

Dr. Vasant Gowariker was born in Pune in 1933. He obtained his M.Sc. and Ph.D. degrees in Chemical Engineering from the University of Birmingham, England. After working for 5 years with the U.K. Atomic Energy Authority and Summerfield Research Station as Senior Technical Officer, he joined the space centre at Thumba in Kerala in 1967 as Head of Propellant Engineering Division, became the Director of the Chemicals and Materials Group and finally rose to head the Vikram Sarabhai Space Centre, which is largest establishment of the Indian Space Research Organization entrusted with the responsibility of development of advanced rockets and launch vehicles for India's space programme. The SLV-3 project to launch India's first rocket to orbit a scientific satellite was successfully completed during Dr. Gowariker's leadership of the Vikram Sarabhai Space Centre. He represented India for five years on the Solid Rocket Technical Committee of the American Institute of Aeronautics and Astronautics.

Dr. Gowariker was a Visiting Professor at Stanford University, California, U.S.A., during 1985-86, when he was invited to join as Secretary, Department of Science and Technology, Government of India. During 1986-91, his major responsibilities included science and technology policy formulation, promotion of new science and technology areas, international science and technology affairs, science and technology and entrepreneurship development, science popularisation and other measures needed for the promotion of applications of science and technology for national development. The new Monsoon model, which for the last five years has been able to accurately forecast the season's total rainfall along with its major characteristics for the country as a whole, was developed and operationalised under Dr. Gowariker's leadership. This work has received worldwide recognition and has been accepted as a major contribution to the understanding of the monsoon processes and long range weather forecasting capability.

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Dr. Gowariker is a recipient of the National Design Award of the Institution of Engineers; Dr. K.G. Naik Gold Medal of the M.S. University, Baroda; the FIE Foundation Award; honorary doctorates of the Universities of Jabalpur, Indore and Roorkee and the Shivaji University; the 1989 Award of the Indian Society for Technical Education, National Citizens Award 1991 and the Padma Shri. He is a Fellow of the Indian Academy of Sciences (Bangalore), Academy of Sciences (Allahabad) and the Indian National Academy of Engineering (New Delhi).

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**Something Happening in India that
this Nation Should be Proud of**

Vasant Gowariker

R R KALE MEMORIAL LECTURE, 1997

**GOKHALE INSTITUTE OF POLITICS AND ECONOMICS
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Something Happening in India that this Nation Should be Proud of

Vasant Gowariker**

Several years ago, I was asked if I could give the Kale Memorial Lecture at this famous Gokhale Institute. I couldn't make it. Little did I realise then that the destiny will have it that years later I would be called upon to stand-by for one of the most eminent jurists of our times, Mr. Nani Palkhiwala. Those of you who have heard Mr. Palkhiwala speak would know that had he been here today he would have shared with you, in his most inimitable style that few could match, his vision of the 21st century India. While I am his substitute here today, I realise that I am no substitute. And the more I think about my appropriateness the less I think about my appropriateness. The least I can do under the circumstances is to deal with a subject that is very close to Mr. Nani Palkhiwala's heart. That subject is India's population.

Before I speak on the subject, let me express my gratitude to Professor Wadhwa for the honour he has done to me in inviting me to give this Memorial Lecture. When Rao Bahadur Kale donated Rs. 1.3 lakhs in those days, he was leaving behind a legend for posterity in the form of this unique Gokhale Institute, and a mechanism for mustering a chain of thoughts of some of the most eminent personalities of our times. The Kale Memorial Lecture series, going on almost uninterruptedly for the last 60 years, has attracted speakers from almost every walk of Indian public life, and I confess that I feel diffidence at the prospect of being counted one amongst them. In addition, I am aware that the Kale Memorial Lecture series is a very formal and serious affair. For the last 60 years, the practice has mostly been that the speaker reads off from his printed text and this practice was followed even by the people of eminence of Dr. Babasaheb Ambedkar, Dr. John Mathai, Dr. Chintamanrao Deshmukh, Dr. Dhananjayrao Gadgil, Dr. Manmohan Singh, Dr. V. Kurien, and last year the then Chief Justice of India, his lordship Shri A. M. Ahmadi. On this background, I beg your tolerance for my audacity for having to stand on my hind legs and not following the glorious tradition of reading from a printed text. I am sure you will kindly forgive me as I was given this task only six days ago and I couldn't get round to preparing my speech in a printed form. But I assure Dr. Wadhwa – and all of you ladies and gentlemen – that I will soon make a printed copy of my speech available if someone wants to refer to it.

While speaking about Indian population, one symbolic reference to the technological whirlwind sweeping across the country might be necessary. Professor Wadhwa just made a reference to the year 1992 when the Institute conducted a major survey involving 4000 eligible women. Around the year mentioned by Professor Wadhwa, one optic fiber could transmit 1000 messages simultaneously. Today, the same fiber can transmit one million messages simultaneously. That was something unthinkable a decade ago. Because, this exponential rise in the carrying capacity of a fiber optic means all the 23 volumes of Encyclopedia Britannica can be transmitted from

* Text of Rao Bahadur R. R. Kale Memorial Lecture delivered at the Gokhale Institute of Politics and Economics, Pune, on 22nd January, 1998.

** Vice Chancellor, University of Pune, Pune-7.

New York to Pune within one second. I can – or anybody else can for that matter – extrapolate India's technology adaptation capability curve and come to the conclusion that such dramatic changes are already at the subterranean level in this country. If you want to hasten the process of bringing up all these changes on a "visible" plane we would need conducive environment for trust, confidence and faith in the capability of this magnificent land called India.

Mr. Nani Palikhiwala, as you might know, is pessimistic about India's population. This is understandable. Demographers all over the world converted every census into a doom's day forecast for this country. However, when I became the President of the Indian Science Congress and chose "Science, Population and Development" as the focal theme for my Presidential address, I found that India's population scenario was totally different, totally opposite to how it was perceived abroad and in this country. India's population scene, to my mind, is not at all pessimistic as Mr. Nani Palkhiwala imagines. In fact, it is the other way round. By saying so, am I encouraging the sense of despondency or complacency?

I propose to answer this question also with the help of some slides. When I came under severe criticism from all sides for being the first and the only one concluding optimistically about India's population, a whiff of fresh air came from the editor of a famous scientific journal. This is what he wrote to me (slide 1).

Slide 1

"... I found that your views were contrary to those normally expressed by many, particularly those propagated by the World Bank/IBRD ... But I believe in what you say..."

-Editor, Current Science, 17/8/93

He was the first one to respond favourably to what sounded to others as my "utterly unbelievable" conclusions (slide 2)

Slide 2

My Conclusions

- India has turned the corner on population front.
- India's population growth rate declining.

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My conclusion on India's population scenario certainly appeared "unbelievable" in those days. Because, as I said, all the time until then demographers had described every census as a "doom's year"! And this "doom" lasted until the next census which was inevitably to be slated into a "bigger doom!". The mood of the other experts on population can be summarized thus (slide 3)

Slide 3

The Mood of Other Population Experts

- "India's population bomb ticking dangerously."
- "India heading for a disaster"
- "India fast heading for a population explosion."

Their mood was based on numbers - the census figures. But, to my mind, demography is not just a study of human numbers. There is a lot behind these numbers - and these numbers were telling me a different story. Exactly opposite to what others were telling! It's my contention that if I were to be asked in 1951 what India's population would be like 40 years later or 50 years later, I would have been able to predict it within a narrow margin. That means, there is a pattern set in way back 40-50 years ago, and hence, my observations are as follows (slide 4)

Slide 4

My Observations

- There is nothing unusual or earth shaking about Census numbers.
- India has all along been on the right path.
- But demographers never ever saw this.

As background material to my focal theme of my presidential address to the 79th Annual Session of the Indian Science Congress. I edited a 511 page companion volume to explore interconnectivities and action possibilities in India on the broader theme of "Science, Population and Development". The thoughts of over 100 eminent persons were contained in this volume which was released by the Prime Minister in the presence of about 4000 scientists and leading personalities assembled in the spacious campus of the M. S. University of Baroda on January 3, 1992.

This science congress was attended, among others, by representatives of several UN bodies . Immediately after the Science Congress , the top officials of the United Nations Population Fund (UNFPA), United Nations Development Programme (UNDP), United Nations Children's Fund (UNICEF), and World Health Organization (WHO) inquired if I could consider bringing and a condensed volume of around 300 pages (as against the original of over 500 pages) in which they wanted me to expand my thoughts, especially the "I Predict" theme. They wanted the new book to be ready for release on the 1993 - World Population Day. I agreed to their proposal and proposed "The Inevitable Billion Plus" as the name of the new book.

What happened after "The Inevitable Billion Plus" book (with my "I Predict" chapter) was released on the 1993 - World Population Day is summarized here (slide 5)

Slide 5

After Release of "The Inevitable Billion Plus" Book

- UN Bodies sent book to universities in USA, Britain, NGOs, population experts.
- Debates followed.
- "I Predict" severely criticised initially.
- Carping criticism since mellowed down.
- I am "elevated" from being " absolutely unrealistic" to "mildly optimistic"!

I am aware that the tone of my speech may sound immodest. Yes, utterly immodest. I am sorry for that. But I don't want a crucial point to be lost sight of. You see, I am not a demographer, and certainly not in the sense a classical demographer is. As a scientist, and pursuant to my "Science, Population and Development" , theme I was looking at the demographic data. My studies led me to conclusions which were poles apart from what classical, professional demographers were leading us to believe for decades. I was in a hopeless minority of one when I propounded my thesis on India's population based on the same census data that was available to others. It was thus a matter of my perception being different. It caught the imagination of the concerned UN bodies which sent my book to all interested scholars, institutions and bodies abroad. I was told that this was the first time that such an initiative was taken by them in this area. Since nobody had said what I had and the foreign experts' opinion appeared to have changed after my findings got across to them, I do feel elated and proud. I am happy that the headlines about India's population have now turned quite optimistic, reflecting a new mood on their part . See, for instance, some typical headlines (slide 6)

Slide 6

International Press Headlines are Now More Like :

- “India among the lowest fertility rate countries in the developing world.”
- “India’s population bomb *no longer* ticking dangerously.”
- “A break-through during 1991-93 compared to 1981-83 on (India’s) population front.”
- “Fertility rates dropping in India.”

-World Resources, 1996-97

- “Population growth rate falls to 1.97.”

-Business Standard (9/6/1995)

And then Indian demographers too began to take cognizance of my work in prestigious journals like the “Economic and Political Weekly”. Here are some specimens (Slides 7,8 and 9)

Slide 7

“...Gowariker’s suggestions are undoubtedly good and worth pursuing by the Government but to expect quick results out of them will, in our view, be too optimistic”.

- EPW : 3 September 1994

Slide 8

"Vasant Gowariker's assertions are optimistic, but..."

EPW : 17 Dec 1994

Slide 9

"... Even if we assume a rate of decline of this order, the birth rate would be around 24 per 1000 in 2003 instead of 21 per thousand predicted by Gowariker."

EPW : 4 Feb 1995

I would now like to show you a Table in which the Crude Death Rate (CDR), the Crude Birth Rate (CBR) and the Natural Growth Rate per 1000 population per year for the last 50 years (from 1941 to 1991) are given on the left hand side of the dotted line. This data forms the basis of my conclusions on the Demographic Transition (DT) pattern in India.

Table 1 : CDR, CBR etc. for Various Years* and My Projection** for the Year 2003

	1941*	1951*	1961*	1971*	1981*	1991*	2003**
Crude birth rate Per 1000 population For the decade	45.9	39.9	41.7	41.2	37.2	29.5	21
Change			4.7		4.0	7.7	
Crude death rate Per 1000 population For the decade	37.2	27.4	22.8	19	15	9.8	8
Change			18.2		4.0	5.2	
Natural growth rate Per 1000 population Per year	8.7	12.5	18.9	22.2	22.2	19.7	13

* Reference : See, for instance, J.J. Bajaj in "The Inevitable Billion Plus", p.30.

** Based on Presidential Address : 79th Annual Session : Indian Science Congress.
"The Inevitable Billion Plus". National Book Trust.

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I now come to the essence of demographic transition in India as I see it for which I have to dwell heavily to my earlier writings in EPW, etc.

Demographic transition (DT) occurs in 5 phases. The first phase is characterized by the birth rate remaining essentially constant but the death rate declining. Naturally, in this first phase of the DT the population increases steeply which, I contend, demographers in India and abroad didn't interpret the way they should have. What they ought to have brought out, but didn't, is contained in my following analysis.

Regardless of the country or the region, the demographic transition is characterized by the following 5 steps :

- 1) The crude death rate (CDR) declines, with no significant decline in the crude birth rate (CBR).
- 2) The Natural Growth Rate (= CBR-CDR) increases; concurrently population increases.
- 3) The Natural Growth Rate reaches a plateau; the CBR decline begins to become significant.
- 4) The Natural Growth Rate begins to decline; the birth rate begins to decline faster than the death rate.
- 5) The Natural Growth Rate declines at a fast rate and ultimately becomes zero. The number of births equals the number of deaths; the population stabilizes.

In India, the 4 of the 5 steps are already over and the fifth and the final step has started. The "transition" is indeed following a text-book pattern as may be seen from the stepwise status, summarized below, which can be compared directly with each of the above 5 steps:

Steps 1 and 2 : From 1941 to 1971, the death rate declined sharply (by a figure of 18.2 – almost halved) whereas the birth rate declined only marginally (by a mere 4.7). The Natural Growth Rate consequently increased from 8.7 to 22.2, representing a steep rise in population.

Step 3 : What occurred in 30 years (from 1941 to 1971) occurred in just 10 years (from 1971 to 1981) when the birth rate declined by 4. During these 10 years (from 1971 to 1981), the death rate also declined by 4 which means the Natural Growth Rate reached a plateau at 22.2.

Step 4 : From 1981 to 1991, the birth rate declined by a figure of 7.7 which is now larger than the decline of 5.2 in the death rate during the same period; the process of Natural Growth Rate decline started (from 22.2 to 19.7)

Step 5 : Now underway.

The data in the Table reflects a classical demographic transition already underway in India. The figures are for the country as a whole, encompassing both demographically backward and advanced states. The birth rates and the death rates are declining both in rural and urban areas of all the States without exception, although to a varying degree. The process underlying the CBR decline has already gained momentum – the other determinants such as literacy, wealth generation, energy consumption, food availability, medical facility, etc., being clearly on the rise, it is difficult to visualize the CBR to be very smaller than what I predict. My projections of the CBR and the CDR for the year 2003 are shown in the last column of the Table.

I would now make two observations (slide 10)

Slide 10

In Demographic Transition Already Underway in India:

- Government has played a role and will have a role.
- But it's individual's urge that made demographic transition tick on textbook pattern!

As I mentioned earlier, with all the success we have had on the population front, there is no room for complacency. We need to further strengthen our efforts with the following measures (Slide 11)

Slide 11

Further Measures

- Legislation.
- Make available wide basket of contraceptives.
- Stimulate Government's role in creating, sustaining, propagating FP message.
- Demystify Contraception (Thailand's example) where peoples' movement created involving Buddhist monk to farmer to vendor to royal prince.

Some people fear that my optimistic picture about India's population scenario may make people complacent. Obviously, if that were my intention I wouldn't have suggested measures to further strengthen the efforts of the family planning programme. But there is another set of persons who feel that my intention may not be to make people relaxed but painting an optimistic picture about the country's population may have the unintended effect of making the country relaxed and complacent. What about that? --

Those who entertain such fear forget that India's successful march on the population front has not come out of a tyrant "one child" dictat as ruthlessly implemented in a communist country where people are allowed to be treated as machines, but has emerged as a consequence of a long process driven by individual's pragmatism and common sense in this world's largest democracy. They - whether

illiterate or otherwise – have demonstrated their uncanny ability to determine what's good for them on several occasions. Even with the worst ever salesmanship, the "illiterate" farmers of India increased the use of chemical fertilizers from a measly 50000 tones to 13 million tones. The same "illiterate" people of India have effected a dramatic decline in the death rate, which is today comparable to that in many European countries, and put a decline in the birth rate on a fast track. They have done all this not because any stern, corrupt dictatorship was breathing down their necks, but because they themselves voluntarily felt the need of doing it. My positive observation about India's accomplishments on the population front is just by way of recognition of this nation's innate strength. My positive observation after exhaustive analysis is like an observation of a glorious event in history, that will only encourage us to move thunderously ahead in our chosen path.

It's time to conclude (Slide 12)

Slide 12

Conclusions

- India has turned the corner successfully and democratically.
- Population growth rate fast declining.
- In next 5-10 years, India will reach replacement level, thereafter move towards zero growth around 2040 or so.

R.B.R.R. KALE MEMORIAL LECTURES

<u>Lecturer</u>	<u>Subject</u>	<u>Year</u>
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2. + G.S.GHURYE	The Social Process	1938
3. + B.R.AMBEDKAR	Federation Versus Freedom	1939
4. * K.T.SHAH	The Constituent Assembly	1940
5. + A.V.THAKKAR	The Problem of the Abo-igines in India	1941
6. + V.L.MEHTA	A Plea for Planning in Co-operation	1942
7. S.G.VAZE	The Formation of the Federations	1943
8. * JOHN MATHAI	Economic Policy	1944
9. * S.R.DESHPANDE	A Statistical Approach to Vital Economic Problems	1945
10. * J.V.JOSHI	India's Sterling Balances	1946
11. + C.D.DESHMUKH	Central Banking in India: A Retrospect	1948
12. + D.G.KARVE	Public Administration in Democracy	1949
13. R.L.DEY	Policy of Protection in India	1950
14. M.VENKATRANGAIYA	Competitive and Co-operative Trends in Federalism	1951
15. A.D. GORWALA	The Role of the Administrator: Past, Present and Future	1952
16. * LAXMANSHASTRI JOSHI	Indian Nationalism	1953
17. + W.R.NATU	Public Administration and Economic Development	1954
18. * P.C.MAHALANOBIS	Some Thoughts on Planning in India	1955
19. + S.K.MURANJAN	Reflections on Economic Growth and Progress	1956
20. + B.K.MADAN	Financing the Second Five-Year Plan	1957
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22. K.P. CHATTOPADHYAY	Some Approaches to Study of Social Change	1959
23. B. VENKATAPPIAH	The Role of Reserve Bank of India in the Development of Credit Institutions	1960
24. B.N.GANGULI	Economic Integration: Regional, National and International	1961
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26. + H.M. PATEL	The Defence of India	1963
27. + M.L. DANTWALA	Agriculture in a Developing Economy: The Indian Experience (The Impact of Economic Development on the Agricultural Sector)	1964
28. * PITAMBAR PANT	Decades of Transition - Opportunities and Tasks	1965
29. + D.R.GADGIL	District Development Planning	1966
30. S.L.KIRLOSKAR	Universities and the Training of Industrial and Business Management	1967
31. E.M.S. NAMBOODRIPAD	The Republican Constitution in the Struggle for Socialism	1968

32.	J.J.ANJARIA	Strategy of Economic Development	1969
33.	RAJANI KOTHARI	Political Economy of Development	1971
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58.	A. M. AHMADI		

* Not Published

+ Out of Print

No lecture was delivered in 1947 and 1970.