comparison. In Brazil, all taxes to GDP ratio are about 24%. The US, interestingly, is about 19% excluding social security and another country is Japan which excluding social security is also 19%. Somewhere, 18-19%, no matter whether you are rich or poor, excluding social security is really between 15% and 20%.

Let us look at where India is. India in 2017-18 before the bad year 2018-19, was 17.6% to GDP excluding social security, one of the highest in the world. Looking at all this data, you can also do the following: you have all the various countries and you have their tax to GDP ratio and you put in that since income obviously determines partially how much tax you collect, such that the predicted tax GDP ratio in India is somewhere around 16.5%. In other words, we are collecting more than what our levels of income would dictate.

This is all pre-2018-19 or 2017-18 and pre-Covid. I wrote a paper back in December 2018 or 2019, where I argued that corporate tax rates should be reduced. One of the reasons to argue for a

reduction in tax rates is that it increases compliance, contrary to the general belief that more revenue is needed through higher tax rates. Therefore, raising the tax rates makes sense in the advanced countries. Incidentally, tax compliance in the United States (US) over the last 20 years has been around 82%. They publish it every year in the US. By tax compliance I mean that given the tax rates and given the distribution of income, what is the tax to GDP ratio we should collect. If you are eligible to pay taxes (and we know each individual's income because it is declared in the tax return), then given your income and where you fall, if you should be paying taxes, and in the US, that number is about 82%. In India, that number was 15% as mentioned in a paper that I did for Vijay Kelkar's Study back in 2002. Only 15% of revenue on which you should be paying taxes, you were paying taxes, or the tax collected was only 15% of the total as compared to the US where it is 82% of the total. That number has significantly gone up in India. By my preliminary calculations, compliance issues were about close to between 50% and 60% today. We have done really well on compliance, but let us see how well we have done in tax collection.

Unfortunately, I don't have comparative data because it's just not available, but we do have data for India. We have the three major taxes, i.e., corporate, personal and Goods and Services Tax (GST), which account for a large proportion of total taxes collected, something like 60-70%. We can look at their evolution over the last few years. This is where the real surprise comes in. This is the tax to GDP ratio in India. We already have that data for 2022-23. It was 19% which, as I mentioned, is comparable to everybody. It doesn't have social security. And all the other numbers also don't have social security, so am comparing like with like. We have had a phenomenal growth in taxes, much higher than the growth in nominal income in GDP and it is showing up in the data on the very rich. When you read that GST taxes have gone up or personal income taxes have gone up or corporate taxes have gone up, you should go for evidence-based analysis. Then you have several people saying that when the income of the people is not increasing, they are dying, there is no employment, then where did the taxes come from? Where did

the taxes come from when there is no employment? If there is no employment growth, then why is GST, which is indirect taxes, going up? Personal income taxes, as I mentioned, part of it is compliance, absolutely. May be, GST has a bit of compliance which is good. Taxes are going up. The economy is doing well.

What does one conclude from this while looking at the data of all other countries? Now, tax to GDP ratio is very close to even China including social security. And from our side, we have a separate system of social security, like free food to two-thirds of the population which accounts for something close to 2 to 3% of GDP. You can think of that as a social security measure that India has. Given that we are some distance away from a compliance level that we need to achieve and these days, compliance is easy because of a lot of reforms that the government has introduced, my conclusion, then, is that I think that our tax ratio is too high. One of the things we should do is decrease tax rates, particularly on indirect taxes, because indirect taxes, that is, GST, is very regressive. We have to decrease the tax rates in GST in order for it to be more progressive. We can afford to do that. Also, if you decrease income tax rates, then your compliance is likely to go up further. Paradoxically, it will be a win-win situation for the government if it were to decrease GST tax rates, and normalise 18% or something close to it; the original formulation was about 12%. I think they had all agreed on 12% to 15% and for it to be where it is, it is extraordinarily high and not well advised.

The major conclusion one can draw is that we need a direct tax reform along with an indirect tax reform in the form of GST. They are too complicated, have too many slabs, etc. And I am not even talking about bringing alcohol, electricity and fuel into this. We can afford to do it because the economy is robust, growth is good and paradoxically, as mentioned before, if you will reduce the tax rates, you will increase compliance, and you will have much more money to do whatever you wish to do. This is better than to stick with the policy that we traditionally have done. Economists both in government and outside genuinely want to increase tax rates in order to increase tax revenue.

If the tax collection rate is quite reasonable, should the government provide free water, electricity etc.? I think this is an age-old habit, bad habit of interfering with the price system. Don't interfere with the price system. The government, for redistributive purposes and to provide income to the poor, the bottom 3rd or the bottom half of the population, gives cash transfers. The price mechanism should not be interfered with at all. For example, I am actually doing a study: in Karnataka, they are planning to provide free bus rides to women, which will be followed by some more such freebies. For lack of a better word, I would call it mindless. We know why they are doing it. You want to give more money to women as has actually happened in Madhya Pradesh or whatever the reason might be, and we can debate what is the amount that should be given to them, or whether they should receive any money at all, or what about poor men, etc. But it is certainly more efficient than doing it to the price system. One law of taxation for development and everything else that we have learnt over the last 70 years, is that please don't interfere with the price system. Price system is not meant for that and now we can afford certain things. That is why the Direct Benefit Transfer (DBT) is a major, mega revolution and is working very well as it improves targeting. It doesn't mean that if you have DBT, whatever you do will be the right thing to do, but it is certainly a lot more efficient manner of doing it.

We need simpler taxes. We have covered a fair ground in the direct taxes; the direct tax reform was first suggested under Manmohan Singh in 2009-10 and then under Modi, there were perhaps two separate reports on it. It could be that after the 2024 general elections, there will be, or should be, a Direct Tax Code. That's a reform that we need. That is due. Where Tax Deduction at Source (TDS) is concerned, the more we go through the TDS route, the better it is, and it is better for everybody. It is better for the government and is better for the individual. Certain tweaks can be made to the TDS system to make it simpler and more efficient. On capital gains, you have capital losses also. That is not so. In the long-term, you might have gained and there is a zero tax; in short-term, it goes all over the place. There is a problem of having TDS on short-term, which

anybody who will speculate in the stock market will know. There is a huge problem, but I like the intent behind it that it should be streamlined, transparent and efficient. We are going to get there. Maybe, we are almost there in the sense from what I understand. Tax refunds have become a lot quicker. Previously, you had to bribe somebody in order to get a tax refund. Now you don't have to bribe anybody for this purpose. It is not that we don't have problems, but on this one, we have progressed quite a bit.

Where replacing the old tax regime with the new tax regime is concerned, if I remember right, the government had said that they would do it gradually over 5 years. I think we are coming close to the end of those 5 years; they might just give you a shock saying that the old tax regime is out whether you like it or not. But yes, it should be done. Otherwise, we don't move forward. Taxation should be simple, transparent and easy to do. We have come a long way.

To conclude, our tax revenue is very well-behaved, and is quite high—our tax rates are very high and if we were to lower tax rates on both direct and indirect taxes, we will be in an even more comfortable position to finance more social security. We can have increased tax revenue and more goodies to spare. If we want to decrease the fiscal deficit for whatever reasons, we can also decrease the fiscal deficit by the increase in tax rates.

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R Balasubramaniam

Enhancing Capacity of Governance[*]

Being the eternal activist that I am, I can say that in my own way, my brush with the government was always on the other side of the fence. Most of us when we work in the civil society space, have this arrogance that we have solutions to the world's problems. Sometimes, we have a greater arrogance than the government, and that is the cause of the problem itself. We then take a view that incompetence of the government is actually denying citizens their due privileges. I belong to that segment of people where I thought that the only way I could raise my voice was when I could make it loud enough to be heard. The state, too, usually only listens to loud voices. It is not about the legitimacy or the genuineness of the voice. I felt an agitation towards the might of the state for the first time when mercilessly, the forest department used to beat up our indigenous tribal communities for occupying the forest land. In their opinion, it was legitimate land given by the revenue department for which they were paying taxes. It was not as though they were doing anything wrong. They were legitimately given that land and revenue was being collected every year. And when we protested, nobody heard us. We went to the local range forest officer, the Divisional Forest Officer (DFO), Chief Conservator of Forests (CCF); I learnt all the designations at that time.

My first experience of what the state is and what the state is capable of, in both a constructive and positive way as well in a negative way, was when the tribal leaders of the Jenu Kuruba, came to me. They belong to the Particularly Vulnerable Tribal Group (PVTG) as termed

by the government, although I do not like to use that definition; when we call them particularly vulnerable, we do not ask who creates that vulnerability. At that time, I had no idea of what indigenous communities were. That was the first time I stepped into a village – I was born and brought up in Bangalore. Except for my commitment and passion and faith in myself, I had no other resources. I went there and they told me that they had found a body of one of the Jenu Kuruba tribal and that the forest ranger gave them Rs.1000/- to cremate it immediately. They came to me saying that they don't cremate but bury their dead, and they were confused as to what to do. I was very troubled as to why the Forest Department should bother about a death of a tribal. They said that he had died in the forest. I went and saw the body and realised that he had 24 pellet shots on his back. The postmortem actually counted more. Clearly, he had been shot from close range with a shotgun. I was confused – I had no experience and there was no telephone or electricity where I lived. I was living in a little hut in a place called Brahmagiri, that had access to only one bus a day. I told the tribals to hold on and not do anything. The only person I could ask was the government and that was the Deputy Commissioner, an extraordinary officer whom I am still in touch with and who possibly gave me faith that these systems can work. I went and met with every commissioner and told them that this had happened, but by the time I could come back, they had actually buried the body. They did not cremate it. But I did not even know what could be done except for my knowledge of the forensic medicine I had studied, how exhumation happens, how to do the post-mortem of an exhumed body. I had that knowledge but I had never done a post-mortem and I was not qualified to do it because I was not the government doctor. But the District Magistrate ordered an exhumation. The post-mortem was conducted and 36-38 pellets were recovered. It was very clear that he was shot. I was so angry. There was a protest petition and the state, the legal process ruled that the forest officer had shot him in his line of duty and he died because he was encroaching into the forest. I tried to communicate to the tribals what encroaching into the forest meant, but they could never understand it. In Kannada, they say *Î kâu nam'madu* (this forest is ours). How can we encroach our own house? For them, the Maharaja of Mysore was the one who had granted them

all that land only because the Maharaja used to come hunting there and that was the spot of Khedda where elephants are caught on the riverbank of the Kabini. He needed the tribals to catch the elephants and so he had taken good care of them. The Deputy Commissioner then gave a lot of assistance and that was the state land use, two acres of land. This happened in 1987. This was my first exposure of what the government can do, and it was soon forgotten. I didn't even know that we can have redressal to such issues and what is the next step.

In 1995-96, four tribals went into the forest and only one came back. The tribals were convinced that they had also been shot and killed, and this time, they were buried in the forest itself. One who came back was of unsound mind, something had happened, something had snapped and he was not normal. They thought that he had been beaten and saw his people getting killed. These were all stories. We did not know what happened in the forest at that time. I had come to Delhi. A number of tribals were brought in front of the forest department office. By that time, in ten years, they had organised themselves, had community leaders, and women were very articulate. They had self-help help groups in place, and they could not be taken for a ride anymore. Earlier, they would sign a voucher – Rs 12 was the wage that they got per day. But all that stopped because they were educated now. They were asking and demanding for more and the local guard and forester could not take them for a ride. Lot of things had changed by then and the anger had also built up in the system that these people were getting educated. They went on a strike and in their anger, they did something which I felt was unnecessary or can't be justified. They pulled out all the forest guards and rangers out of their office, unrobed them and beat them up. The government immediately filed a case. Unfortunately, it included me, it included all my staff, everybody saying that they were causing all the tension etc. But the truth was that 36 acres of land belonging to the tribals was taken away by the forest department and that had created a lot of tension, leading to what happened. That is when we went to the National Human Rights Commission (NHRC). I went to my mentor and asked him what I should do. It was announced just then that next month, he was going to take over as the Chairperson of Human Rights Commission. He asked me to

wait, or I could approach Mr. Mishra who was presently serving, and asked me to send a letter detailing the whole matter. By the time he took over as the chairperson, he would have something built on it. We had filed an atrocity case against the forest department saying that three people were missing and we did not know what had happened to them and some atrocities had happened. The case was closed, and we did not even know that. The government had conveniently closed the case, but our case was open. The best way to trouble a citizen is to file a case especially when the court is 40kms away. Every 3 days or 4 days, 40 people would go to the court. It was so painful. You lose your day's salary, lose your job.

At that time, I felt I should take a gun. I should become like a naxalite. A naxalite would hear only violence. We teach in our public policy courses to our students that state is the largest proponent of violence. Only a state can create structured violence, and I was facing it. I thought I should return to violence. I had faith in Gandhi, Vivekananda and the guidance of the senior people of the Ramakrishna Mission monks; I decided to fight constitutionally, and constitutional organisations worked. The NHRC actually took it up seriously and it was my good luck that Mr. Chaman Lal was appointed the special rapporteur, and everything got disposed. Today, justice for 154 tribal families who were ousted from their natural environment by the state in the name of development by building dams and national parks, were completely rehabilitated not where the government wanted, but where the NHRC insisted it should be as per the people. This was done without my making any noise and I did nothing. That told me that systems can work, the state can operate. We have to have patience.

Later on, when I was writing the book *I, the Citizen*, I thought I should write the real experience, I should talk to people and ask what governance meant to them. Governance, to me, meant a state which is compassionate, a state which is not deciding for the citizens; it is deciding with the citizens; a state which does not mandate development the way it understands it but has the patience to ask what development means to people. I wanted to ask people what they think of development and governance. I had a special relationship with tribal women because they really took care of me, fed me when I had no

place to live. I used to sleep on the floor. They would give me food. Those were the best years of my life. And they were really mothers to me. I asked Madi, one of the tribal women, what governance meant to her—what it meant to her when I came there, and what it is today, after 20-25 years. And she told me something beautiful. She said that when I came, I got her the widow pension from government. And widow pension meant to her that the government would give her pension once in six months. It was a grand amount of Rs. 250 per month in those days. But it would come once in six months whenever the Treasury decided to send it, through the postal department. There would be a postman coming in search of the beneficiary, and for her, it meant that once in six months she would get Rs. 1500, and the postman would take Rs. 100 out of that. She would only get Rs. 1400. Today, she is getting Rs. 1000 and it comes into her bank account – she proudly showed me her Rupay card. Her granddaughter goes and draws money from her bank account on her behalf. She also told me another thing which really was touching. She said that now it is not only people like you who have all these cards, but she, too, has a card. Look at the egalitarianism that can come through a small gesture like a card! It is only a plastic card, but it gave her a feeling that she gets her money month after month, every month now into her bank account directly which her granddaughter can go and get. More importantly, she said she gets the entire Rs.1000. She was very clear – governance just meant getting her pension every month. She had no grand ideas about democracy, institutions, state, public administration, Fukuyama, nothing. For her, it just meant that much. That was interesting. I spoke to Sharmila, a housewife in Bangalore, and for her, governance was very simple. She said if there was no power cut, the state is working. If she could watch her evening television serial, the state is working. For the street vendor, it was not giving Rs. 30 to the beat policeman for selling his ware on the footpath. Each one of us interprets governance from a very personal experiential perspective.

To understand governance was quite a challenge. After being a part of 'team Anna' and creating all the noise and fighting on the streets, suddenly, here I am in the government and the mandate is how to build the capacity of the system. And when I was asked to join, the

first question I asked was: why me? I was told that my time for writing books and lectures was over, and it was now time for some visible action on the ground. It looked like a nice challenge and I was very excited. I thought maybe I should take it up. It is very easy to stand on the other side and criticise, which I was doing very well, and we get one-sided; we get unidimensional because we see it from our narrow lens. You would have heard of the book by James Scott *Seeing Like a State*. I think seeing like a state matters. It is very easy to see the state from the outside and form opinions, which I am not saying are wrong. Anecdotally, it's true for us. But when you get on the inside, if you look at the way the Indian state operates, you find the constraints and challenges we have. We also have a lot of options today – the strategy options, and technology itself is a great option. How do we do it? It is real that Direct Benefit Transfer (DBT) saves lakhs of rupees. It is also real that students get scholarships in June today rather than next June after the academic year is over. It is also real that people like Madi get their pensions on time. But is that all governance is? It is a question all of us have to still think about collectively as Indians. Is there something more?

About 8 or 9 months ago, the honourable Prime Minister in his speech in an Udyog Mela said that his governing guiding light was the citizen and his mantra of governance was citizen centricity. What does citizen centricity mean? He also used the word Jan Bhagidari which is a word with deep meaning which most of us have not figured out. To me, a state which has got enormous agency, can do whatever it wants. I remember when I was called to the police station and arrested, the Superintendent of Police (SP) called up the inspector and told him that that I was harmless but by arresting me, he had made me a martyr and created a problem. He fired the circle inspector and told him to release me on bail. I didn't know until that day that there was something called police bail.

Many of us are not aware of the systems, the processors, etc. But then, isn't that also a part of the game? Agency and control exist because of the asymmetry of information and power. The state enjoys it. The moment you breakdown the asymmetries of information and power, it makes citizens who are not benign recipients of a welfare

state. I am not saying welfare is bad. I believe welfare is legitimately due to the deserving. But the kind of welfare that is happening in many states today can be questioned. Every young person in Karnataka is given Rs. 2500 every month; it is just a freebie, kind of an insult; you take away enterprise at an age where enterprise is what drives aspirations and that is inimical to development. I kept wondering how I could fit into this game. I was invited to be Member Human Resource (HR) of the Capacity Building Commission. I didn't know what I was bargaining for. Only after I joined, I realised that where civil servants are concerned, many of them are civil, many of them are servants, but many of them are neither. I had vast experience of looking at maladministration and misgovernance in Karnataka, with Justice Santosh Hegde as Vigilance Director Lokayukta. I had seen corruption from very close quarters. I had used Right to Information (RTI), which is a very powerful tool against corruption and to fight for good governance. The same state which creates opacity to encourage governance also creates the transparency required for RTI. It is very funny. We can't really comprehend the state or different arms of the state and we cannot homogenise it and say that this is what state is, this is what government is.

When I was initially trying to understand the government, the first number given to me was that we have only 20 million civil servants in the Government of India (GoI). To me, 2 crore civil servants is not a small number. And then to add to it, I was also told that there are 2 more crores in the states. If states work with GoI, then the state civil servants are also available. Operating in a government which doesn't understand HR at all, I am called Member HR. As per my background, I teach at the Industrial Labour Relations School at Cornell, courses around leadership for future public HR work, and we use the word HR with a particular semantic, with a particular idea. And in India, the Department of Personnel and Training (DoPT) only knows administration and it doesn't understand HR. I did not know if the DoPT was the HR ministry of the government. I was figuring it out and it was a great learning for me. I learnt that the real government is only 3.2 million people. I started working on how you look at numbers. How do you keep out numbers which matters to citizens? How our

ordinance factory is run may not be noticeably felt by ordinary citizens on the streets, but how the local corporation functions affects him. If there is shortage of electricity, it is bad governance for him. If the schoolteacher is not coming, it is bad governance for him. But we have no footprint at that level.

In a federal structure, the state operates with its own advantages and disadvantages. As much as cooperative federalism is a slogan and federalism is a great advantage, it is also a disadvantage, and we have to balance both. You have to look at both sides of the coin. Among 3.2 million people, if you remove 1.5 million people in the central police forces (who at least get a lot of good training) and a million people in the Indian Railways, you are finally left with only 7 lakh people. I started breaking it down. Who are the opinion makers? Who are the influencers? In the first 6 to 9 months, I didn't even know what Multi-Tasking Staff (MTS) was. The first day I went, I was told that I had been allotted an MTS. I didn't know what the word MTS meant. I asked one of the government people what MTS was. What work could I give him? And unfortunately, I was given the wrong definition, a very provocative definition. They told me it meant a multitasking servant. How do you call somebody a servant? I said this is unacceptable and completely wrong politically. I then asked my Principal Private Secretary (PPS), can't we at least call him by name? What is he? He told me that I had not been informed properly. He said MTS meant multitasking staff. It was a little more decent. But we use him like a servant. That is different. We at least feel better than we don't call him that. The first 8 to 9 months were a period of great learning for me. I decided I didn't know the system and was a complete outsider. The system is so intelligent that it does not want to share its intelligence. Everybody feels like it's a perfect caste system. I am convinced that that caste system is not in our villages. There is such a powerful caste system in the system and all of you in service will understand what I am saying. I had to unpack this caste system. I had some funny experiences. For example, my PPS once told me that I had to talk to a Joint Secretary in some ministry, and that she would connect to him. I thought she was the one who was connecting but suddenly, the Joint Secretary spoke to me. I didn't understand the dynamics of this. I asked her how this

works. She informed me that since I was at the level of a Secretary to the government, only I should speak directly. I said that I wanted the work to be done and how does it matter who speaks to whom? I had to understand even small things like that. Even the car that I had been allotted, was a symbol of that caste system. But that's exactly what we are supposed to prevent. Working with a minister in a particular ministry, I actually recognised two joint secretaries in a meeting who had worked together for two and a half years, but had not spoken to each other. And the cabinet order setting this up had said de-silo wise government. But in the same ministry, the same department sitting next door, you don't know the next man and what he does.

I am not saying these are normative examples; I am just giving you the experiences that I had which may not be the norm but may not be an exception also. I am talking about these because capacity of governance is such a complex process. It's been fun, it's been great learning, but the greatest fun for me and joy was the system genuinely wants to do good, too. In one instance, I had filed this case, and the chief secretary of the state (a very good man and one of the finest officers I have seen), was so upset with me that he got angry and shouted at me, I had irritated him so much. In the break, Mr. Chaman Lal called me and told me something which is a mantra for me in governance: he said that I may not like the state, I may fight it with passion, but the state is the permanent institution that can deliver to the tribals, and that I should not forget that and know how to fight. He gave me a strategy. He said, remember the state should be bent, but never be broken because if it's broken, you have nothing else to replace it with. Today, my job is to get the state to have the humility to bend, not bend out of fear but bend with concern, compassion, empathy and equity to a citizen who is not seen as an equal.

Say what we might, the Indian Civil Services were trained for a different purpose and when we got our freedom, we were a provider state. Whether you and I like it or not, that is a reality of the country. We had 2% of global GDP, 350 million people, average life expectancy at birth 35-36 years, maximum literacy was 30% for men; the state had to provide, and the systems were not trained to provide. We must remember that. We should appreciate what the state has evolved to,

from a state that had been looking at citizens as subjects of a crown. A state which had collected taxes from citizens, ensured law and order and prevented them to fight for independence, suddenly, was mandated to provide. Nobody trained them for this purpose and the system had to respond. We did manage the country. We can now blame credit policy, but the country lived through. In the 1990s, suddenly, we said we were going to liberalise, and the effects will trickle down. I never saw anything trickle down. But the state changed and a lot of people at the top became richer. It's similar to what COVID has done; COVID has destroyed millions of lives of the poor across the world. Even regaining pre-COVID levels of income will take them 10 years, but COVID has created tens and tens and thousands of millionaires who made 10 times the money they would have normally made. This is the strangeness of the economic order we live in. But we shifted the economic order in 90s. From saying we can't make that extra scooter or that extra tonne of steel and we will be penalised for it, we said we now wanted to make it. We will deregulate. A state which was used to licensing regulation had to learn how to deregulate and it's not easy. Nobody trained them. And suddenly today, we are talking about partnership state. I don't think people understand it. How do you tell a state to share agency with citizens? How do you tell the citizen to let go of dependency, and from a citizen receiving doles, live in an environment that gives authority to the citizens, because that's what democracy is. How do you authorise the state to do your job? It is something huge and citizens don't want that. Citizens want to take because we created that political economy in this country. It is a huge opportunity and a challenge.

What really gave me hope was the Non-governmental Organization (NGO) sector. We take sides so strongly. I used to fight corporates. We had sued a local company which put a resort in Nagarhole National Park. We all have opinions and I believed corporates are worst sinners. They just rape and plunder the earth and destroy equity. That's what I believed in at one point of time. I thought I can supplant the state but today I can tell you, civil society can at best supplement the state. We need the coalition of Samaaj, Sarkaar and Bazaar. We need to educate each other. Nobody is better than the other. Today, I believe in the

synergistic partnership between all the players which is what can bring about change. If I don't educate corporates how to behave better and responsibly, then I am not doing my job as much as I don't educate the state, as much as I don't educate myself as a citizen. It is a combination game. That is what COVID taught me. Thousands of people including our organization went through a major crisis. We had no money to pay salaries. My own employees were willing to take a 50% cut in their salaries if it meant that another person is not dismissed. We suddenly saw humanity at its best. Even the state did a good job. There were lots of leakages, but people responded. We had a scientists do a very good job. Public health response was very good, corporate sector responded. One could witness the power of partnership in coalition.

What kind of a nation do we have today? Information technology is unbelievable. The kind of power that generative AI has got is frightening. I can share an example. One day, I was mandated by the powers that be that before the next session of the Parliament, we should bring citizen-friendly laws and laws that citizens can understand – simplified laws in 3-4 pages which will also go to the Parliament. We have 300-page documents which only lawyers and judges can understand but we wanted something which simple citizens could understand. This was music to my ears. I was given this mandate from the highest office 14 months ago. I fell in love with it. I went around the whole country talking to experts and finally, zeroed in on a national law school team or faculty who were willing to do it. I am privileged to have a lot of young people working for me and I learn so much from them every day. They think I teach them, but I have not told them the secret, that I learn from them. We developed a beautiful system. I was going with my lawyer colleague to the law school in Bangalore. I drove from the airport with these young people. My lawyer colleague told me that we could ask ChatGPT to design a simple language drafting law for Indian parliament to pass – we will give it the required prompts and see what is the end result. It gave me a beautiful document. I am not a lawyer. He was a lawyer interface for me. He saw it and said it was good. From a learning design perspective, from a training perspective, I am an expert. I saw it was beautiful. Then we went to the law school. The vice chancellor of the faculty presented us their version. It was

also good. Then I gave him this document and asked what he thought of it. He looked at it and said, Sir, if I were you, you should not hire me – you should use whoever gave you that. I said unfortunately, I cannot hire him because he can't come and teach. That is the power of AI that I got exposed to for the first time. Today, ChatGPT and similar tools that are there are horrendous. Today, fake is more real than truth. That's the reality we live in, and we all have to deal with it. We can't run away from it. But can that be a tool we use for making life better? Can it be a tool that can help us train better, can teach us better? Can we create simulations? Very recently, the Prime Minister opened a new campus of National Academy of Customs, Indirect Taxes and Narcotics (NACIN) in Palasamudram. I had the privilege of mentoring it and we have designed an immersive learning experience for our officers of the future because our job is to build a future ready bureaucracy in a world where we don't know what the future is going to be. It's so many Black Swan events that we cannot define it. Technology is making the whole world connected. As I am saying this, for all I know, somebody is already tweeting it and tweeting it the way they are interpreting it. It could either create trouble for me or make me lose my job even. We don't know. We are living in a very uncertain world and that is a reality.

We have public servants who have come from very privileged backgrounds who hire Public Relations (PR) agencies to constantly keep them in the limelight of public and when they get transferred, they instigate people, nudge people to go on protest and tell the government not to shift them. I have actually seen it in Mysore and other parts of Karnataka. You spend money to create an image of yourself while the simplest thing is to just do your job well and you will create a good image for yourself. You don't need an image; that will be the real you. These are realities. We cannot renegotiate it. We have to accept realities as they come and devise ways of dealing with them.

Today's citizens are very informed, very demanding. You should look at Karnataka. I have spoken to a lot of people, and asked them what they do with the first 200 units of electricity that is given free of cost to them. Each person, in his opinion, has got legitimate reasoning either justifying the free electricity (because they pay heavy taxes, that

the poor should get it free, etc.), or to criticise the scheme by saying that things like electricity should not be given free. Citizens are so informed. They will fight for their entitlements. They will not fight to perform duties. We live in such a world where whether we want it or not, we have new technologies, to fight wars or to fight poverty; we have new tools today, but are we using the right ones?

How do I look at my job? The Prime Minister gave us a mandate and his mandate was very simple. He said that the first thing was that public servants should develop a karmayogi spirit, and move ahead from the attitude of a mere karmachari (employee). I had to define what a karmachari was and what a karmayogi was. Karmayogi cannot be defined in the way Bhagavad Gita defines it because then we will have a polarising argument on it. Karmachari itself is good enough. People work for their salaries and do their job. That's also very good. That is what public servants are all about. What do we do? I ask myself, what exactly do we want to build capacity for? What do you build people's capacities for? Why do you build capacities? Do you build them to dig ditches?

We need to understand the work itself. What does public work mean today in a highly complex, changing world where the COVID vaccine started off as a public good and became a hybridised good? The state said that it would give the vaccine free, but the private sector has to give it and it will pay the private sector Rs. 100. Then the state said you can go to the private sector and pay Rs. 1000. If you don't want to stand in queues, you go take it privately and pay for it. If you are willing to stand in queues, come to the Primary Health Centre, and take it free. It became hybridised – what a public good is, is changing. Is clean air a public good? We don't know today. Living in Delhi, as a doctor, I know anything more than 100 AQI is dangerous for humans. But from 461 AQI, if it comes down to 420 AQI, I am happy. 420 AQI has become a public good now, not clean air per se. We all live with our own adaptation strategies of defining what public work is.

What is the future of public administration? Do you need so many people if technology is really a solution? If Google has removed 10% of its staff in the last 3 months around the world, why is the government recruiting them? Why can't we use the power of technology? There

are different ways of looking at it. We have nearly a 42% vacancy in the Government of India, not because the government does not want to recruit or because recruitment is a powerful political tool, but because the courts are now deciding what should be stayed and what should be held up and so things get stuck. So, when you know there is a legitimate need for people, you cannot have people. And when you know that you can use technology and not have people, you can't do that too. It is a very complex ecosystem. How you define work? If I were to ask any government servant, 'what do you do', the first thing he will respond with is his designation, joint secretary, for example, and will not really say what he does. Probably most of us would respond in a similar way. Then, if you dig a little deeper, he will say that he is in the agriculture ministry. If you dig further, he will say he is a joint secretary in budget division. They define themselves and their identity and their very existence by the role they play, and they don't even see the role. They only see the designation. Our entire system operates on positions and designations and what meaning we can make out of it. And in this system, we have now got to tell them to shift attention from karmachari to serving people as karmayogi. It's not easy to make this shift. What are the set of behavioural competencies you need? Where do you work and why shouldn't you work in a good place? Many of my friends who come to visit me in my office find the office clean and nice. They say it looks like a corporate office. What do they mean? Why shouldn't a government office look decent, good? Why shouldn't citizens feel that they are entering a good office? Why should it look like the old movies of 70's where you throw a file and dust flies in the air? Why do we live with such myths? Does professionalism not include that, too? And today, we have research which says that the workspaces determine productivity as well. Why do we allow mediocrity to flourish by not addressing certain things that we can address? The workplace matters. Building capacity is addressing all these aspects together.

Unfortunately, lot of people still think that capacity building commissions are training commissions and that we only oversee training. That's a sad because we use training as an instrument of state capacity building. State capacity is understanding what the state should be doing, where it should it be going. What is the workplace and who is the doer? Appreciating all these things, determining and mapping it,

we decided to go with what the government of the day decides is work. You need a model, you need a goal and the Prime Minister set the goal for us. He said that the long-term goal is preparing the bureaucracy to deliver in Amrit Kaal. The NITI Aayog is now defining what Amrit Kaal means, what those 25 years of India's progress is going to mean in different spaces like social development, economic development, and preparing public servants to deliver. But in the short-term, we look at **five things**. We look at a **5 trillion-dollar economy**. For all the ministries, it is mandated to develop their economy. But I say it should be an inclusive economy, not just a growing economy. Every Indian has a share in it. Every Indian should have the strength to deliver on it. Every Indian should be a participant in it, a beneficiary of it. Next is **Ease of Living**, which is a slogan. Depending on which ministry you ask, which department you ask, you get a definition. We decided we will not wait for that. We are the capacity Building Commission. We will discover how to measure ease of living. What does it mean to our indigenous forest tribes living in a forest? What does it mean to a rural farmer? What does it mean to an urban person? The next is how do you **deliver things for the citizen from a citizen-centric perspective**. And remember, state has its perspective. What is the state's perspective? People need food grains, so give them rice. Rice is a crime, in my opinion, as a doctor. It has a high glycemic index, and all kinds of systemic pesticides are used for growing rice. The pesticides enter the grain and they are poison for the islets of Langerhans. As it has high glycemic index, you are killing the pancreas. By giving 40 kilograms free, we are creating the greatest health crime in this country. How do we bring in millets? How do we bring in what people want? Can we ask people what do they want to eat? We don't want to give them 5 star menus, but we can give them a menu of 4 or 5 things to choose from. Why isn't oil or a pulse as important as a cereal that we give? What is ease of living? We are trying to understand these things. What is the citizen-centric delivery of goods and services? **Atmanirbhar** is not just in economic terms. There are so many ways of looking at atmanirbhar including training design. Why should we imitate the West? Why don't we build in something culturally from our roots, not in a romanticised or in a blind way, but in an evidential way? And finally, **technology** is a reality. How do we use it? Those are

the short-term goals. We have mapped every ministry. I am proud and happy to say all the 3.2 million employees are covered in some sense or the other. The 7 lakh are surely covered. Every ministry is mapped and asked what they do. We are operating in an ecosystem where no government employee gets a job description. Nobody gets a Key Performance Indicator (KPI) saying this is how you will be measured at the end of the next year.

People who talk about the digital divide, do so without looking at actual data. We have deep penetration of broadband; the highest in the world is in India. I am not a politician. I don't make claims. I can give you data. The highest number of cell phones sold today, not owned, is in India. Rural India has got a huge new upcoming generation which understands how to use cell phones at a very young age. It is not urban India alone, it is not an exclusive urban delight. We have to innovate mechanisms. We have Digital Infrastructure for Knowledge Sharing (DIKSHA) platform for school children in education as much as we have the world's largest Learning Management System (LMS) for government officials. Globally, academic absorption of course material on a learning platform in massive online courses is at 7% conversion rate. This means that out of the total number of people who register for a course on edX or Coursera, only 7% complete it. In the Government of India, it is strangely 94%. Why is this so? A BSF jawan has done 200 courses. The question to ask is, why did he do 200 courses? Is it going to help him in his job? There is a hunger for learning too, and it gives him an opportunity for growth. We celebrate him. Why? He is sitting in some rural area with no access except the Internet. He is doing courses. So, the divide is real, but it is rapidly decreasing. In some cases, it is decreasing for all the wrong reasons and purposes. How we reprioritise and package it in a constructive and positive way is our job. It is our collective responsibility. How can I reach that Block Development Officer (BDO) or that Anganwadi worker or that Accredited Social Health Activist (ASHA) worker with the latest immersive learning experiences on her phone or iPad? I have to find an answer. I can't blame her for not seeing it. And that's what we have started attempting.

The first chapter of my report is on performance – performance

of the individual, performance of the department, performance of the government, performance of the whole government including ministries. I hope the report sees the light of the day. I have a person who takes a solution approach. This is something I learnt from the civil society space. You cannot talk about a problem until you can also explore a solution. I have given a series of data points which every ministry can capture from today. Today, we don't have data. But from next year, I can say which ministry is performing, which individual is performing. We have built the tools. It will, hopefully, get mature enough to get into the system. Every ministry is mapped against the larger national goal. Then we talk about the tools you have to deliver on that. The successor-predecessor syndrome is a reality. It means that I will dismantle whatever my predecessor did in office and my successor will dismantle whatever I have done. Nobody knows what knowledge transfer is. Presently, it's unbelievable that the handing over of a charge is barely done in three sentences. And even this is often not done directly with the successor ; you have to leave the job in such a hurry that you just give it to your junior and ask him to hand it over to the next man who comes in. There is no memory transfer at all. I was in Noronha Academy, Bhopal, and going through the Noronha Museum I looked at the charge handing-over note that Noronha used to write. It ran into 7-8 pages. If you look at the charge handing over notes in the last 10 years, some of them are mere signatures, not even a sentence—just charge handed over, with a signature. That is all. Where is the knowledge getting stored? Why are we rediscovering the wheel with every transfer? Why can't we imbibe it? Today, technology can do it. How do you institutionalise knowledge? Why don't we just tap into it? Retired officers have embedded knowledge and while some if it may be irrelevant, the principles they used could be shared with the serving officers, like how to inculcate empathy, how to innovate, etc. The principle of innovation is more important than the product. We need to share that experience and communication is required between retired and serving public servants. We want the mindset to shift from karmachari to karmayogi; from a rule-based approach to a role-based approach. It is not about telling rules to citizens who walk into your office. I am not saying to break rules. PM also does not say break rules. It is transcending the rules thinking that my role is to serve citizens. My

role is to find a solution for your problem. I will try to find a solution within the system of rules that I have. I will serve you.

How do you make a future-ready bureaucracy which is open to learning throughout their professional life? There are no easy solutions. Every day is a learning experience for me. Can you keep learning every time? We don't understand the structural problems in enhancing state capacity. When writing the report, we wanted to mention how many people are there in the Government of India. And the funny part was, depending on whom I asked, I got a number. Cadre Controlling Authority gave a number and the DoPT also gave a number. Finally, the Finance Secretary gave me a solution. He said that I mustn't run around, it was simple. I must look at the pay research unit number, as every employee receives a salary. That is the number the government is paying salary for.

We were told we only have 25 Central Training Institutes (CTIs) and 33 Administrative Training Institutes (ATIs). We discovered something like 900 training institutions run by the Government of India. If you have so many brick and mortar institutions, why isn't capacity getting built? We discovered some new institutes which have not trained anybody in the last 6 years. We have accredited them. We have streamlined them. How do you keep an individual motivated with the same levels of motivation when he joins as until he retires? We think it is the responsibility of the system to keep a public servant motivated. Today, there are so many challenges for the young public servant. Within 3 years, he is dispirited and demotivated. From transfers to postings to challenges of community work, how do you keep somebody motivated, inspired? Young people who are IITs, IIMs, who have given up mainstream careers, extremely bright careers, given it up to come and join a public service, how can we use them? They are the best. The toughest exam is not Indian Institute of Technology-Joint Entrance Exam (IIT-JEE); it is the Union Public Service Commission (UPSC) exam. And trends are changing. 72% in the latest batch are engineers. And most of these engineers are quantitative thinkers. Where is the passionate humanization of public service? It is not their fault. They are trained to be quantitative thinkers, and we have to humanise them. Why are we teaching them the same constitutional law? They

have studied hard for the UPSC. They are much better than the teacher. And they are bored, and they sleep. We still want them to do horse riding in the morning and then stay awake the whole day and then go become empathetic to citizens. We have to really look at how you build capacity. Is the individual prepared to play the role he is playing? Does he have the tool kit, does he have the knowledge, does he have the training, the skill set? We ask ourselves: how do you keep somebody motivated? How do you build his behavioural competency to motivate himself? How do you build his functional competency and give him the means? More importantly, we might train him. But is there a sense of where we can post him? Does the system have a very fair, transparent way of utilising these people for what they are trained for? That itself causes loss of motivation. Extremely talented people are frustrated because they do not have their talent being used. Can we spot it? Can we have a system which is beyond human interface and where we have a competency hub, where competency is assessed and tested? All this is work in progress and my guess is, in the next 2-3 years, we will actually be able to do that. We are looking at a rule-to-role based approach and we have done something fascinating based on what is appropriate for this country.

Every single institution, irrespective of what they are, who they are, what their legacy in history is, has got eight pillars against which they are getting measured today. We have set standards of accreditation with 5 stars being the highest. No institution this country has qualified till now. One star is the lowest that has been accorded but the results cannot be disclosed yet. We are going to go to institutes and tell them that they are a 1-star or a 2-star, and we will help them rise up, and keep improving each other every step of the way. The tool is quite good. It meets global standards. We have had the courage to have the Intellectual Property (IP) rights. We can share it with the rest of the world.

We did our work, talking to experts around the country and we realised we only need four sankalps (resolutions). Each public servant has to make four pledges to himself and to the nation. First, Developed India. Let us define what development is, where everybody is fair, everybody is equal. We do not differentiate between people and we actually want that they have enough food to eat at the table, and that

development is sustainable. Can I be proud of my nation and my duties and my responsibilities? It includes decolonization. As much as we need to remove laws which were made in 1850s and 1820s which are irrelevant today, it is as important as to make laws which actually enhance pride in the citizens of the nation. Can we look at our duties? From a rights-based approach, can we shift to a responsibility-based approach where the state and I are partners in determining my own future and development? And finally, we have to be one nation where it does not matter whether one is a Bihari, a Bengali, or Kannadiga. When 80% of Bangalore consists of non-Kannadigas, you want 60% of the language to be Kannada. I love Kannada, I used to write in Kannada. But language should be both a symbol of culture and a symbol of transaction. It cannot just be kept as one. It has to be both, and we can take pride in it. Why shouldn't I learn Hindi as much as somebody else learns Kannada? They are just Bharatiya Bhashas. Why do we get caught up into all these arguments and spend so much energy. We say all you need for these aspirations to be delivered is only four things. Understand yourself. Ask yourself why I am in public service. **Swadhyaya**, study yourself; you don't have to imitate anybody. Why have I come into the system? What is my job? If I am in civil society, what is my job? I believe I am still serving my mother nation. I am a strong patriot and I believe that I am serving this country. I used to serve as a physician, as a doctor, as a civil society person. Now I am serving a larger landscape. I do not call myself a government servant. I am still a servant of this country. Can I understand myself? Can I understand that I have to work with others? You cannot develop a nation on your own. Whether it is political spectrums, whether it is ideological spectrums, whether it is state and centre, whether it is department and department, whether it is ministry and ministry, we are all together in this game. **Sahkarita** is a trainable skill. It is an attitude. We should not think that we can do everything alone. Subsuming 'I' is karma yoga. Building 'We' is what a nation is all about and **Rajyakarma**. The system has to be strengthened. We can't ignore the state system whether it is democracy or democratic institutions, as it comprises finally of actual people. People are making the rules and the people are playing by them as well. And then finally, my Dharma is to the citizen, **Swadharma**. It is always the citizen first and citizen

last. We actually break it down into these competencies. We measure it. We train people for it, behaviourally, functionally. It is something like if I am joint secretary or an under secretary or an MTS, my behaviour and mindset should be to serve. It is the same for everybody but functionally it changes. I am an Under Secretary, my functions are different. If I am Secretary to government, my functions are different How do you train them? How do you teach people to understand that they should be experts in their field? Today I am Joint Secretary, Health, tomorrow morning, Joint Secretary, Agriculture. Today, you are teaching doctors how to prescribe, tomorrow morning, you are teaching farmers how to plough; you are not doing justice to either, but your ego says that you are the best in both. How do you get a person to take charge only if he has the competency for the job? We are trying to bring in such kinds of small changes and technology is a part of us.

Karmachari, in my opinion, is *dvaita*. He has separated work, workplace and the work person. Karmayogi believes I am the work, I am the worker, I am the work person and I am the one I am worked for. *Advaitic* oneness with the citizen, that *Ekatvam* is a karmayogi and I don't know whether I will reach the goal, but I aspire to keep working for it.

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