



INVITED ARTICLE

PROF RODDAM NARASIMHA THE GIFTED GURU

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Early years

Prof Roddam Narasimha (Meshtru* to his early students, RN to many other students, Roddam to his foreign friends and Narasimha to his many friends and colleagues) was a highly gifted Guru. As per the divine Geeta it could be aptly said that शुचीनांश्रीमतांगेहे (Ch. 6 Shloka 41), that is, he was born in a very cultured and educated family. I am quoting this Shloka in Sanskrit because he loved Sanskrit very much. He was born in July 1933 and was educated in Acharya Pathshala of Bangalore and as per his own account he got very good and dedicated teachers. RN must have had excellent education in School and at home. Later in his life he often used to quote that as per ancient Indian tradition (विद्यातुप्रमुच्यते), that is, knowledge is for liberation as against the Western tradition, Knowledge is power (dominationism), showing clearly to many of us that his upbringing was in the best of Indic tradition. I joined the Department of Aeronautics (now Department of Aerospace Engineering), Indian Institute of Science, Bangalore in August 1963 as a direct entry candidate. In those days first rank holders of a University in India were admitted directly without any interview or test. I came into his contact as a student while doing ME, and even now after so many years his first lecture on basic Fluid Dynamics is very vividly remembered by me as masterly, showing deep insight of the great teacher. RN was a young Assistant Professor in AE Department (Dept of Aeronautics was called so) then about 30 years old. He had a halo of being the most brilliant student of Prof Satish Dhawan for whom RN had a deep respect and admiration. Many in the department used to talk about their joint paper, “Some Properties of Boundary layer Flow during the Transition from Laminar to Turbulent Motion” in Journal of Fluid Mechanics (JFM), 1958. It is one of his very well cited papers on his favourite topic of transition. When I joined IISc, Prof Satish Dhawan was the Director, who is considered as the best Director of IISc. Myself and RN used to often discuss greatness of Prof Dhawan and both of us held the view (I am sure there are others too) that he had a high moral authority i.e. high SQ = Spiritual Quotient apart from high IQ.

RN joined the AE department as a young faculty after doing his PhD under the guidance of famous Prof HW Liepman of Cal Tech, USA. I had the great fortune of attending all courses taught by RN, did my ME Project (in 1964-1965) under the guidance of Prof Dhawan and I attended special lectures given by Prof Liepman on stochastic processes (**Photograph 1**). I always felt that I could not have joined the AE department at a better time. I had the great fortune of learning basics of fluid dynamics, aerodynamics, turbulent flows, stochastic processes from three generations of very gifted teachers. It was very clear to me in ME days that I am learning basics of fluid dynamics from a very gifted teacher and in the first semester itself it was clear to me that I will do PhD under his guidance. As a student, I loved vector calculus with curl, div, grad and here I got a teacher who used plenty of them in his classes and to my utter joy he used Cartesian tensors while teaching fluid motion. I learnt the use of inner product of a tensor $\left(\frac{\partial u_i}{\partial x_j}\right)$ with vector (dx_j) in his classes.

I distinctly remember (even after 57 years) that he started with

$$\begin{aligned} du_i &= \left(\frac{\partial u_i}{\partial x_j}\right) dx_j = \frac{1}{2} \left(\frac{\partial u_i}{\partial x_j} + \frac{\partial u_j}{\partial x_i}\right) dx_j + \frac{1}{2} \left(\frac{\partial u_i}{\partial x_j} - \frac{\partial u_j}{\partial x_i}\right) dx_j \\ &= \frac{1}{2} D_{ij} dx_j + \frac{1}{2} \omega_{ij} dx_j \end{aligned}$$

*Teacher in Kannada



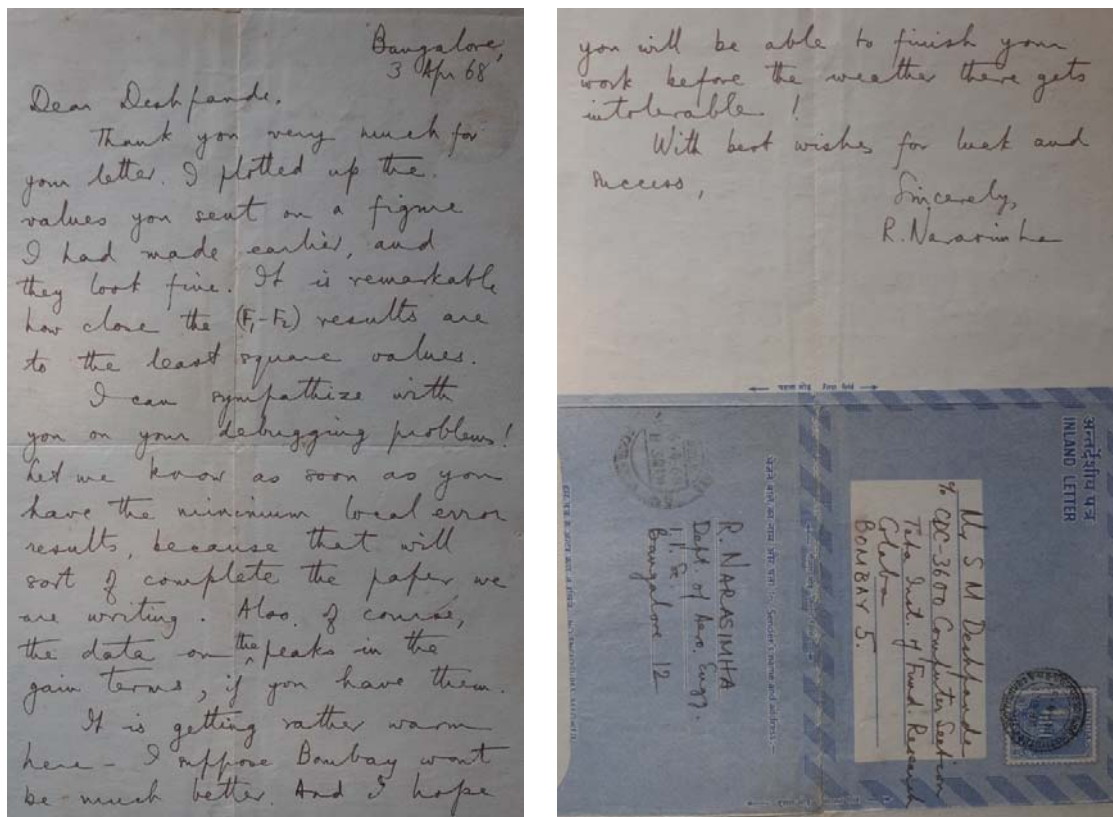
Photograph 1 shows ME students (who attended his classes) along with Prof Liepman and young RN.

The first term on the right contains deformation tensor and the second term on the right contains antisymmetric tensor (curl of vector field u_i). It was therefore argued that viscous stress tensor should depend on deformation tensor. The insight offered by writing the velocity vector differential in the above tensorial form is of great value. Needless to say that I was tremendously impressed by his teaching at a young age of 21! Later on I came to know that some students were terrified by the appearance of tensors in fluid dynamics.

He taught us during that period many courses – fluid dynamics, boundary layer theory, method of matched asymptotic expansions, hydrodynamic stability, real gas dynamics, turbulence, stochastic processes, chaos theory rarefied gas dynamics. In August 1965, I joined the AE Dept as PhD research scholar under his guidance – as I said I made up my mind about it very early in 1963 itself. The topic of my research was shock structure using the Boltzmann equation of kinetic theory of gases (called Rarefied Gas Dynamics then). Discussions in his office in the old building of AE dept (it has now shifted to a new building) were very illuminating. In these person to person discussions he did Anugrah (to use ancient Indic phrase) i.e. he imparted his valuable insight to me in thermodynamics, gas dynamics, theory of characteristics (I had the benefit of attending this course offered by Prof PL Bhatnagar of Dept of Applied Maths, IISc), kinetic theory of gases, use of tools of mathematics in solving problems in fluid dynamics, similarity solution etc etc. I am sure this is also the experience of many of his students. Apart from these subjects we (other students then being A Prabhu, S Vasantha, MRA Sayanam) discussed with him a variety of issues such as history, geopolitics, role of Mahatma Gandhi in freedom struggle, renaissance and enlightenment in Europe, the British empire, diversity in India, changes being brought about by Director Dhawan in IISc, new curriculum being introduced, concept of electives in education and its benefits to students and so on and on. On almost every issue he very patiently listened to excited students and gave them an insight into the issue. It is as if we were in a Gurukul system of ancient India. His interaction with students was held in a very friendly and gentle

atmosphere, he never lost his temper (अक्रोध : is a divine virtue as per 16th Chapter of Geeta), had great patience in explaining the issues to young and sometimes excited and charged minds.

My PhD research problem was to start with Motl-Smith Ansatz (linear combination of two Maxwellian velocity distribution on the upstream (cold) and downstream (hot) side of a shock) and evaluate very difficult fivedimensional collision integral $J(F_1, F_2)$ appearing in the Boltzmann equation. I could derive the $J(F_1, F_2)$ in closed form using special functions called hyper-geometric functions after a lot of hard work over about 18 months. RN was deeply impressed and considered it as a solution of a very difficult problem by me. The next question was calculation of the gain term in $J(F_1, F_2)$. The computational facilities in IISc were very meagre then and only TIFR Bombay (Mumbai) had CDC-3600 Computer. The great Homi Bhabha had laid down the policy of giving 15 minutes free time every month to any student in India. It was of great help – myself, HS Mukunda, N Ramani (two of my fellow research scholars in AE Dept) and MV Krishnamurthy (MVK, research scholar in Dept of Mech Engg, IISc) used to make frequent trips to TIFR Bombay to run our programs on CDC 3600 Computer (**Photograph 2**).

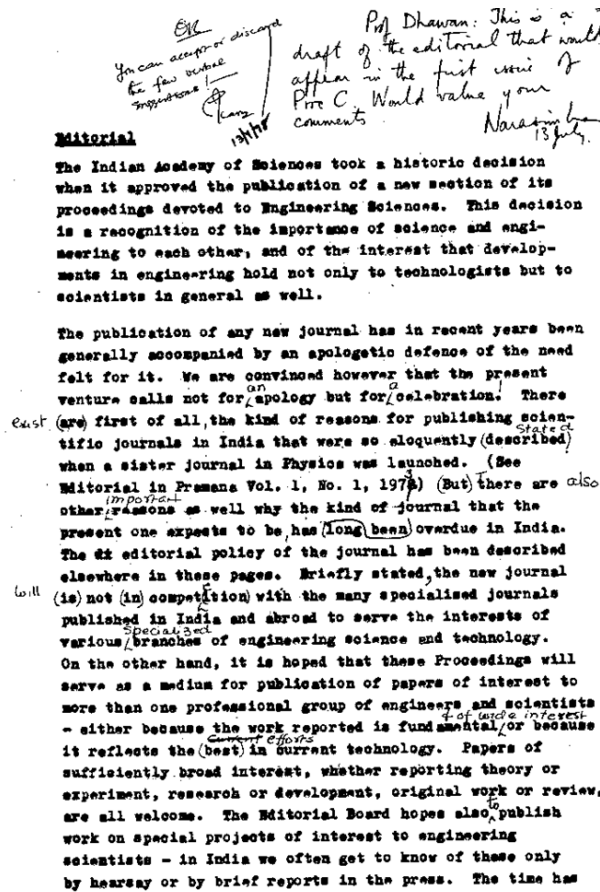


Photograph 2 A copy of letter written by RN to me in 1968.

One experience of mine is worth quoting here, it reveals the human qualities of RN. During 1965-1967 the DA (Dearness Allowance) payable to a student by IISc was very meagre, not at all sufficient to stay in hotels/guest houses as well as in meeting boarding expenses. I remember myself and the above friends used to stay in TIFR Guest House (not always available), YMCA Guest House, Shanmugananda Hall of Tamil Sangam (N Ramani used to book this for us). Still DA was not enough to cover all the expenses. RN said, look this is your research work as well as mine, so let us share the expenses on a 50/50 basis. This was known among a few as RND (RN and Deshpande) funds. Obviously, I was touched by his kind gesture. There is a Sanskrit subhashit – विदूया विवादाय धनं मदाय शक्तिः परेषां परिपीडनाय । खलस्य साधो विपरीतमेतत् ज्ञानाय दानाय च रक्षणाय। The difference

in good (साधोः) and bad (खलस्य) is indicated in this Shloka in Sanskrit. विद्या ज्ञानाय, धनदानाय, शक्ति रक्षणाय i.e. knowledge is for imparting it to others, money is for giving to the needy and strength is for protecting others. This is how साधोः (great and wise people) are. This event clearly shows that apart from being an outstanding scientist, he was a very virtuous person with great character. He was always very sensitive to what others will say (लोकापवादात्भयम्) – as per the great poet Bhartruhari. This is a very important moral character of a person – others should not perceive my action as favouritism, as inappropriate, as clannish as discriminative. He valued and practiced this virtue लोकापवादात्भयम् all his life. He had great respect for Mahatma Gandhi and often used to quote with great pride many episodes from Gandhiji's life. I have personally experienced such great human qualities of him quite a few times in my long association with him.

Myself and RN had two papers on studies in shock structure in JFM (1969) based on our joint research leading completion of my PhD in 1969 and award of the degree in 1970 by IISc. He was very meticulous in correcting draft of paper or report written by students, usually acceptable draft emerged after some iterations. As a student working under his guidance, I remember his advice about writing a paper or thesis. First tell them what you are going to tell them, then tell them, then tell them what you have told them. It is interesting to note that his draft was also corrected by his teacher Prof. Dhawan (**Photograph 3**). Thus, the great tradition continued.



Photograph 3 A draft prepared by Prof RN and corrected by his teacher Prof Dhawan.

At that time there was an advertisement for faculty positions, and I joined the faculty of AE dept as a lecturer in 1969. Around this time Dr PV Subba Raju (who later on joined VSSC, Trivandrum) joined us as a post doc and we three had ISRO and CSIR sponsored projects on DSMC (Direct simulation Monte Carlo) method for Rarefied flows around a satellite launch vehicle. Thus, began my interest in numerical methods for computation of fluid flows which led to my lasting interest in CFD (computational Fluid Dynamics). RN played a very important role in convincing Dr YJ Rao in VSSC to start R & D activity in RGD (Rarefied Gas Dynamics) through sponsored projects (CSIR sponsored project “Studies in Shock Structure in 1968-1970, ISRO sponsored Project” Rarefied Gas Dynamic Studies for a satellite vehicle 1971-1976. ISRO sponsored project Monte Carlo Simulation of low density flows past space vehicles during 1977-1980 in collaboration with me and Dr PV Subba Raju). The computing power in India then was very limited and we could not even do Monte Carlo simulation with one million molecules. He always anticipated the future areas for stating R & D activity and encouraged every student to pursue his own interest with passion which is very important in research. During his stay in IISc he was on several important committees and programs. Some notable examples are, switching over to grades from marks in IISc, Avro Enquiry Commission, Sonic Boom Committee, Failure Analysis Committee (FAC) of ISRO, GAF (Ground Attack Fighter) program of HAL. It is well known in the aeronautical community of India that he played a very crucial role in conceiving, planning and getting approval for LCA program while he was still in IISc, Because of his contact and influence or clout in ISRO, we got two ER (External Research Program). PhD candidates KP Singh* (who later joined ADA) and SK Saxena (who later joined CSIR-NAL) of VSSC, Trivandrum for doing research in CFD. I had the full freedom to guide them and to successfully produce very early PhDs in the new and rapidly evolving field of CFD. Thus because of his foresight and help we could jointly play the role of GTDA (generation, transmission, distribution and application) manpower in CFD.

I must quote one more incident here. In 1973, I published a paper in Quarterly of Applied Mathematics on a very different and original formulation of NS (Navier-Stokes) equations. RN would always mention this contribution of mine several times and along with Prof Dhawan (who was Vice President of Indian Academy of Sciences) was instrumental in making me a Fellow of Indian Academy of Sciences in 1974. I am very grateful to him for encouraging, supporting me so much. He always believed (I am sure many of his students and colleagues will testify) that talent must be spotted, nurtured and supported-a kind of academic aristocracy!

Around 1984, I went on two year sabbatical to NASA Langley Research Center, USA, He was the Chairman of AE Department and soon he became the Director, NAL.

In CSIR-NAL

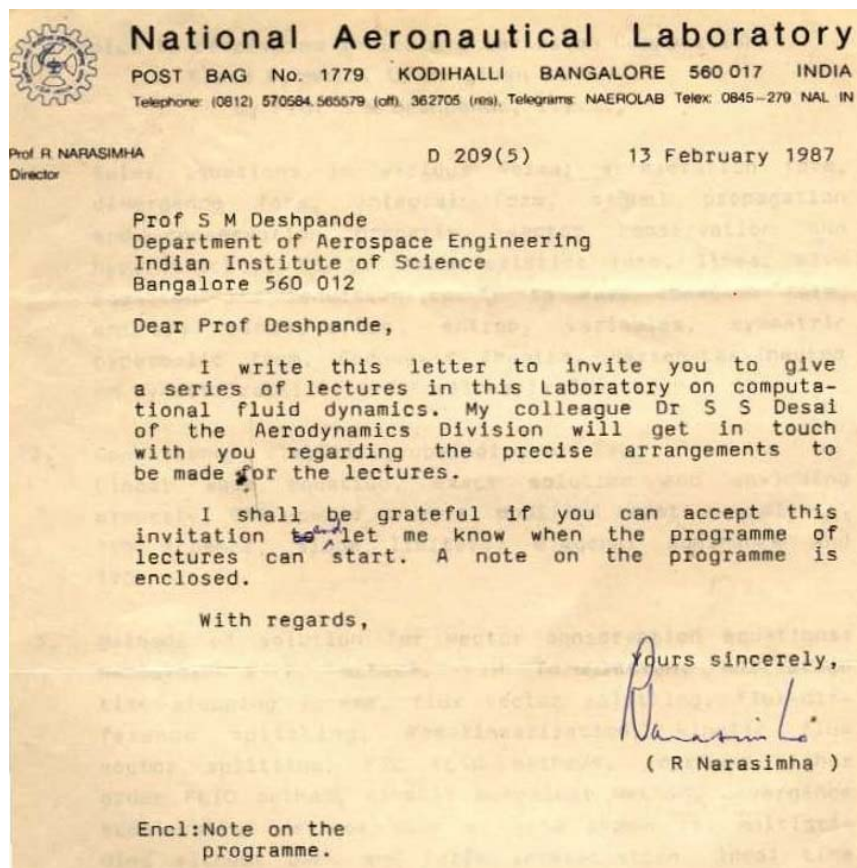
It was a momentous period in Aeronautics when he took over the reins of Directorship in NAL(now called CSIR-NAL) in 1984. There were many national programs of great importance such as IGMDP (Integrated Guided Missile Development Program) of DRDO, LCA program of ADA (DRDO), and ASLV/PSLV/GSLV programs of ISRO. The MTCR (Missile Technology Control Regime), TDR (Technology Denial Regime) were either on or kicking in slowly and there was an urgent need to develop our own parallel computing platforms to meet our needs of computer simulation. A much bigger canvas was now available to RN for playing a national role. He committed resources (both in terms of expert manpower and facilities) of NAL for successful completion of the prestigious LCA program of DRDO. He founded CTFD (Computational &Theoretical Fluid Dynamics) Division with Dr SS Desai,a dedicated and brilliant Scientist, as head of CTFD. The SOFFTS (a kind of software library) was established with a tool box of CFD Codes which can be accessed by any Scientist of NAL. The Flosolver Group (later it became Flosolver division) was established with very committed and passionate scientist Dr UN Sinha as its Head.

Myself, Keshav Malagi and Arshad Shameem of CTFD, NAL had used the parallel computing capability of NAL for the Data Assimilation project (NMITLI/CSIR Project 2007-2009 together with Dr UN Sinha) while I was in Engg Mechanics Unit (EMU) of JNCASR, Bangalore. I am of the view that this very useful project on the Data assimilation for better weather forecast should have continued till its logical end. But it was closed, and the Flosolver Division was also closed. The joint paper by me and Keshav Malagi on Data Assimilation presented in AeSI CFD Conference in 2017 is very widely read.

**Recently ADA set up an award in the name of Dr KP Singh for outstanding work in aerodynamics*

As a Director of NAL, RN promised the LCA program that all wind tunnel testing would be undertaken by NAL and under his able leadership all the testing was completed on schedule. He was very proud of mentioning this achievement to many generations of his students (the oldest being about 80 years, and the youngest one is now about 34 years old). The CLAW (Control Law for LCA) team for designing the FCS (Flight Control Systems) of LCA, the composite airframe of Tejas (LCA) were very significant and crucial programs in which CSIR-NAL participated under his visionary leadership (The details of significant contributions from CSIR-NAL to LCA Program are available on www.csir.res.in).

I very vividly remember that after my sabbatical in NASA Langley, USA, I returned back to IISc in 1986. RN was very keen in promoting CFD and he specially invited me to give a series of lectures in NAL (**Photograph 4**).



Photograph 4 A copy of letter of invitation to me

Another significant event, I remember during that momentous period is that Dr SS Desai, Head, CTFD, NAL was assigned the task of leading the aerodynamics design team of ADA. The team made frequent visits to Dassault, France and worked very hard. I had Indo-French Centre, Delhi supported projects, IFCPAR, so I used to visit Ecole Normale Supérieure Paris and University of Paris quite often. I had met many members of this team in Paris. There was extremely close interaction between me (of ARDB CFD Center, IISc) and Dr SS Desai of CTFD in the field of CFD. It is very interesting to note here that my ME Project student (K Sanjay 1988) worked on the Project "Development of parallel code for Euler equations using NAL parallel computer). Obviously, this was possible because of the tremendous help from RN and Dr UN Sinha. I remember very fondly that I had sent a fax to him as Director, NAL saying I want to use your parallel computer and promptly I got the reply from him "yes with pleasure". Myself, Dr SS Desai and RN jointly made a bid for hosting the first ever International Conference on CFD



Photograph 5 A photograph of RN, Dr KN Raju (NAL), Myself and Dr SS Desai (NAL) at inauguration of ICNMFD



Photograph 6 A picture with RN in Paris

in Bangalore. The famous 14th ICNMFD (International Conference on Numerical Methods in Fluid Dynamics) was held in Bangalore in July 1994 (**Photograph 5**). Both of us had travelled to Paris to attend the Scientific Committee of ICNMFD and after the meeting we toured around Paris for a while (**Photograph 6**).

His tremendous support as a Director of NAL was very crucial in organizing this prestigious CFD Conference in Bangalore. (I must admit here that I have been on extremely friendly terms with Directors of NAL).

During his tenure in NAL and subsequently in NIAS Bangalore he developed interests in many areas: Yoga Vaasishtha (I have been studying it since 1965), Charak Samhita, Indic epistemology भारतीय प्रमाण शास्त्र, Sankhya Darshan सांख्य दर्शन, contributions of Aryabhatta, Bhaskara, Brahmagupta and ofcourse history. As a research student in IISc he had loaned me his book on Vijayanagar empire titled “Forgotten Empire”. He was on a Committee called Track II diplomacy on Nuclear Doctrine of India during Prime Ministership of Bharat Ratna Atal Bihari Vajpayee for whom he had great respect. Some of the very famous Sanskrit Shlokas/Subhashits we often quoted and enjoyed are given below.

- (i) Neelkantha and Madhav of the Kerala School of Mathematics said एतत् सर्व युक्तिमूलम् न तु आगम मूलम्
All this in the book comes from युक्ति (a very clever and intelligent proof) and not from authority.
- (ii) The very very famous Yaksha Prashna (यक्षप्रश्न) in the epic Mahabharat (महाभारत) that he was very fond of:
The Yaksha asks कः पन्थः ? Which is the path? The famous Yudhishtir answers
तर्कोऽप्रतिष्ठः श्रुतयो विभिन्नः नैको मुनिर्यस्यवचः प्रमाणम् । धर्मस्य तत्त्वं निहितं गुहायां महाजनो येन गतः स पन्था ।

The logic is indeterminate (तर्कोऽप्रतिष्ठः was often quoted by RN to many), different sacred texts differ, no single Saint’s utterance/statement can be taken as valid. The principles of धर्म (Dharma – there is no suitable English word for this Indian concept) are hidden in a cave and hence follow the path of the very great man (महाजन). I remember very vividly that in JNCASR we (Prof RN, Prof Gary Brown, myself) used to discuss this very often and RN with great patience would explain the concept of Dharma to Gary. The discussion used to be very intense in the car travel also so much so that our driver Basavaraj for years got to know the concept of Dharma very well! I am sure by now Gary has fully understood the concept Dharma.

- (iii) This Shloka is from the play मालविकाग्निमित्रम् Malavikagnimitra by the famous poet Kalidas. It was immensely liked by RN and me, and we read it independently. We often used to quote it.

पुराणमित्येव न साधु सर्वं न चापिकाव्यं
नवमित्यवद्यम् । सन्तः परीक्ष्यान्यतरत्भजन्ते
मूढः परप्रत्ययेनेयबुद्धिः ॥

Just because something (saying, statement, a thing etc) is old, does not mean it is good. Also being new does not mean it is to be rejected. A person with discrimination examines everything and then accepts it, fools (dull people) decide acceptability or unacceptability based on what others say. This Shloka captures the wisdom RN had acquired as a result of his Indic upbringing. It is often said that he took the best of the east and the west, but root of the acceptance/rejection synthesis (समन्वय in Sanskrit) was firmly rooted in the best Indic tradition.

- (iv) Another short Sanskrit Sutra he loved and often quoted is द्रुक्गणितैक्य i.e., agreement between calculations and observations. This small compact Sutra is the corner stone of many Indian astronomers, scientists in general. He called it in his lectures as a kind of computational positivism. It is very similar to one view in Quantum Mechanics (QM) termed, “Shut up and calculate”.

- (v) He was very fond of emphasis on vichar (thinking, discrimination) and Paurusha (effort) by the great epic work called Yoga Vaasishtha. He often told about विचार and पौष to many of students.

JNCASR, Bangalore years

RN was involved in JNC (shorter form of JNCASR) right from its inception. He founded the Engineering Mechanics Unit (EMU) of JNC and wanted it to become a center of excellence in fluid mechanics. I joined EMU as a senior research associate in September 2004 soon after my retirement from IISc in July 2004. I have spent about 16 years working in close collaboration with him. I joined JNC primarily because of my close ties with him. He always loved to do research in turbulent flows, transition, instability, relaminarisation. He had published many papers in reputed Journals in this field jointly with his research students and colleagues – A Prabhu, K Narahari Rao, MA Badrinarayan, KR Sreenivasan, PR Viswanath. It is well known that he was deeply interested in clouds, weather, monsoon and in general atmospheric science. During his tenure in IISc, he founded the CAOS (Center for Atmospheric and Oceanic Sciences) and often visited it while he was in JNC. Other former students and his co-workers are more competent about writing his contribution in the above areas of research. I will confine my comments to our joint R & D work done while being at JNC.

We have jointly guided research work of many MSc/PhD Scholars and post doctoral fellow (post docs) while in JNC – Aditya Konduri (now faculty in IISc), Prashanth (now in USA), B Rakshith (now in Airbus, Bangalore), Rajesh Ranjan (now post docs in Ohio, soon to join IIT Kanpur as faculty), Milind Dhake and NH Maruthi (both of them now in Sankhya Sutra Labs Ltd, Bangalore), Kishore Singh Patel (now in NIT Rourkela). Some years ago, RN and myself decided to start DNS (Direct Numerical Simulation) group, which was the need of the hour as HPC (High Performance Computing) had made rapid progress in speed (FLOPS), data movement, memory and it was being used elsewhere in the world in computing complex flows. Much more computing power was available in IISc, CSIR-4PI, DRDO, CDAC Pune. Also, under NSM (National Super Computing Mission) of India plans were afoot to set up many HPC platforms. It was a very important, timely, cooperative (परस्परपूरक) venture because of his lifelong interest in Turbulence, transition, relaminarisation of my deep interest in CFD. Both of us believed in synergy, that is,

$$\text{Pr (AUB)} \gg \text{Pr(A)} + \text{Pr(B)}$$

Where Pr stands for productivity and Pr (AUB) is the productivity when working together.

Two problems in fluid dynamics were selected for research. (i) Transient diabatic plume as a model for cloud (Vybhav Rao did experimental work for this problem for his PhD) (ii) Flow past a gas turbine blade at moderate Reynolds number ($\approx 10^4$). Both the problems involved turbulent flow and the turbine problem involves transition, relaminarisation and again transition to turbulent flow. We had sponsored projects from GATET (DRDO), ANURAG (DRDO) and GTRE (DRDO). Thus, started our DNS group, it also got a tremendous support from NVIDIA HPC Group, IBM, Caligotech (a small private company involved in code optimization). The ANUROOP code used several GPU platforms and it was run on several HPC platforms of CDAC, CSIR-4PI, IISc, DHARVA of ANURAG (DRDO) and with the help of NVIDIA HPC with P100, V100 GPUs. Many papers have been published in Journals and conferences based on this work. Important to mention here that our joint PhD Scholar Rajesh Ranjan (now at IIT Kanpur) developed the ANUROOP Code for computing the flow past a gas turbine blade. Dr. S Kishore Kumar (Associate Director in GTRE) and Director GTRE were extremely helpful in supporting this DNS programme.

Another problem we jointly tackled was Aerodynamic Shape Optimization (ASO). Rakshith and Milind worked on this problem for PhD/MSc in collaboration with Dr C Praveen of TIFR-CAM. This work led to a patent. We started with finite wing theory of Prandtl so called low fidelity model first, and then used 3D KFVS finite volume Euler Solver. To take into account effect of propeller (tractor configuration) BEM (Blade Element Theory) capability was added. Later on, we used FLUENT-RANS code for increasing the fidelity of simulation.

Prof. Gary Brown (one of authors of the famous Brown and Roshko paper) visited us in JNC many times. He & RN had a lot of interest in vortex dynamics, turbulence, transition and geopolitics and concept of Dharma (which I mentioned before). All three of us use to discuss these topics in depth during tea, lunch times and often during car travel from JNC to IISc where he stayed. I have very very fond memories of my association with Gary.

With the gentle persuasion of RN I took NMITLI/CSIR sponsored project on Data Assimilation for better weather forecast in collaboration with Dr UN Sinha, Dr TN Venkatesh, Keshav S Malagi, Arshad Shameem from CSIR-NAL. It was an excellent collaboration which as per my remark before should have been taken to its logical end. Obviously, such an ambitious joint project was possible because of RN. I must mention before concluding this section that RN was very fond of managing projects, Labs development with very meagre funds. Often this became a difficult problem as funds are required for post docs, project associates, infrastructure development etc. On many occasions I used to press for asking more money and I used to often tell him that his is because सुखस्यमूलं अर्थः (i.e., wealth is required for happiness) but generally he was unwilling. I got a lot of it during my interaction and collaboration with scientists from DRDL when Dr APJ Abdul Kalam was Director and later on Chief of DRDO. My great fortune (that I had the privilege of working with Padma Vibhushan Prof Roddam Narasimha and Bharat Ratna Dr APJ Abdul Kalam who later on became President of India. So, both Saraswathi (Goddess of learning) and Lakshmi (Goddess of wealth) showered their blessings on me because of these two great sons of Bharatmata.

Concluding Remarks

It is very difficult for his past and present students and colleagues to come to terms with the reality that the “Gentle Giant” in Aerospace Engineering is no were among us. For me personally it is a terrible loss because of my association with him for about 56 long years. A great Sanskrit poet said, “Time is infinite, and earth is plentiful” and hence our great country will in future very definitely produce more such outstanding scientists steeped in the best of Indic tradition.

Acknowledgement

I am very thankful to Dr. R Balasubramaniam and Dr. S Kishore Kumar (respectively Editor and Associate Editor) of Journal of Aerospace Sciences and Technologies for inviting me to write an article on my beloved **Guru Prof. Roddam Narasimha**.