

My Education and Wandering: A Voyage to the Void and Absurdité

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1. Introduction: This is an autobiographical essay written by an ordinary man who floating in the current of events touched different banks but could not set his feet anywhere and was dragged by the mightily turbulent water, time and again, back into its realm. He didn't know what was his destiny or destination but was on a voyage lifelong. He wanted to live and for that he had to die many a time. An ordinary man does only ordinary things in life and is fully responsible for what he did and what he became or is. His autobiography must be ordinary, without any event or achievement that could impress a reader. However, even ordinary persons live and do have a right to communicate whether they are paid any attention or not. This essay should be read, if at all, with that spirit and understanding.

2. The background story: My father, who did not have much formal education and lived in a village, did not believe in the efficacy of education imparted to the young children at the primary schools. He had some involvement in the Indian Independence Movement that had engulfed the society in 1920's through 1940's and I believe that he had been a participant in the intermittent incidences of eruption and turbulence that the movement threw up from time to time. As he himself described briefly many a time, he spent several years in Banaras and had had a personal contact with the people such as JB Kripalani, Meenu Masani, Achyut Patwardhan, MM Malaviya, Jayaprakash Narayan, Acharya Narendra Dev, Vinoba Bhave, etc. that shaped his worldview. In his personal life and attitudes to the society, he believed that the socioeconomic dynamics that led to concentration of power in the hands of a few land-hungry, scheming, clever, pro-British and high-caste individuals, immiserizing the rest of the people in the rural society, was the real reason for India's underdevelopment and continuance of her servitude to the British interests. He also believed that the education imparted in the schools supported and reinforced the said socioeconomic dynamics since the individuals, trained in the educational framework prevailing, can only fit to the larger scheme that the British had designed, and do not have any intrinsic worth for the welfare of the society. In his youthful days at Banaras he had been under the influence of Trimbak Shastri, from whom he learned Sanskrit and Ayurveda (the Indian system of medicine). He earned livelihood by practicing Ayurveda in the village. He earned just enough for the family to make ends meet.

We had in our house a small library of books crammed in two large almirahs. Most of those books were in Sanskrit and covered Ayurveda, grammar, Nirukta, thesauruses, astrology, literature, puranas, upnishadas and so on, together with numerous but fewer Hindi and English books. It would be appropriate to mention here that most of the Sanskrit books were stamped to belong to 'Chalta Phirta Kamala Sanskrit Pustakalaya' that means mobile Kamala Sanskrit library. The library, I guess, was built by my uncle, Shri Kamalakant Chaudhary (who hailed from Chanrely, at the bank of Chanan, Banka, Bihar) married to my father's sister. About Shri Chaudhary I know only this much that he was a Sanskrit scholar, otherworldly and untamable to the household chores of a traditional village life. Leaving his wife and two daughters behind him, he vanished not to be seen again. My mother used to say that he became a sanyasin. I must say that the said small but rich library at our house gave me and my siblings an opportunity to lay our hands on many Sanskrit classics normally not accessible to many growing children whose academic world is limited to the books prescribed for their courses in their schools.

My father had succeeded in teaching my elder brother at home, who, after having procured a Sanskrit Madhyama degree (equivalent to secondary school leaving certificate) privately, obtained an admission to the Ayurvedic college at Bhagalpur and did his GAMS (Graduate of Ayurvedic Medicine and Surgery). He was considered by his professors to be an extremely good student and a good physician in making. The brilliant success of education through an alternative route enabling his eldest son to be independent (not needing any govt./private job or service), self-sufficient and socially useful reinforced my father's belief in the futility of the conventional route and feasibility of the alternative route to educate his children. He gained all impetus to try his educational method upon me, his second son.

3. The beginning of my unusual education: I do not remember as to when I learned reading and writing. But I suppose my father taught me writing by holding my hand in his hand, since our handwritings are very similar. He believed in the saying, often attributed to Gandhiji, that bad handwriting is a sign of imperfect education. He wrote balanced, beautiful Devanagari (as well as Roman) scripts, with proper strokes. He often used to say that one must read as it was written in books (properly pronouncing short and long vowels, *hrashwa* and *dirgha*; discriminating among *murdhanya*, *taalavya* and *dantya*, caring for various types of *virama* or punctuation properly and so on), and must write as it was written in books (letters must be as if they were printed, one must learn the changes in language owing to gender, tense, case, etc.). Compared to Hindi, Sanskrit is much more particular at those grammatical and compositional rules.

I remember since when I found myself committing to my memory or getting by heart the *shlokas* of Amarakosha, a Sanskrit thesaurus written in verses that classifies the objects into different *vergas* (classes) and lists the synonyms for different objects. We (my elder sister and I) used to be busy at that exercise and in the evening we had to report to our father on our achievements of the day. Exceptional achievements were financially rewarded which sowed in us the seeds of what David McClelland (1961) would call the n-achievement; it also inculcated in us the sense of competition (as my sister and I often wanted to outperform each other). We took almost two years to commit the entire Amarakosha to our memories. Having done that, of our own (primarily due to the interest taken by my sister, which on account of competitive spirit, could not be ignored by me) we laid our hands on another thesaurus, Medinikosha, which is in verses. But its scheme is different from Amarakosha (except a small part of it – Nanarthavarga) that takes an object and lists the words for it. Medinikosha takes a word and lists those objects that the word signifies. Our father neither encouraged nor explicitly discouraged us at that enterprise. Instead, he yoked us at committing the sutras of Laghu Siddhanta Kaumudi (Sanskrit grammar that has a reputation for initiating students to Panini's grammar, Ashtadhyayi). I must also add that in our leisure time we used to read other books, some of which were the works in Hindi poetry. We also found a book on *Chhandashastra* (namely, Vrittarnakaram) that described different types of *shlokas* (in different meters) composed by different *ganas* (eight or 2^3 ordered triplets made up by putting short and long vowels in different order, such as SSS, SSI, SIS, SII, ISI, etc.). Of our own, we read Panchatantram, Ritusanharam, Raghuvansham, etc. But those books were not in our syllabus as prescribed by our father. Reading those books was considered as an extracurricular activity. The main course book was Laghu Siddhanta Kaumudi; the task was committing to our memory the sutras in it. The entire book, cover to cover, must be gotten by heart. At that time it was beyond me to envisage, but now, on reflection, I think that the very organization presented in the *Shiva Sutras* alluded to be of divine origin though, must be a marvel of the conscious yoked to the unconscious that sought for extreme functional generalization of the vast number of particulars that a language like Sanskrit characterizes.

I personally believe that at the young age when the brain is developing fast, a training to memorize, especially verses, has positive effects on the capability of the brain to command a larger primary memory and recall the memorized things fast as and when they are needed. It also indirectly helps in the capability to compose. I also believe that I have an above-average memory and fast recall and composition power due to the said training that benefitted me throughout my life. But let it be my personal belief, out of the domain of discussion or discord.

A good command over Sanskrit thesaurus like Amarakosha (with a little of grammar basic to inflections that the nouns, pronouns (*shabdarupa*) and verbs (*dhatrupa*) undergo in view of gender, tense, etc and a little of *samasa* or making of compound words) readily gives a person the capability to understand normal Sanskrit. Hindi, especially the Hindi poetry which is highly sanskritized, is easier to understand. I always regret not having a good word stock of Arabic and Persian in my primary memory and that is why I cannot understand, speak or write normal Urdu, although the rules of composing sentences and inflections of verbs are almost same in Hindi and Urdu (and it is not difficult to learn Urdu scripts). I think I have made my point why a command on word stock (as provided by committing a thesaurus to memory) is essential for understanding a language.

Returning to my training in the Sanskrit grammar (after having memorized Laghu Siddhanta Kaumudi), it was not so easy to apply the sutras to derivation of different *shabdarupas* (inflections in nouns, adjectives and pronouns) and *dhatrupas* (inflections in verbs). It required instructions of a teacher who himself was skilled at that and could recall appropriate *sutras* at the beck and call of the problem at hand. My father helped me in *shabdarupas*, but when I came to *dhatrupas* it became quite complicated on account of different groups (*ganas*), tenses (*lakaaras*), *aatmanepada* (verb being used for serving the self), *parasmaipada* (verb being used for serving others) and so on. Note the difference among *dadaati* (gives, direct) and *diyate*, *diyete* and *diyante* (singular, dual and plural, indirect – being given). Different combinations of tense, aspect, mood, number, and person make the *dhatrupas* very complicated. All such inflections follow several *sutras* of Panini. A good grammarian must remember them all, exactly and correctly in an appropriate sequence. I suppose, my father was not a very skilled grammarian and I was not able to appreciate the utility of complexities in *dhatrupas*. Those difficulties resulted into my sluggish growth, and may be some sort of disinterest, in Sanskrit grammar.

I must also mention the apathy that I used to receive from the boys of my age living in my neighborhood. They all were going to schools; they had many topics to talk on, many subjects to study, punctuality and routine that they had to undergo, the thrill of passing the examinations every year, the joy of getting good marks, comparing their achievements vis-à-vis others', laughing at those who had cut a sorry figure and so on. I had none of those. I had nothing to tell others that they could participate in or enjoy. They also had a feeling that Sanskrit could not help in making a career, getting a job, becoming a scientist and so on. It could at best secure a priesthood which was synonymous with a vain prestige cum empty stomach, pulling on life on the merciful but disdainful donations. Their scornful eyes to me were piercing, disturbing and perhaps deeply insulting.

Disturbed at my educational stagnation my father decided to admit me to a Sanskrit school at Karnagarh, Nathnagar, a few miles away from the township of Bhagalpur. The admission was ok but residence at Nathnagar was problematic. We were economically modest and in all likelihood my father could not have arranged for my stay at any hostel and pay for food and lodge. My father thought that I could stay with my elder brother who was working in the hospital attached to the Ayurvedic College at Karnagarh. But my elder brother had his future plans that did not make a good combination of my stay with him. Hence, after a short episode of my education in the Sanskrit school at Karnagarh, I returned

back to my village in despair, but with an alternative in my mind. That alternative was to join the high school in my village.

My father was not happy with my resolution to join the village high school, but he was not happy with my educational stagnation either. Almost six months passed in a fix and we remained in doldrums. Consequently, my father agreed to send me to the village high school. My education took a new turn. I was introduced to reading English (of course, I already knew Roman alphabets). We had had a book, Panchatantra, in three languages, Sanskrit, Hindi and English in a single cover. I knew the contents of the book - every story in it. Once I started reading the English version, I came across the words most of which were new to me. We had a good English-Hindi dictionary. I noted the English words, found out their meaning in Hindi that did not jeopardize the theme of narration and got them by heart. It was not much difficult to do, except the pronunciation. It is notable that in Sanskrit (as well as Hindi) one writes what one speaks, letter by letter. But that is not so in English. I marked those peculiarities and soon became accustomed to that. I must say that when a non-native learner progresses in learning English, a sort of intelligence is gradually created such that it automatically suggests the pronunciation of a strange, previously unknown, word, which at times might be wrong but, in general, it is correct. In this sense English adds to the creativity of mind rooted in empirical experience. Returning to my story, it took almost four months and my English vocabulary became rich enough. I started composing small sentences in English. That much of knowledge was satisfactory to meet the local standards. I knew no mathematics, except elementary arithmetic. It was decided, in consultation with the headmaster of the school, therefore, that I may be admitted to class X directly, but in the arts stream. The problem was resolved and in May 1963 I was admitted to the school.

I had to study many new subjects. Sanskrit and Hindi were two subjects, dealing with which I found easier than a child's play. Social studies syllabus was not more than a week's task. History syllabus was merely a sequence of stories, reading which was informative and pleasant. I was accustomed to doing more mental work and tackling more difficult problems (in Sanskrit) than what the syllabuses of those subjects demanded of me. We had a course in elementary physiology and hygiene (EPH). Having been brought up in a physician's family, much of the syllabus dealt with in that course was a common sense to me. There was a course in 'Everyday Science' which contained some physics and chemistry, a little of biology and also some very elementary physical geography, earth science and environmental science, etc. I found them very interesting. Experiments in laboratory (in physics and chemistry) were permitted only to the students of the science stream. However, in due course, considering my interest, the headmaster kindly permitted me to attend the laboratory classes and join the group of science students who did some experiments during the afternoons. This experience not only promoted my knowledge in sciences and made me familiar with many concepts to cover the syllabus of 'Everyday Science', it also inculcated in me a lasting interest in sciences, chemistry in particular. My knowledge remained cipher in mathematics. It did not take much time that I appeared at the Bihar Secondary School Examination (in the last quarter of 1964) and passed the secondary school examinations. My results pleased most of my teachers. Among them, Shri Gangadhar Jha, who taught me 'Everyday Science' expressly exhibited his happiness. Our headmaster, Shri Rudra Pratap Singh expressed his joy, encouraged me to carry on and not to hesitate if I needed any help in future. I had secured very high marks in EPH and Everyday Science, but only second class marks in most other subjects. I scored below forty in Social Studies (that included economics, political science and sociology). At that time none could have guessed that in the days to come, teaching economics and doing research in it would be my profession. At that time, in view of my innocence, none could have guessed that in future I will be most involved in doing statistics, writing computer programs and applying the techniques of optimization to the problems that I would formulate. At that time none could have guessed that in future I would coauthor (with whatsoever

contribution) a couple of research papers that would relate to 'inter-atomic potential function' and be published in a science journal such as Chemical Physics Letters.

3. Joining a college: My father was not in favor of sending me to a college for further studies. In those days the youngsters who passed the secondary school examination in I-division (with 60% or more marks in aggregate) were directly admitted to teachers' training course, which, once completed, ensured their entry to the govt. job of a primary school teacher. It was a great opportunity to me which my father wanted me to avail myself of. On the other hand, there was an option to join a college for higher studies which could fetch uncertain results. Moreover, college education was more costly and had to be pursued for longer period to be meaningful. Poor people, if rational, are risk averse. And my father perceived the difficulties that I was to undergo if I chose the option to pursue further studies. However, my mother was not cowed by the perceived financial difficulties and uncertainties that further studies implied to us. She had had in her mind the higher education that my elder brother had received. Though at the risk of digression, I should mention here that my elder brother, having completed his GAMS and house surgeon's training, appeared privately for the secondary school examinations and having passed the examinations joined a college, did his BA and MA in English, all in regular course. He did all those things of his own, completely unsupported by my father, and went through miserable circumstances that befall on them who are financially constrained. Of course, he returned back to his physician's profession after doing his MA. Having completed his MA in English he could overcome the complex that the society had implanted in his heart due to his lack of general (socially accepted) education, especially literacy in English. One must admire the fighting spirit and perseverance that my elder brother had exhibited, and my compassionate mother was the best admirer of her worthy son. Hence, she preferred to court uncertainties and hardship that my higher education implied to us. She won and it was decided that I should join a college at the nearest township of Bhagalpur.

In Bhagalpur, there were two colleges, either of which could be chosen for my admission. TNB College was the best and most preferred for its appearance (building and infrastructure), teaching standards, records and fame where I could have been admitted directly, without joining a queue (owing to my result in the secondary school examinations). Marwari College was an alternative, but chosen by only those who could not be admitted to TNB College. By design, we chose Marwari College, where we could negotiate for full free education, owing to my 1st division results at school, which had given me a choice to join TNB College if I were to pay fees. To add, my elder brother had been a well-known student of Marwari College due to several reasons. First, he was an exceptional student who had done his BA from that college, after having his degrees of a physician and a remarkable skill at diagnosing and treating the ailing people. Secondly, he was a very good carom and chess player who in his college days had brought many laurels to Marwari College in the University level competitions. Owing to all those positive factors in my favor, the principal of Marwari College agreed to admit me to his college with waiver of all fees and a word for extending all educational help to me in gratis.

So, I was admitted to the Pre-University (PU) Course. English and MIL Hindi were two compulsory papers. I chose Hindi (Principal), logic and economics as optional. Hindi never posed a problem to me owing to my training in Sanskrit. I had improved in English, too, as I continued enriching my vocabulary by reading out-of-the-course books and consulting dictionary whenever needed. I was apt at writing good essays in Hindi and I often tried to do that in English, too. Imagination and composition are not much language dependent, as a language is only an expression thereof though constrained by its intrinsic (often structure- and culture-dependent attributes that a language has) as well as user-dependent limitations. I did have imagination as well as aptitude for composition. Only thing to conquer was my limitations on account of vocabulary and skill at forming well-structured sentences. I was

learning those things gradually. As to logic (deductive), I found it so well defined that it was a pleasure to learn it. Very soon I succeeded at mastering the topics in the syllabus. I always felt that economics was a poorly defined subject. In Indian economics, all topics and statistics fell apart any structure; there was no reason why the things were as they were. Today I would say that Indian economics, as it has been presented in the syllabuses in India, is poorly structured since there is no theory that puts them together in order. This poor structure may not be intrinsic to the subject, but the exposition makes it appear like that. On the other hand, economic theories appear to be highly hypothetical and far from the reality. Moreover, economic theory and its empirical counterpart (Indian economics) are poorly matched. In sciences, the empirical facts and theories are well-matched and largely support each other. I think that in economics such a mismatch has historical reasons. Indian economics was initially raised by those who in the British Raj were akin to follow the historical and institutional schools of thought and believed that the received neoclassical theories from the British were only instrumental to justify the exploitation of the underdog by the ruling class. However, they could not develop a theoretical system to replace the neoclassical economics. After independence the anti-British spirit that spurred Indian economics turned pro-government for pseudo-patriotic reasons, but remained without a well-structured theoretical content. Those Indian economists who tried to build theories out of the Indian economic experiences were critical of the government and showed communistic bent. The Indian politicians had preached a socialistic pattern of society, but socialism was a facade only. As a matter of fact, India tacitly planned to launch capitalism by strengthening the hands of businessmen through covert capital formation in the private sector (Jha, 1963) at the cost of the public sector, supported by public resources but enriching the politicians, businessmen and the intelligentsia. My father and elder brother thought like that and under their influence I sensed all these while I was in college, but my teachers at the college were too professional to encourage me asking such questions. In due course, I passed the PU examination. Following that, I did my BA Part-1. There is nothing special to mention.

4. Opting for Honours course in economics: After passing my BA Part-I in 1967, I was at a crossroad where a choice of course might decide the openings to the future career of a student. The first issue was whether to choose a pass course or an Honours course. Pass course meant, largely, a full stop on further studies (doing MA) and beginning of seeking for a job with a BA degree. Those days the private sector of the Indian economy did not have many openings for BA Pass students. Therefore, a natural choice for the students was to opt for Honours courses which were more difficult but, having been successfully completed, they provided prospects to joining MA in the subject concerned. Honours in English, which was highly prized, was neither my cup of tea nor was it being taught at Marwari College. I should mention here that Marwari College was established with a view to excel in the Commerce stream and complement TNB College since the latter did not serve the Commerce stream. Later on, in order to absorb the spill-over of students who could not be admitted to TNB College, provisions of education in the Arts stream were made. In the same vein, education in the Science stream started. Marwari College also started Honours course in sociology which was not available in TNB College. Primarily specializing in the Commerce stream, Marwari College had had necessary capabilities to offer an Honours course in economics, although it stood nowhere vis-à-vis TNB College in attracting good students to do Honours course in economics. My humble economic background and generosity of the College towards me had bound me to remain there and opt for Honours in economics. The same was the case with a friend and class-fellow of mine, Sudha Ranjan Singh (who in due course rose to become professor of economics in Magadh University, Bodh Gaya). Once I opted for Honours in economics, I also had to choose a paper to specialize in. On the advice of my friends, I chose statistics, although I admit that my knowledge in mathematics (even simple arithmetic) was nearly zero.

Economics Department in Marwari College had three teachers: Prof. S.S. Lal, Prof. R.S. Dalmia and Prof. R.D. Sharma. Professor Lal was the Head of the Department who seldom taught us, although people said that he was good at his subject. We were too young and perhaps subdued and marginalized to know or understand as to what made him indifferent to students academically as well as emotionally. Prof. Dalmia was congenitally deprived of eyesight. But he was very regular at conducting his classes. Punctually, he was escorted to the classroom by a help who after roll call would leave him on the dice in the classroom and escorted him back to the staff chamber when the class was over. He taught Indian economics and remembered all statistics on the topic that he taught. He could not use blackboard and, therefore, we faced a lot of difficulties in taking notes of his lectures. Also, since he was not able to watch his students quitting the class room after the roll call, not many students remained in his class to listen to him. There had been a malady in teaching Indian Economics. First, it revolved around the problems faced by the Indian economy and the government's efforts to contain them, without discussing much as to the causes of the problems, interrelationship among them and the reasons that explained the failures of the public effort to solve the problems. Those days, population growth was blamed for all maladies, characteristically in the Malthusian style (Myrdal, 1953), tacitly suggesting that the people themselves were responsible for the failures met by the public efforts. The vagaries of nature were the subsidiary causes. The other possible reasons such as lack of coordination, inefficiency in planning, misplaced priorities and ill-conceived procedures, corruption, rent-seeking and bureaucracy were seldom discussed. Second, planning became synonymous with allocation of public resources. This approach to understanding the economy was full of data that could never be correlated with the measures of performance. Third, Indian economists never bothered to develop an appropriate theoretical framework that explained emergence and continuance of problems. Thus, the relationship between economic theory and Indian economics reminded us the remarks of Keynes (1936: Ch. 21, p. 292): "We have all of us become used to finding ourselves sometimes on the one side of the moon and sometimes on the other, without knowing what route or journey connects them, related, apparently, after the fashion of our waking and our dreaming lives." These remarks are not on the teachings of Prof. Dalmia. He was perhaps as good at his job as any other professor could be. These remarks are on the status of the Indian economics and its teaching in the colleges and the universities. And the results follow. Indian economics is a boring subject that is replete with unconnected, unexplained, unreliable, data always in flux and often mutually inconsistent. Or considered differently, it is a boorish apologia of the intelligentsia in favor of the government efforts to resolve the problems of the Indian economy. It may also be considered as a vulgar effort to indoctrination or a colossal exercise of sycophancy by the intelligentsia. In the later part of my life I was always amused at the innocence of my colleagues who specialized in Indian economics and yet never bothered to read the Asian Drama of Gunnar Myrdal.

Professor R.D. Sharma was perhaps the ablest teacher on the faculty who taught us economic theory and public finance. But he had excessive love for Sanskritized Hindi and wanted his students to abandon every effort to read books or write answers in English. Perhaps he was undermining the fact that the English language presents before us a very rich literature in orthodox as well as heterodox economics, which would be inaccessible to the students deprived of facility in English. Secondly, if a student went on for further studies in economics (such as doing MA or PhD) Hindi would not be of much help. But this perspective was of no use to Professor Sharma who was eying the students to be the clients to his private tuition enterprise. Hindi as a language of instruction was in his favor since many among the students were afraid of English or did not aim at higher studies. Empirically also, the students and Professor Sharma were right. After all, from among the scores of students doing Honours in economics, one or two would succeed and would be found suitable for doing MA. Then why to be Nietzschean and sacrifice the interest of the mass for raising a few excellent ones; why not to work or plead for the greatest good of the greatest number? This philosophy also helped his self-interest. So, he was as he

was. He also showed little interest in those students who, good or bad, wouldn't go ahead to take private tuition from him. In due course, Professor Sharma rose to become the University Head of the Department of Economics in Bhagalpur University.

Professor L.K. Sharan was on the faculty of Statistics (rather than Economics) and taught us statistics that was confined to the concept (and computation) of probability, measures of central tendency and dispersion, correlation and regression and some methods of constructing index numbers. He knew our limitations and showed a lot of patience and compassion. In spite of our block headedness he remained smiling and worked hard to teach us statistics. Particularly, I was at a great disadvantage because of my pitiable training in mathematics and arithmetic. Yet, he never lost his cool and tried his best to teach me statistics. In later years when I met him while I was at IIT, Kharagpur, he was very happy with his characteristic smile on his face and commented that he knew that someday in future I, as his student, would bring that honor to him.

There were a few other teachers who were quite affectionate to me and encouraged me to do my best. Professor Amal K. Bose was the vice principal. Although he did not teach me, he loved me like his own child. Professors Bhavanath Jha and Naresh Jha had taught me deductive and inductive logic in PU and BA Part-I. They also were quite affectionate and encouraging. Professor Bholanath Singh taught me political science (which was my side subject in economics Honours). There were other teachers, too. But my memory fails to recall them by name. Last, but not the least, was the role of Professor Sukumar Roychoudhury who was the principal of Marwari College during those days. While being admitted to College in 1965, he kindly waved all my fees and continued to do so throughout. He also permitted me to borrow and retain as many books from the college library as I needed. I also purchased several text books, which was financed by the headmaster of my village high school on a weak condition that I would return those books to the school library when my studies would be over.

5. Professor Kameshwar Jha as a Godsend teacher: Those days it was generally held by almost every student that to perform at examinations it was needed that the student should compile the questions that were asked in the examinations of a series of years in the recent past and taking help of different books should write answers to them. The enterprise of that was called making 'notes'. Those who could afford to take private tuitions from professors were getting 'notes' from the tutors and, therefore, did not have a need to make 'notes' by themselves. Such students could devote more time in reading them and in proportion to their capabilities to hold them in their minds and write them in examinations (if the answers prepared by them suited to the questions asked), they performed badly or well. The enterprise of making 'notes' by one's own efforts needed books, time for reading, comprehension, ability to grasp the salient points, writing précis, directing the points to answer the question and so on. Moreover, some questions required that the students should be able to synthesize different views or create a sequence among different events or ideas. Thus, the enterprise was quite demanding which an average student could not comply with. Taking the help of private tutors (who were the professors in different colleges) was costly and most of the students those days were economically constrained. Passing on the 'notes' from the one to the other student(s) was a rare practice although exchanges did take place. Formation of coalitions was also taking place when a candidate member of the coalition took private tuition for a particular paper and another candidate member took private tuition for another particular paper and so on. The members of the coalition exchanged the 'notes' among themselves and maintained a secrecy about that. Incidences of cheating also occurred. Such coalitions were seldom formed among those students who dared or were constrained to make 'notes' by their own efforts, since such self-made notes did not carry an authority of expertise which tutor-made 'notes' used to carry.

Being not in a position to pay for private tuition, I was bound to make all my 'notes' by myself. Availability of books was not much of an issue because the gracious gesture of the college principal was in my favor. However, I suspected my own abilities and wanted my 'notes' to be vetted by a good teacher. I received a discouraging treatment from Professor R.D. Sharma, who was considered to be the best among the lot. Moved by my misery and helplessness one of my friends, who was doing economics Honours in TNB College, suggested me to meet Professor Kameshwar Jha. Professor Jha was teaching economics in TNB College and was well known for his knowledge as well as compassion for poor but good students. I did not take many days to meet Professor Kameshwar Jha, and intercepted him while he was returning to his residence from his college. Walking along with him, I explained my problem to him and begged for his attention and help. He kindly heard me and asked me to meet him in the college. I explained to him that I was not a student of his college. That was no issue at all and he instantaneously told me to meet him at his residence. When I informed him that I did not know as to the location of his residence, he explained to me how to reach there and the next evening, carrying all my self-made 'notes' with me, I was there at his residence. We sat together and he was kind to glance through all my 'notes' within an hour and so. Then he said that I could do better if I rewrote them. But before that, he desired to explain to me how each question was to be answered. He asked me to come next evening.

So excited, I visited him the next evening. Professor Jha kept his word, took a couple of questions and started explaining how to answer them one by one. Having explained them he instructed me to write the answers afresh and show them to him next evening. Energized by his support, I worked hard and wrote the answers. Those fresh answers required a lot to be composed by myself and not to be copied from the books. It was a new experience. At the next occasion when I showed the answers to him, he made several grammatical changes, compositional changes, elaborative changes and so on. Having done that, he instructed me to rewrite the answers once more and show to him at the next instant. I must note that after having done that exercise, I regained my skill of composition, expression and exposition. I started developing self-confidence which I had lost to a significant extent after passing my secondary school examination in 1965.

Subsequently it became a daily affair. He moved from question answers to more fundamental ideas. In due course he started teaching me mathematics and statistics also. He was well versed in mathematics and statistics and an excellent teacher and expositor. He taught me nearly everything, economics and beyond. We used to sit together for hours and hours, especially on Sundays, discussing about economics and related issues. I should also mention that our interaction lasted for over five years until, after completing my MA and remaining unemployed for about two years, I left Bhagalpur to pursue my further education at IIT, Kharagpur.

6. Joining the MA programme: Under whatsoever constraints, I could secure Honours in economics and was placed in the 5th position in the university. In view of the fact that I was in Marwari College, the success was spectacular. My teachers were very happy and I, too. The next step was to join the MA course. However, there were two choices before me: to join the MA (Economics) programme or to join the Rural Economics and Cooperation programme. Those programmes were given in two different and mutually competing departments, the first headed by Professor Narmadeshwar Jha and the second headed by Professor Shiva Chandra Jha. The Economics MA programme was most sought after but only two types of student joined the Dept. of Rural Economics and Cooperation, the first included those who could not be admitted to the MA (Economics) programme and the second comprised those who were rent-seekers. Professor Shiva Chandra Jha was politically active and he was known to have pro-caste biases. Those traits were (and even today, they are) not unexpected of those whose hearts lie in

commanding power and milking the soft state of India. After all, politics is dealing in exchange of support for favors. I chose MA (Economics) programme for my further studies.

Academically, it was a correct choice. Teachers in the Department of Economics were knowledgeable. Professor Narmadeshwar Jha himself was very keen on quality and regularity of teaching classes. By that time Prof. Kameshwar Jha had started teaching PG classes. Other teachers were very good and scholarly. Prof. S.N. Thakur was teaching the History of economic thought. Prof. Shiv Kumar Singh was teaching Public finance. Prof. Ramji Sahay was teaching Micro and Macro economics. Prof. Narmadeshwar Jha used to teach Development economics. Statistics (which I took as my specialization) was taught by Prof. I.K. Narayan. Mathematics for economists was taught by Prof. Kameshwar Jha. Prof. Durganand Jha taught Indian economics, planning, etc. Being a student of MA (Economics) was a good experience and fully gratifying. The examinations were held in the third quarter of 1972 and I passed MA in the opening month of 1973.

7. Face to face with rejections and unemployment: Having done my MA, I started seeking a job. I wished to be a lecturer somewhere and it was not so easy. In May 1973 I was selected in A.N. Sinha Institute of Social Studies at Patna to work in a project directed by Dr. M.P. Pandey. I could work there only for a month. Most probably I suffered a sun-stroke and fell sick. I returned back home, burning with fever. The fever took a bad turn keeping me sick for almost one and a half year hanging between life and death. Those were the days of despair. Loss of job followed by the chances of loss of life was disheartening and terrifying. The joy of completing my education evaporated in the thin air. While I was yet to regain my health fully, I appeared at several interviews for the post of a college lecturer. I was rejected everywhere, even for those colleges that paid a paltry sum to teachers and where teachers as well as students were living a disgraceful retched life, all bungled and botched. I will narrate one such episode. After I responded to an advertisement for a post of lecturer in Sukhsena college, I was happy to receive a call for interview in the college premises. I set out for the college and reached there in the evening, prior to the day on which the interview was to be held. In the name of a hostel, the college had in its premises a very large room with four mud walls, a single door, a thatched roof and several paddy-straw beds on the floor. There were a few persons lodging there; I did not know whether they were students, teachers or candidates for the interview. I readily prepared a straw bed for myself, too. In the night I got my meal that included some rice, watery *Dal* with some grains of pulses visible and a little of curry made of potatoes fried in water. Tired and hungry, I ate and slept. In the morning I was ready for the interview. The stage was set in an open verandah with a table and a few chairs, one for the interviewee and several for the interviewers. The requisite number of chairs was arranged in the courtyard, annexed to the verandah, where the candidates who came for the interview were seated. The interviewers could watch the candidates and hear them talking. The candidates could watch and hear the conversation going on among the interviewers and between the interviewers and the interviewee sitting before them. Utter deprivation and poverty had made all of us completely naked, fully transparent to each other – all *digambara*s (covered with open space, not clothes, i.e. stark nude), nothing to hide among ourselves. The interview started. The candidates were not doing well. My turn came. I responded to all questions, and I think, correctly. After all the candidates were interviewed, it took almost thirty minutes for the interview board to announce the results. I was not selected. Since

everything was transparent, I asked the interviewers to provide me with the reasons to reject me and side by side, the reasons to select the one who evidently did not answer most of the questions. Nobody was angry or dissatisfied with my open challenge to the board. The board members were calm. The chairman, a white khadi dhoti kurta topi sporting gentleman who appeared to be a political man from top to toe, smiled gently and introduced himself to be Shri Ramachandra Jha. He said that I was a good candidate and had a prosperous career waiting for me. If I were selected in that college, my future would be doomed. To protect me from that abominable future, he chose to reject me. He also said that when in future I would be better placed, he would welcome a letter from me informing him if he foresaw my future correctly. And that was the end of the episode.

8. Training at NICD (NIRD): In the opening months of 1975, Professor Narmadeshwar Jha received a letter from the NICD (now NIRD), Hyderabad requesting him to recommend some persons for a short training in community and rural development. I was in contact with Prof. Jha and he showed his kind gesture to recommend me for that short training. I went to Hyderabad. The trainees were comfortably lodged and offered a good rich food. It was a pleasure to stay there. While there, I came across a person named Dr. G.K. Mishra who was basically a geographer specialized in regional planning. He was some 5 to 7 years older to me. We used to go out on a walk in the beautiful and cool evenings of Rajendra nagar, Hyderabad. Almost every day he impressed upon me that I was whiling away my time there at NICD. One evening I became irritated and asked him if he knew a way out from the rut that I was in. He took my rough response coolly and posited that he knew a viable way out. I should apply and join the regional planning course at IIT, Kharagpur. I had not heard of IIT, Kharagpur or regional planning. Yet, I wanted to know that if I were selected for the course, who would foot the bill. He explained that if I could be selected I would get a handsome scholarship. The suggestion was so nice and encouraging that we sat together and sent a letter to the Department of Architecture and Planning, IIT, Kharagpur to send to me an application form for admission to the Master of Regional Planning course. Since I was to quit NICD before I could have received the forms, I requested in my letter that the form should be sent to the Head of the Department of Economics, Bhagalpur University.

9. One more Master degree at IIT, Kharagpur: By the time I reached Bhagalpur, the application form and the schedule of entrance test had already arrived at the Department of Economics, Bhagalpur University. I met Professor Narmadeshwar Jha and told him as to what I was intending to do. I filled the form. There was a provision in the form for the recommendation of the head of some institution. Professor Jha kindly made the recommendation. On due date I appeared in the entrance test and, fortunately, I was selected. I received the selection letter that required paying the admission fees and other charges immediately, which grossly, amounted to some 350 rupees. I approached my elder brother who was living at Rishra (near Calcutta) and told him of my requirement. He kindly supported me and thus I joined the Master of Regional Planning programme spread over two years and paying me a scholarship of Rs. three hundred every month. A hostel room was given to me and I was to dine in the hostel mess. The room rent and mess fee were automatically to be deducted from my scholarship and the residual amount paid to me every month.

Very soon a small problem arose in the payment of scholarship to me. As Professor Jha had recommended my case, it was expected that the Department of Economics, Bhagalpur University would

financially support me. On this complication, I met Professor Jha at Bhagalpur who wrote a letter to the Director of IIT, Kharagpur explaining that my application form was not recommended by Professor Jha with any such condition known to him. It worked and the Director, IIT, Kharagpur kindly removed the conditionality, if any, on my scholarship and the problem was sorted out. It appears that such conditions were not mentioned in the form. Whatever might be the case, my journey to become a regional planner began. The MRP course began in June or July 1975.

10. Learning many things that had lasting value: The Master of Regional Planning (MRP) course was open to geographers, economists, sociologists, anthropologists, statisticians and might be some others, too. A similar course (Master of City Planning or MCP) which had many papers in common with the MRP course was open to architects and civil engineers. Of course, the Department of Architecture and Regional Planning was offering BArch and MArch courses for the architects. In the hostel, there were students from varied branches of engineering and sciences including the humanities. In the Department as well as in the hostel, I interacted with the people of varied specializations. The first effect of this interaction was open mindedness and much wider worldview. In the hostel dining hall we sat for at least two hours every day since we all took two meals and two breakfast/refreshments every day. Many of us met in the hostel common room also. Many a time, interactions were academic and it was illuminating to listen to such discussions even though one may not participate. Thus, residing in the hostel was also knowledge enhancing.

In the MRP course I learned many new things. Geography, statistics, spatial economics, mathematics and numerical analysis were directly rewarding to better understanding and practicing of economics. Additionally, I was exposed to computer programming that makes statistics and mathematics applicable. Much of econometrics that I learned from Professor Kameshwar Jha was only conceptual and theoretical, which could not be of much use without numerically applying them to real data. I soon realized that computer programming was necessary to make statistics and econometrics practically meaningful.

In the first half of 1977 I was in the 4th and end semester of the MRP course for which I had to write a dissertation. The dissertation required doing a lot of numerical computations. In particular, I had to compute a large correlation matrix in which every element was a coefficient of correlation between two variables. My supervisor, Prof. R.N. Chattopadhyay, suggested me to meet one Professor Alam in Mathematics Department who could give a Fortran computer program that computed such a correlation matrix. My repeated trials to obtain such a program from Professor Alam failed and my progress in the dissertation work was halted. Meanwhile, interim evaluation took place for which Professor M.N. Pal from ISI, Calcutta was the evaluator. Professor Pal publically held me singularly responsible for not progressing in my work and alleged me of being insincere. I was hurt and in response I decided to develop the computer program of my own. I met Supratim Biswas who was doing research for his PhD and explained my problem to him. He had been my teacher for the course called 'techniques of analysis and computer programming' which was the one among several one-semester courses that an MRP student had to undergo. Mr. Biswas did not write a program for me, but he taught me how to write commands as to read data, compute arithmetic mean and standard deviation, work out covariance matrix and finally a correlation matrix and, at the end, to obtain the correlation matrix as an output on

the punched cards. He explained extremely well the meaning and implications of various statements that a computer program would have. As a matter of fact, he could have written the program in a fraction of time that he really invested in teaching me how and why one should write a particular statement to make a computer accomplish any particular task. When I was ready with the program, he took me to computer center and taught me how to punch them on cards, one card for each statement. The program, when run, showed errors or bugs. Computer programs those days were punched on cards and the pack/deck of cards (that also included input data, if any) were submitted to the computer centre for batch processing. After a few hours of submission, the results were returned to the users. Because of this procedure, presence of bugs in the computer program ate away time. It was thought prudent, therefore, to be extremely careful so that the program did not have any bugs. Anyway, Mr. Biswas kindly gave me time to fix the bugs and rerun the program several times. This thorough training was more helpful and of lasting value than if I could obtain the program written by Mr. Biswas or some other person. I must say that Mr. Biswas laid the foundations of programming in me. These days, Mr. Biswas is a well known professor of computer science at IIT, Bombay.

The MRP dissertation was completed in time, but the experience which I had had clearly suggested that it would be rewarding if I could master the art of computer programming. I became oriented to that new occupation before I had completed the dissertation, but after completion of the dissertation I had plenty of time to pursue that newly found field working in which was creative, skill-forming, challenging, capacity building and in summary, rewarding and opening up a lot of possibilities before me.

11. Joining research project: I completed the MRP programme in July 1977. The end of MRP programme had also resulted into the end of tenure for which I was getting scholarship. Therefore, it could not have been possible for me to stay at IIT, Kharagpur unless I got something to sustain myself there. I also wanted to do PhD so that I might enter into the profession of teaching. Two possibilities were there. The one was to join the Doctoral programme in the Department and the other was to join a research project. As the latter alternative was more remunerative, I chose it and side by side registered myself for doing PhD. The project work had an added benefit of obtaining a lot of field data collected by a team. The project director, who was my teacher in the MRP course and also agreed to be my supervisor for the PhD course was well aware that analysis of field data needed a person like me who was motivated and wanted to apply his skill to data analysis. So, I was a welcome entry to a project. The duration of the project was only one year and I did a lot of work to that end. My efficiency and usefulness opened a door for me to join another large project, sponsored by the Ford Foundation. Its duration was five years which could well be extended. Having joined the Ford Foundation Project, my stay at IIT, Kharagpur for five years at least was secure. That was also a duration needed to complete the doctoral work taken up by me.

The Ford Foundation Research Project was amorphous but having a fabulously large financial backing. The project remained so for a long time until the influential professors at the Department could reach at a multifocal coalition structure. In the said structure my PhD topic was included in the project. It is easy to explain the inclusion of my research topic in the coalition structure. The completion of my doctoral work benefitted me and it was expected that I would certainly work with all my capability to that end. My research work could easily be shown as an output of the project, adding to the physical counterpart

of the financial implications measuring value of the game. A part of the financial implications made up my remuneration and expenses on collection and analysis of data obtained from the field. The same logic worked in case of others, too. Professor R.N. Datta, who has been a civil engineer and town planner by training, was a lecturer in the Department and working for his PhD on slow-moving vehicles and mixed mode of transportation in Calcutta. His research topic was also included in the project. Two other topics were also included of which I do not know much. There could be other ingredients in the coalition, but everything could not be transparent to me. I was not a player in the game; I was only a means to add to the value of the game and my benefits were fixed accordingly. Even though Professor R.N. Datta (who remained quite friendly, transparent, helpful and affectionate to me) was well-nigh a player, but he, too, did not know of all the tacit strategies in the minds of the influential players of the game. As a part of the project activities, we were required to visit some university in USA and receive some training to accomplish our tasks. We applied to different universities and, perhaps, three of us (Mr. Datta and I and also Mr. Saraf if I remember correctly) were invited by the Ohio State University at Columbus as Visiting Fellows. Mr. B.K. Sengupta (and Mr. Saraf, I do not clearly remember) was invited by some other university. We were meagerly financed (400 US Dollars per month plus air fare to and fro) by the project. I think (and Prof. Datta agrees with me) that the sum of stipend could have been much larger if it was possible for the players themselves to visit the USA. It could be so that either the research project did not permit their visits to USA or the coalition members did not agree on those terms. Whatever be the case, a visit to the US added a feather in our caps. Who knows what we did there or how we lived there on a meager stipend! On the academic front, we developed multi-equation econometric models, wrote computer programs and tested them at work for my work as well as for Professor Datta's work. We were surely benefitted by our visit to the Ohio State University, USA. Sufferings are to be forgotten; pleasure, good outcome and benefits are to be remembered. As expected, when our doctoral dissertations were approved and we received our degrees, our dissertations were also presented as project reports and published by IIT, Kharagour on the expenses of the Ford Foundation project. We benefitted enormously; we had our degrees and also publications to add to our academic credits.

12. Exploitation, capital formation and development: Since I joined the research project and enrolled myself for a doctoral research after completing MRP in 1977, my mentor and supervisor, Professor C.R. Pathak, was very kind to me. In view of my motivation, energy, capability, interest and output-oriented attitude, he assigned many involvements to me. He found in me a reliable efficient helper who returned more than demanded. He was running his 'Indian Journal of Regional science' for which, starting from management and sorting of papers receive for publication to printing, binding and disposal of the journal volumes, a reliable and efficient person was needed. He found those attributes in me and relied on me for the entire process. However, the choice of the paper to be published was in his hands. Often I used to say in lighter vein that Professor Pathak and I jointly decided which paper would be published and which wouldn't. If I okayed and he (Prof. Pathak), too, okayed, it would be published. If I did not okay but he okayed, it would be published. If I okayed but he did not, it wouldn't be published. If both of us did not okay, it wouldn't be published. A little of analysis would reveal that he was a dictator and I had absolutely no role in the decision-making. All said and done this experience that I had to undergo for several years improved my skill at editing, proof reading, publication, etc. It also helped in knowledge

accumulation and ability to transmission thereof. Well, in a sense, Professor Pathak exploited me; in another sense he helped in my skill-formation (human capital building) and development.

Professor Pathak was so kind to and confident on me that he assigned almost all his classes to me. He was a very busy person, having to manage a large empire. His students and friends were scattered far and wide in the country and often commanded some influence, partly because they were capable and the rest because they belonged to a league that had a strong grip on the system. They often invited Professor Pathak and were thankful if they were obliged. Moreover, Professor Pathak conducted the annual seminar/conference for the Regional Science Association of which he was a permanent (yet every time elected) secretary. Chairmanship or presidency was honorific, often given in absentia. But vice-presidency meant a promise to conduct the annual conference at one's institution or university. Thus, vice-presidents changed every year. For all those functions to perform, he had to be absent from the Department very often and other professors were critical of his lackluster attitude to teaching and research. It was customary in IIT that the research-scholars who could, did teach the classes assigned to their supervisors. I was not only interested in teaching but also a good orator and expositor. So, Professor Pathak gave me the honor to conduct classes on his behalf. I also helped all his research-scholars to conduct research, especially by assisting them in applying statistical methods. Those research-scholars were my colleagues and helping them was not only gratifying, but also confidence building. Thus, due to the kind gesture of Professor Pathak I was trained in teaching and supervising research. In a sense, it was my exploitation, but in another sense it was human capital building.

Capital – human, physical, social or of whatsoever genre – is almost always built up by expropriation of the primary or secondary (or both types of) fruits of the toil of the underdog by his masters. When capital is embodied in the underdog and he has a freedom to change his master, it helps him develop. However, when capital built up by the toil of the underdog is not embodied or it is chained with the ownership that rests in the master, exploitation per se results and the underdog is alienated. Fortunately, in my case my exploitation characterized a mutually benefitting cooperative game. I wouldn't take up cudgels for fighting against such happy ending exploitations.

13. Lectureship at IIT, Kharagpur – a foiled appointment: In 1981 I applied for a post of lecturer in the Department and I was selected. Since Prof. R.L. Muni Chakravorty who was heading the Department was in the selection committee, I suppose he was not against my selection. But when I received the appointment letter, I was not allowed to join the Department (as a lecturer). Everybody was tightlipped and non-cooperating. I heard birds saying that one Md. Iqbal Jamil who was a research-scholar working with Professor R.N. Chattopadhyay had made a complaint or filed a case against my appointment. There were also some rumors that Professor Pathak did not any more want the number of teachers in regional planning to increase. Some others were saying that since I was a man of Professor Pathak, my entry to the Department wouldn't be welcome. Some others were of the view that since my joining as a lecturer might jeopardize the interests of the Ford Foundation project that had spent so much money on me it was felt that I should have remained in the project until the project ended or my assignment was completed. All those gossips were heard outside the Department. Nobody suggested that I could submit my joining report in the office of the Director, IIT, Kharagpur. Even today, while many of the then teachers in the Department have retired and I left IIT, Kharagpur not to return back, and matter has died

long back due to passage of time and flow of events, people do not want the episode to discuss. It has remained a great mystery to me.

However, at that time, before giving up the case, I had done something unusual and perhaps immature but pragmatically appropriate on my part. I wrote a letter to the Director, IIT, Kharagpur explaining my agony and injustice done to me. I also attached the appointment letter with my letter to him mentioning that the appointment letter was of no use to me and it should be taken care of by the Director himself because the appointment letter was his order and its dishonor was an injury on him and not on me since small people like us were born and lived to be injured. It was a very strong letter written under an emotional charge or outburst. After a day or two, Professor Muni Chakravorty called me in his chamber and enquired as to the letter that I wrote to the Director. People said afterwards that the Director had called him and admonished him for not allowing me to join the Department. I do not really know what happened afterwards but within a couple of months the post was re-advertised.

14. Appointment as a lecturer: I applied once again when the post was advertized and I was selected once more. As soon as I received the appointment letter, I joined the post in November, 1981. There were no hassles. But within a week I felt that I was sitting at the crater of a dormant volcano. My entry was not welcome in the Department, although everybody was tightlipped. I continued teaching the courses which so far was assigned to Professor Pathak (but taught by me). Additionally, I was assigned the course on 'techniques of analysis and computer programming' which theretofore was taught by some teacher or research-scholar from the Department of Mathematics. Soon I found that a residential quarter was allotted to one of my colleagues who joined after me. In the Departmental meetings efforts were made to deny me of the supervisory assignments for MRP/MCP dissertations, which were given to my junior in an appreciation of his aptitude for that, although he didn't have a PhD or even a single published research paper. In my case the professors were of the opinion that I was too inexperienced to shoulder that responsibility. As a fallout (of those uncalled-for adversities), I started losing interest in teaching and research. I started thinking of quitting the Department as soon as an opportunity came. It was in my interest to complete the project and submit my doctoral dissertation as soon as I could. Within six months or so, I hurriedly completed my dissertation which was submitted in due course. I also had to complete three years of my lectureship before accepting a job elsewhere, because I could not have been granted lien or extraordinary leave for availing myself of such opportunities unless three years' period was over. Even if I could have got a job elsewhere, I could not have resigned the post that I held and gone to join a new job. In short, I had to wait until November 1984 came and I could have found out a job elsewhere. By the middle of 1983, I started closing the things and preparing myself to go elsewhere; where to I did not know.

Under the stress that I was living those days (1982-1983), I started losing interest in regional planning. Regional planning in India was closely associated with geography but it did not penetrate into economics departments so much. Even spatial analysis was largely out of the domain of economics as pursued in various economics departments in the country. However, statistics and especially econometrics were highly prized branches of economics. So, to make myself acceptable to economists, I turned back to enhance my capabilities in econometrics. Computer programming helped me there a lot.

It wouldn't be out of place to mention that it is one thing to derive theorems mathematically; it is another thing to write a computer program that converts data into results. Programming requires more detailed understanding. It is one thing to say that 'we obtain the eigenvalues, $\lambda_1, \lambda_2, \dots, \lambda_n$.' It is quite another thing to work them out numerically. An interesting episode comes to my mind. Professor Pradhan H. Prasad of A.N. Sinha Institute of Social Studies, Patna was a visitor (to lecture on something) and I was there. In course of conversation, he wanted to know if I could help him in obtaining the eigenvalues and the associated eigenvectors of a matrix that pertains to Leontief's Input-Output Analysis. He also expressed his discontent that many people promised to help him and all of them gave wrong results. I explained to him that it was so possibly because of two reasons. First, in Input-Output Analysis the matrices were asymmetric. They had two eigenvectors associated with each eigenvalue; one of them was a right eigenvector and another was a left eigenvector. Secondly, most of the people used Jacobian or Householder's method to work out eigenvalues, which was meant for symmetric matrices. Other methods, such as the power method (or inverse power method) would be appropriate if one wanted to obtain eigenvalues and eigenvectors of an asymmetric matrix. Moreover, the methods of working out eigenvalues and eigenvectors of an asymmetric matrix may not be as stable as those used in case of symmetric matrices. Professor Prasad gave to me the matrix of his interest and fortunately his work was done immediately. This is to highlight the fact that numerical analysis and computer programming complement Econometrics and statistics enormously.

15. There were others seeking for a person like me: There took place a petty small incident that laid the foundation of my departure from IIT, Kharagpur. In 1983 there was a seminar being conducted at IIT, Kharagpur. Many people had come from outside and I was with some of them in an evening taking a round of the campus. While at *Pan Shop* one of the persons, who was rather a young man of my age or a little older, spoke in a very authoritative voice and slightly rudely enquired me if I had read his book published shortly. I did not like his tone and responded that I was used to reading classics and good books only. I didn't care a fig for a book written by any and every x, y, z published by some p, q, r publisher at Delhi. The response was so spontaneous and harsh that the person's face became red. But another person who appeared to be some ten years older than me, was watching with a smile on his face the crumbling down of an undue ego, much like a glasswork having been hit by a stone.

In the last quarter of 1983 I received a telephonic call from a gentleman who introduced himself as Professor Shri Prakash, working as the Head of the Department of Economics in North-Eastern Hill University (NEHU), Shillong, and wanted that I should help him in inverting a large (93 x 93) matrix encountered in Input-Output Analysis. I told him that it was rather a simple problem, but punching cards to feed such a large matrix would be prohibitively laborious. On that, he replied that he could send the punched cards for matrix A and wanted if (I-A) could be inverted. I told him that he should send the deck of cards in proper order. He did that and received the results in a week or two. He thanked me a lot.

In the early months of 1984 I received a letter from Professor Shri Prakash that his University was going to advertise to fill the posts of Reader in Economics. He would send the application form in due course and I should not fail to apply. The things moved accordingly and I applied through proper channel. In due course, interviews were held and I was selected. I received appointment letter in July 1984 or so, but I was constrained to complete three years before I could get lien or leave to join any other job. I

requested the Vice Chancellor of NEHU to extend my joining time until December 1984. With the appointment letter of NEHU I also applied for extra-ordinary leave for one year with effect from my release after completion of three years of my job at IIT, Kharagpur, which was readily granted. I completed three years on November 27, 1984. I was released from IIT with effect from December 5, 1984.

Thus, I planned and succeeded at quitting IIT, Kharagpur as early as I could. It was painful. It was painful to quit a place or an institution which was not only one's *alma mater*, it had also given the one all facilities and opportunities to grow. It was painful to bid good bye to an institution that picked me up from the streets and nurtured me to stand firm on my feet. It was painful because the circumstances were created so that I could not stay, work and grow there peacefully. People congratulated me on getting Readership so early (and possibly they congratulated themselves to have succeeded at dispatching me at the earliest). I wept when I left IIT, Kharagpur, but there was none around to see tears in my eyes.

16. Joining the Department of Economics at NEHU: I joined the Department of Economics, NEHU on December 5, 1984. The lost horse returned back to the stable.

The Department of Economics was a small department with five teachers on the faculty which increased to six after I joined and to seven after Dr. N. Shrivastav joined shortly after me. It was mainly devoted to teaching the MA (Economics) students who mostly hailed from Meghalaya, Mizoram, Nagaland and Assam. Owing to good English medium schools and fairly good colleges in Shillong which were the major tributaries of supply of students to the Post-Graduate (MA) programme, students were mostly good, receptive, interacting and well-behaved. Research programme was at low ebbs. Although the Department had started a decade past, it had produced only one PhD and a couple of MPhil students. Among the faculty members, Professor T. Mathew was the senior-most. He had been in Delhi School of Economics and specialized in political economy and public economics. In all likelihood, he was good at his specialization. Basically an introvert who interacted with reservations and possibly had a kind view to his students, he lived in a world of his own. Professor Shri Prakash was the second among the senior members on the faculty. He was an extrovert and specialized in quantitative economics, particularly in Input-Output analysis for which he had an obsession. He did not carry on well with Professor Mathew. He was the man who brought me (and Dr. Shrivastav a little later, in 1985) to strengthen the faction of quantitative economists in the Department. He was supervising several students for MPhil and PhD and by all means he was an involved, painstaking and cooperative supervisor. He took lead in organizing departmental seminars regularly and was keen on participation of teachers, research scholars and students in academic discussion. He was dynamic, but overly opinionated. He had had a low opinion of non-quantitative approach to economics. In that scheme, history of economic thought, institutional economics, political economy, etc., which were mostly non-quantitative, had only a little potential to add to understanding of economics and economies. At that time, possibly, that was à la mode in India. However, I had seen Professor Narmadeshwar Jha teaching economics and Professor Kameshwar Jha teaching statistics, econometrics, mathematics and mathematical economics. Prof. Shri Prakash, howsoever boastful, was no match for them. I could simply laugh at his conceit.

Dr. Asit Banerjee was specialized in micro-economics and had connections with Delhi School of Economics. He was an introvert, limited in his interactions, kind to his students, devoted to take classes but possibly showed little interest in research. He was undeniably good at his job. Dr. K. Bez, another member on the faculty, was a statistician by training and he had spent many years abroad. He did not show any sign of understanding the fundamental of his specialization, nor, perhaps, was he good at delivering his know-how to the students. He was also suffering from persecution complex. He had adorned himself with a conspicuous manner of speech, dress and conduct with others in his own characteristic style; especially with his students and juniors whom he was overtly endearing. Mr. E.D. Thomas worked hard and paid a lot of attention to his duties with regard to students. He was teaching macroeconomics and international trade and was considered by his students an excellent teacher.

On joining the Department I was naturally expected to teach econometrics and/or statistics. Assigning statistics classes to me amounted to add to the evidence of persecution of Dr. Bez. However, such a feeling was kept at low by assigning econometrics classes to him. Teaching econometrics was considered to be more prestigious than teaching statistics. Moreover, statistics was a compulsory subject taught to a class of fifty students. On the other hand, econometrics was an optional subject taken up by a handful of students. Administering statistics classes (and carrying out of internal test, tutorial classes and so on) needed more labor and involvement than the econometrics classes did.

The assignment to teach statistics was very rewarding. I knew statistics with many fine details, but my knowledge was oriented to computation, because derivation is considered as given and outside the purview of a programmer. The approach of a programmer is more algorithmic (choosing the one from among several algorithms available for the purpose) for programming that would save memory, arithmetic operations and time in keeping with the accuracy of results. It is also needed that he should choose an algorithm (from among many available to him) that would be more general. This is so because he has a tendency to capitalize on his past labor by writing subprograms (or procedures, so to say) which might be invoked when needed. More general is an algorithm, better it qualifies to be coded as a subprogram and work as capital in future. However, very general algorithms have their own 'large dead load' that makes them general at the cost of being more demanding (time wise, arithmetic operation wise or memory wise). A programmer has to strike a balance among those implications.

Take for example a simple job of inverting a matrix. In the course books it is customary to teach how to invert a (regular) matrix by the so-called minor-cofactor method. But it is rarely pointed out that the minor-cofactor method becomes prohibitively demanding even for a small matrix of order ten, not to imagine as to what would be its worth if the matrix to be inverted were of the order hundred or more. Hence, one has to go in for an algorithm that Gauss initiated and other mathematicians worked for its refinement. After all, Gauss (and others) did not introduce (and investigate into) new methods simply for a fun. Then let us proceed to more general algorithms. In the midst of computations one does not know whether an intermediate matrix would be regular or singular. Gaussian algorithms fail if they come across a singular matrix. In that case we say that the intermediate matrix is ill-conditioned for inversion. A programmer has to know that there is a way to circumvent this failure and that is through using the famous Cayley-Hamilton theorem that suggests us (among many other things) that matrix inversion may be approached through computing eigenvalues and eigenvectors of a matrix. However, a

general method to numerically work out the eigenvalues and eigenvectors is hard to find or program especially if the matrix is asymmetric or in worst case when roots are repeated or complex roots are there. There is another dimension of generalization. What if the matrix is not square? A matrix is a rectangular array which may not be a square. Then the route goes through generalized inversion (or working out the so-called Moore-Penrose inverse). It may fall back upon the eigenvalue problem. In short, a computer programmer has to know all these details and he has to take derivation of theorems as given.

But I have digressed too much. Let me return back and recapitulate that the assignment of teaching statistics to my MA students helped me a lot. Earlier I was not understanding as to where the students found difficulties and how to introduce some intermediate ideas and concepts (usually undermined or not mentioned in text books) that removed those difficulties. I would like to narrate an interesting episode. Once a student asked me that in the least square fitting of a curve to given data points, we assume that the expectation of every error (e_i for $i=1,2,\dots,n$) is zero. However, in reality most of the estimated errors are non-zero. Since in every case there is only one e and naturally it is its own expectation, which is generally non-zero, why to assume it to be zero. Books seldom explain that it is assumed that if repeated samples are drawn, for every case there will be so many errors (e_{ij} ; $i=1,\dots,n$; $j=1,\dots, t$, where t is the number of samples taken repeatedly). Then expectation of e_{ij} over j , for every case, i , is assumed to be zero. That means that expectation of e over repeated samples for every case is zero. I had to demonstrate this on computer and then only I could convince the student. I have found that textbooks often gloss over fine details and avoid repetition presuming that every time every student holds everything in his mind and recalls them whenever needed. But in reality that is not the case. Repetitions make bridges; prudence at that introduces discontinuities. Discontinuities are disastrous for understanding and learning. Hurriedly I should also say that in course of my stay at NEHU, I taught many papers to my students, some of which were quite non-traditional.

17. Introducing Diploma Course in Techniques of analysis and programming: Professor Shri Prakash expected two things of me, the first that I should write computer programs for whatever quantitative work he wanted to do and secondly that, in order to spread computer-oriented skill of analysis, a diploma course was to be designed and offered to students within the department as well as to those from elsewhere who wanted to learn. Those expectations were difficult to fulfill. The first expectation was fraught with difficulties because he thought only conceptually and mathematically but couldn't appreciate the odds at the algorithmic and executive level. In programming, nothing is kept undefined and there is no place for wishful thinking. A computer does not understand our wishes, requests or requirements. Moreover, those days we did not have any personal computer in our Department or University. However, he managed a small old portable computer that ran on CP/M operating system and could be programmed in BASIC. All those factors together made programming a strenuous task. The second expectation was hard to fulfill because a comprehensive course, as visualized by him, not only had the components of language (such as Fortran and BASIC), but also the components of numerical analysis, computational mathematics, statistics, methods of operations research, etc. We did not have teachers tuned to teach those subjects with a view to programming them. A non-programmer's view and a programmer's view on doing arithmetic, mathematics or statistics are quite different. For

example, a common economist uses the idea of random numbers naturally and easily (and I would dare say: Father, forgive them since they don't know what they are saying!). But when (pseudo-) random numbers are generated, the procedure is not simple since it requires several ideas from number theory to be executed of which the economist has no inkling. He is not ready to understand that in practice (ideal) random numbers cannot be generated on a computer. All random numbers generated on computer are pseudo-random numbers. Moreover, he fails to understand why only uniformly distributed (pseudo-) random numbers are generated and the numbers following other distributions are obtained by transformation. As yet, I have not been able to convince my colleagues that there are only two ways to test the validity of a (new or old) statistical or econometric method of estimation of parameters: the first deductively (by mathematically proving that it would have such and such implications) and the second inductively (by using simulation, Monte Carlo methods, etc. conducted repeatedly for a large number of time). It cannot be done by applying the method on real data because in that case we don't know the true parameters.

Anyway, we designed a one-year Post-Graduate Diploma course which had six papers namely, (1) the theory of algorithms, (2) Languages - Fortran and BASIC, (3) mathematics, (4) statistics, (5) operations research & optimization, and (6) econometrics. The course was given in evening; from 4 to 7 pm on all week-days except Saturday and Sunday. It was expected that we would readily receive help from mathematics department and statistical cell. The teachers in the Department of Economics with quantitative training would teach some papers in full or in part. The course was passed by the Academic Council of the University and advertisements were made to call applications for admission. Many people, especially from outside the department, applied, and thirty students were admitted. As soon as the course started we came to know that teachers from the department of mathematics and the statistical cell wouldn't be available. Of course, it was expected. None would like to hatch somebody else's eggs. Dr. Bez considered the request to teach a paper in the Diploma course as one more attempt to persecution. Dr. Srivastav took a few classes, but soon he took to his heels. Professor Shri Prakash sustained for some time but ultimately his busy schedule came in the way of teaching the course. Ultimately the entire load fell upon me. Since the students were already admitted, it was practically impossible to retreat. So, forlorn by all my colleagues, I took up the challenge. And I ran the course for seven years, single-handedly and in addition to my normal duties in the Department during the daytime. Yet, now I consider it my sheer foolishness. It spoke on my health. It made my family members and growing children poorly attended for which I had to pay heavily. The entire enterprise was grossly quixotic, imprudent, wasteful and thankless. I have, however, a faint solace: when I come across a person who underwent that Diploma course I hear him say that he was greatly benefitted by that course, not only academically, but also career wise. Yes, even disasters have some positive effects.

Not to weigh against the personal loss that I incurred in serving the Diploma course for seven years single-handedly, I learned a lot. Teaching keeps one reading, too. My fundamentals in numerical analysis and operations research became stronger. My understanding of the theory of algorithms was appreciably improved. I became better informed in statistics and econometrics. I learned more than I taught. I learned the hard way, but I did learn a lot.

I became full professor in 1991. I got professorship in a very interesting way. About that time, Prof. R.G. Michel was the Pro-Vice Chancellor and Chairman of the newly constituted unit for working on the projects related to Social Forestry. I had an active role in that unit. The University had given Prof. Michel the responsibility of making the Eighth Five Year Plan of NEHU to be sent to the University Grants Commission, Delhi. He sought help from me since he knew that I was also trained in planning. I worked on it and wrote the Plan document. Prof. Michel kindly attributed the entire credit to me on which the then Vice Chancellor, Prof. Iqbal Narayan, was very happy. He wanted to give me some pecuniary reward, but I refused to take. On that he wanted to know that if I was not interested in any pecuniary reward, then what kind of reward would have done. I expressed my desire to become a full professor in the University. Professor Narayan kept that instance in his mind and when the opportunity came he, against all odds, made me a full professor. That is why sometimes I say jokingly: matrix inversion made me a Reader and a five year plan for the university made me a full Professor. I may add here that I did not technically qualify for Readership (at least five years of teaching experience) or full professorship (at least ten years of teaching experience, having supervised a doctoral thesis successfully) as and when I was selected for the post concerned. And one was not supposed to count the years of my teaching experience while I was a Research Scholar. But in the Indian Universities, for all practical purposes, all qualifications and all capabilities are ineffective; neither necessary nor desirable. They are at the most extra-necessary and extra-desirable superfluous attributes of a candidate. What is necessary as well as desirable that the system (I mean a confluence of influential people in the system) desires one to select for a post. Once that condition is fulfilled, there are ways and means to select one for any post. Sometimes, the superfluous attributes of a candidate effectively and justifiably hide the will and act of the system; at the others the will is devilishly nude and shameless, laughing aloud at the poor conception of those who still believe that there is the rule of law in the Indian universities. It is completely in accordance with what Krishna said in Gita: *'Karmanyevaadhikaraste maa phaleshu kadaachana. Maa karmphalheturbhuh'*. Only doing is in your purview and might, the results you cannot claim. Never think that the results are due to your actions. Gita is a great book. It has foreseen the condition of Indian universities and teachers in those universities. I am fortunate to have read Gita during my early days.

18. Research activities: Initially, when Professor Shri Prakash was in the helm of affairs, he and he alone was a teacher who could meaningfully supervise a doctoral research. He preferred to send the dissertations of research scholars to some Nobel Laureate(s). Some Nobel Laureates were great people who believed that in matters of quality, *'Homo proponit, sed Deus disponit'*, which means that a man (research scholar, man or woman) proposes but God disposes. A scholar should be rewarded since he (she) proposed, but if God did not dispose quality to his (her) research work, it is an injustice to penalize the scholar for the discretionary activities of God. Hence, a PhD dissertation must be approved for the award of a degree. I am aware of the fact that such people have double standards. When they recommend with expected impact on their own system (department, institutions, country, etc.), they use much more strict measure. But when the implications of their recommendation are beyond their own system, they are quite liberal and lax, perhaps much more 'human' than what they really are when their own system is concerned.

In the eyes of Professor Shri Prakash, if any other teacher supervised a doctoral dissertation (Professor T. Mathew had guided a lone scholar for PhD), it was possible only because he was not there to circumvent or he was not able to circumvent a 'certain decline in the quality' of research in economics. Dr. Bez inherited those superior qualities once Professor Shri Prakash left the Department. In that accord, I was at most capable to supervise MPhil research, which I did successfully for nine scholars by 1991 (and many more afterwards). Supervision of a doctoral research successfully was needed to get a full professorship. Hence, once I got full professorship without supervising a doctoral work successfully, I thought to continue with my subdued research activities and pursue quality by means of reading extensively the classics in economics as well as other disciplines at large. Occasionally, I used to write some research papers and publish them in some journals of compromised quality or the books edited by those who thought that assembling some ten to twenty articles written by whomsoever and getting the collection printed (published) by some publisher at Delhi add invaluable to the literature in economics. Such activities add to the number of publications which mattered. In evaluating research activities of a teacher in the Indian universities it is the number of publication, not quality, that matters.

I recall a cruel prank that I played on one of my professors at IIT, Kharagpur. I was a research student then and I copied (in my handwriting) an article written by a Nobel Laureate published in a highly reputed journal in economics and under my name showed it to the professor to seek his advice for betterment of the article. Readily, the professor suggested several changes in the structure of sentences and presentation of arguments as well as pointed out grammatical mistakes that the language used in the article had had. He also commented on discontinuity in ideas, lack of flow and lucidity of presentation. I acceded to the suggestions and without incorporating any changes got the article type-written. It was presented again to the professor with only change that he was duly acknowledged at the end of the article. On reading the article, the professor was happy but suggested some more alterations and gave new ideas to be incorporated in the article. None was to be done and none was done. I slept over it for months together. When I was sure that the professor would surely have forgotten about the article, I took the journal with me in which the article was published by the Nobel Laureate and showed it to the professor. After having a glance over the article, the name of its author and the journal, the professor praised it beyond bounds and suggested me that I should develop the habit of reading articles published in the journals like that and learn something from the great scholars who wrote them. Later I called those changes in opinion as 'handwriting effect', 'typing effect', 'print effect' and 'name effect'. The jokes on the episode ran in the hostel for quite some time. The moral of this story is that quality is a highly subjective matter and in most cases it means the unfounded opinion of the one who has sat on the judgment. The decision on quality is the result of a random bombardment of neurons in the brain of the judge sitting on the judgment of quality that was caused by the stimuli originating from the object whose quality is being judged plus the interference of other ideas that come to his mind in situ. Hence, the number of papers is a better measure of quality of the author of those papers.

19. Supervising doctoral research as a prestige issue: In the year 1998 or so, one of my colleagues and good friends (not in the Dept. of economics; she is no more – may her soul rest in peace) was very disturbed to hear somebody in my Department bragging on his own ability and commenting on my capability to supervise a doctoral research since he had just accomplished that and I had a dismal record

of supervising none. She requested me, therefore, to begin supervising doctoral research. Her feelings were earnest. I took her request and advice seriously and opened the door to those who wanted to work with me. As a matter of fact many students did not want to work with me because they apprehended that in view of my specialization, past record and attitude to research, it would have been quite straining to work with me and that, too, with unpredictable results. Students wanted an easy way to obtain PhD and this tendency was reinforced by the positive feedback on account of the success of those who obtained PhD without doing any noticeable substantial work. I was rather a dark horse in the eyes of the students desirous of doing PhD in an easy way. Nevertheless, some students showed interest whom I welcomed. As a result, my first PhD student did his PhD in 2003. Since then I supervised many others, but my attitude to doctoral research (in economics) in the Indian universities remains unaltered. My opinion is reflexive. When I submitted my PhD dissertation, I was not happy with its quality. Since I had to wind it up so that I could just obtain a degree and quit IIT, Kharagpur at the earliest opportunity, I chose to submit my dissertation. I was publically and openly critical of my own work. The dissertation was sent to two examiners (it goes without saying that both of them were friends of my supervisor), the one at Harvard and the other at the Indian Statistical Institute. The examiners recommended the dissertation for award of the doctoral degree. Once the report came, my supervisor was very happy and taunted me for the unfavorable view that I had had of my dissertation, which view had been rendered invalid by the experts. I replied "*Kashyaamapi nishaacharaah*", which remark was possibly un-understood or considered characteristic of me. Nobody, even my foes, took me seriously. I had to get a PhD degree and I got it anyway.

One of the factors that decide the quality of research is the topic itself. If the topic is at the cutting edge of the discipline, everyone alive in the field is waiting for something new to happen and to be reported. Even a genuine failure to obtain new results is noted. But it requires, first of all, that the supervisor himself is aware of the boundaries at which research is being done or he himself is involved in that. Most of the supervisors in India are innocent of those boundaries. In the Indian conditions, a research scholar is seldom equipped to gauge the implications of his (her) research work on the boundaries of the discipline. Another factor is the theoretical understanding and skill which a supervisor and a student have in their discipline. In this regard, research in economics in India has suffered the damaging consequences of the unbridgeable divide between Indian economics and economic theory. The neoclassical vector of forces has rendered economic theories devoid of abilities to keep contact with the real world situation. On the other hand, Indian economists at large lack in the aptitude to posit new economic theories to explain what is going on in the real world. In India we do not have George Akerlof, Simon Kuznets, Gary Becker, Herbert Simon or John Maynard Keynes; even Sen, Bhagawati and Dixit chose to settle abroad. Research in Indian economics has largely been shaped by the subtle imperative feedback that Govt. policies adopted from time to time have indicated to the research workers. Economists in India are eager to change the world without understanding it for the first. Govt. policies can only be explained with the help of the theories in political economy and, perhaps, the theory of games in which most of the strategies are either opaque or falling outside the purview of economics. Indian economists have at large disabled themselves by distancing from the theories in political economy and fashionably surrendered to data collection, statistical analysis and hypothesis testing exercises about which it is eye-opening to read McCloskey (2005) and Ziliak & McCloskey (2009). What

they are doing is to mend an electronic circuitry on a silicon chip with chisel and hammer. I wonder if any science that is proud of having a tradition of Nobel Prize being awarded in it could also be boastful of keeping theories and empirical facts in two disconnected baskets. Economics is the lone example of such a science.

20. Solace in working although have drifted away from the core: I have maintained an abiding interest in the methods of operations research and optimization. Optimization is essential in many ways since, I think, almost all results in statistics and econometrics are obtained by some sort of optimization, explicit or implicit. Also, economics itself (after Lionel Robbins) has been proud of defining itself as an exercise in optimization. It is a different matter altogether whether a set of myopic and bounded rational agents, interacting among themselves most of whom have no idea of their global overall objectives and each one of them is busy to meet the local objectives in fluid and translucent environment, would succeed at optimization and if yes then of what sort, but the goal of economics is optimization. It is true that optimization at the global level can be reached only when the decisions at local levels at each hierarchy are all optimum. But, the converse is not true because the criteria of overall optimum at the global level might not be consistent with the criteria met at local levels or there could be the problems of composition. This truth makes life a journey with no goals on which some philosophers have thought so much. It is disturbing, but facts seldom care for their impact on us or our emotions.

I had had an access to books such as Gillett (1979), Kuester and Mize (1973) and Ruston et al. (1973) that are programming oriented. However, I always needed an algorithm that might take care of optimization of an arbitrary and complicated nonlinear function, sometimes difficult to be expressed algebraically. It happened so that sometime in 2004 I came across the field of global optimization that approached the problem through population methods (randomly generated points representing the interacting agents seeking for an optimum value of a common objective function) and most of them were biologically inspired methods. I had read long back a brief assertion by Marshall (1920, Preface to the Eighth Edition) who wrote: "The Mecca of the economist lies in economic biology rather than in economic dynamics. But biological conceptions are more complex than those of mechanics." As I was growing old, I thought that the opportune time had come when I should prepare to visit the hajj and the biologically inspired method of global optimization were paving my ways to the Mecca of the economist. In so doing, initially, there were some difficulties but I wrote my own programs to implement the Particle Swarm method and the Differential Evolution method that performed very well to optimize a large battery of difficult nonlinear benchmark functions. I also proposed a new method incorporating co-evolution and called it the Host-Parasite Co-evolutionary algorithm, which worked fine on a hundred of difficult test problems. All those (and some more) methods kept me busy and provided me with a material to propose several new methods and write many articles whose publication was of a marginal value to me. My interest was to make my findings and the computer codes available to the public at large and for that purpose the depositories (like SSRN, MPRA of RePEc) were the right choice. Zealously, to take many of my colleagues and students with me to hajj, I started intensively reading Evolutionary Economics and introduced it as an optional paper in MA (Economics) program of NEHU. However, I was convinced very soon that economists as a tribe (Leijonhufvud, 1973) were greatly in love with their own traditional religion, apt to cite its ancient origin, resistant to any alteration in its basic premises and the

held beliefs over the generations irrespective of changes in the society that could have made their belief system only an edifice of dogmas flying in the face of reality. Nevertheless, they had had many temples of their own where the high priests were in direct contact with the deities every morning and evening bestowing upon them the power to cure every ill that the people suffer on account of their own sin or their lack of faith in the omnipotence of the deities. *Swadharme nidhanam shreyah paradharmo bhayaavah* (It is better to die following one's own religion because others' religions are dangerous). Of course one may always confuse between *dharma* and religion. Dharma lies in following one's duties to establish and reinforce a healthy society; religion hovers around God, books, dogmas, heaven and hell.

Therefore, my departure from my religion was heretical and it must be penalized. My teaching of Evolutionary Economics was considered to be an attempt to corrupt the youth. We don't live in the age when Socrates was made to drink hemlock, but there are other ways to penalize a corrupter. A few years past, when I applied for professorship (higher academic grade), the experts opined that although I was doing a lot of research and had published many papers contributing many new ideas that were cited and used by many, but the ideas were not in the core area and the users of my ideas and works were mostly science people, statisticians or engineers, but not economists. So, I should not be promoted with effect from 2009, but there was no harm in promoting me with effect from 2010. It is interesting to note that the experts themselves had no work in the 'core area' howsoever defined and their publications did not number even a third of my publications other things assumed to be remaining the same. Moreover, I had not published anything special in 2009 that could have placed my works in the core area. I should note that in the universities in India the panel of experts lists those people who were personally known to panel-makers, irrespective of their academic quality. The essential qualifications are being a professor and being known to the panel-makers. Any vice-chancellor who is constrained to draw a sample from such a panel is bound to call the experts whom the panel-makers know, but whose quality is often questionable. No vice chancellor, howsoever wise, well-meaning and methodical can draw a sample containing cauliflowers drawn from a bag of potatoes; all samples are subsets of the population. And thus the experts could, if needed, be manipulated because personal rapport is more effective than any other principle.

21. One of my long-cherished desires was fulfilled: I loved science, chemistry in particular. But I was there in the Arts stream, and love for chemistry was Platonic. Yet we know not as to what is destined for whom. Toward the end of 2013, my colleague and friend Prof. B. Mishra received a letter from a Chinese physicist working on a problem (inter-atomic potential) who solicited some help. Prof. Mishra could guess that the letter was meant for me and kindly forwarded it to me. I looked into the problem and agreed to help. Since the physics professor had sent the necessary information on the problem, I took some liberty and gave a preliminary solution of the problem. In due course, when the matter progressed I wrote: "I know, in the past physics and physicists have helped economics and economists a lot. We are indebted to you and in all humility we economists should try to pay off the debt. If my efforts are of any use to you, I will be really happy. I say this from my heart. ... I suspected that the domains of parameters were too restricted. Looking into the arguments in the program, I guessed that perhaps the 4th constraint is too restrictive. I do not know physics, so I took chance of relaxing the constraints on the parameters and that I stated in my reply to you sent yesterday. I am happy that such relaxation on the

constraints on parameters does not violate any theory; rather it gives a new insight and more scope.” On his proposal to make me a co-author of the paper to be written I wrote: “As an acknowledgement (of receipt of repayment of debt – so that a borrower feels a little relaxed), if you make me a co-author, I will be extremely happy. I will consider myself a good son who paid off (a little bit of) debt that my forefathers and kin-men (economists) have borrowed from you and your clan (physicists). Even computer programming and the machine is a generous gift from you to us”. Finally, having resolved the problem, we co-authored two papers which were published in *Chemical Physics Letters* in 2014. This success fulfilled one of my desires to do some science which was like a dream as I was in the Arts stream from the very beginning. And that was perhaps the best example of my involvement outside the core. One of colleagues also suggested me that if I concentrated on doing core economics, that would have been beneficial to me as well as the discipline. He was not realizing that the core that he was talking of had long been emptied by the kind efforts of our colleagues in India. If Indian economics has any core, the core lies in the progressively bulging pockets of industrialists, businessmen, politicians, criminals and academics.

22. And every saga has an end: A few years afterward I retired (in 2015). I am not doing anything except reading and learning new things, and occasionally writing whatever comes to my mind, viz. an autobiographical essay at hand. I am sure I learned many things in my voyage from my early village life to the retired life in the confines of Delhi. But I don’t know what my learning means or signifies. Learning is a sort of new arrangement, but arrangements are arrangements only. All arrangements have only ephemeral significance. To me it appears to be nothing more than a cryptic collection or set of clusters of letters of varied sizes without suggesting why they are arranged as they are and what message do they convey! I don’t know where have I reached and whether it means anything to anybody. Does my journey or the sojourn have any value? Possibly, none at all. Events happen, the waves propagated by its happening last for some time, but after that every bit of matter settles down in rest. Calm prevails all around and the event as well as awareness thereof is dissolved in that calm.

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