

## MEDICINE, SCIENCE AND HUMANISM\*

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WE are passing through some heady days in our country and the numerous problems which beset our society are now-a-days believed to be solvable by technological and managerial interventions. Technology Missions are being set up to speed our entry into the 21st Century because firm promises have been made. In the field of medicine, World Health Organization, in a sudden moment of inspired zeal, and in all good faith of course, hit upon a reassuring slogan of "Health for All in 2000 A.D." This has set the pace for some hectic activity because targets have to be achieved. Targeting is the new word. We need more targeted research, more mission-oriented science. And may be less basic research — may be considerably less. This is said to be the new drift. There is little time to waste and so it is considered prudent to buy technology packages from the west. This is the speediest path to modernization, and modernization, for our planners, has become synonymous with westernization. How quickly we have forgotten Gandhi's admonition not to confuse the two. "We may be 'guided' by the west", he said; "let us not get 'conditioned' by it."

In the field of medicine I sense serious trouble when we initiate such a move. It attributes to medicine a much greater store of usable information, with coherence and connectedness, than actually exists. We have to face, in whatever discomfort, the real possibility that the level of insight into the mechanisms of today's unsolved diseases — cancer, or stroke, or hypertension or dozens of others — is comparable to the situation for infectious diseases in 1875, with similarly crucial bits of information still missing. If this is the prospect, or anything like this, all ideas

about better ways to speed things up should be given open-minded, close scrutiny.

When such a viewpoint is placed before our health administrators, or even my friend colleagues during informal chats, they develop a worried expression and look askance at me. Modern medicine has made spectacular advances, they say. It has brought infantile mortality down and increased our life expectancy. They talk of the great technology leap, what with bypass surgery and organ transplants. Modern molecular biology, the breaking of the genetic code, and all the possibilities which genetic engineering has in store for us for a Brave New World, are cited. There is even talk of a scientific temper which is enabling us to rid ourselves of all the superstition and mythology which plagued our non-modern traditional healing systems. They ask me to cheer up.

This is where I miss the presence of Gandhi who had thought deeply about health. Health for Gandhi was really a multi-dimensional phenomenon involving interdependent physical, psychological, social and political aspects. It was not a measurable mass of vital statistics. He had, in fact, provided a moral and ethical dimension which is altogether missing from modern medicine where health is being treated almost as a market commodity. 'Health care delivery' is what doctors are now expected to do along with hospitals, now known collectively as 'health providers'. The patients in turn, have become 'health consumers'. Primary health centres, spreading out across the country like post offices, are believed to distribute in neat packages, as though from a huge, newly stocked inventory, "health". This kind of administered health was totally unacceptable to Gandhi, who believed in a decentralized, healthy life style under the control of individual human beings.

\* Text of the Gandhi Memorial Lecture delivered at the Raman Research Institute, Bangalore, on 2nd October 1988.

This is also where a fiercely independent and creative intellect of a Raman is so badly needed to lay bare many of the pseudo-scientific claims of modern medical technology. I bemoan the absence of such minds so that the humanism of Gandhi could be supplemented by a man of science such as Raman. Raman, I suspect, must have been influenced by the wisdom of Gandhi, otherwise he would not have initiated the present lecture series in his own lifetime.

### *Science and Medicine*

It should not be misconstrued that I am taking an anti-development or anti-science posture. Not at all. I do firmly believe that we owe to science a special vote of thanks. The use of the scientific method, especially in the field of biology, has provided some extremely useful bits of information which, with some very painstaking work, has resulted in a much better appreciation of how the human body works. We are getting a greater insight into how it responds to influences which can derange this exquisitely balanced system. Of course, we have to have the humility and honesty to accept that there is a lot more of which we do not have a clue. Our ignorance exceeds our knowledge and this is why we need more of science than ever before.

It is also somewhat inevitable that progress in science often gets slowed down by dominant theories which tend to cramp different ways of looking at things. Newtonian mechanics governed the thinking of physicists for a long time till it had to yield to some more powerful theories which then suddenly opened up an entirely different appreciation of our world. Such sudden bursts of creative thought is a regular feature in science. But for long periods, the minds of scientists plod along a beaten path, working out the details in a painstaking way. The great thing is that there is nothing like absolute truth in science, to the extent that an experiment is not scientific unless it can be falsified. This is what Karl Popper has taught us.

Nothing like this has happened so far in life sciences. We are still stuck with the Cartesian

dualism which separates the mind from body and which views the body essentially as a machine. Cartesian view of life has suddenly become a dirty word and spirited attacks are being made, perhaps justifiably, from many quarters about its inadequacies. But let us not forget that it was this view which forced a detailed look at how our machine works and even though it provided a reductionist approach, at least we have graduated to the level of molecular biology. After all, if we know how our machine works, we can handle its derangements in a more effective manner.

I think it is a good thing that the rather conservative people who make up the medical profession are becoming dissatisfied with this mechanistic-reductionist approach and have started looking for alternative paradigms. There is hope in this dissatisfaction and even though nobody has come out with any kind of a unified theory, there is a definite movement towards a more ecological view of health. Many exciting ideas are suddenly emerging. Ilya Prigogine's theory of dissipative structures, where disease may be construed as a perturbation leading to order out of chaos, Bell's Theorem, David Bohm's Implicate Order, or Roger Sperry's work on 'thought-changing-matter', have powerful implications in the field of health and disease. I can't grasp them but they are dizzy enough to suggest that a major revolution in biological thinking is in the offing, which is more in harmony with what many of the great minds in the medical profession have been intuitively feeling. I look forward to these new ideas gradually falling into place and providing us with a wiser framework to work on.

It is unfortunate that while modern biologists are realizing the interdependence of all living things in our biosphere, market forces continue to make use of some of our discarded ideas about microbes. They continue to frighten us merely to be able to push their products for sale.

When the germ theory of infections was established, the drug industry moved in to make profits by using the powerful advertise-

ment media. Watching television, you would think we lived at bay, in total jeopardy, surrounded on all sides by human seeking germs, shielded against infection and death only by a chemical technology that enables us to keep killing them off. We are instructed to spray disinfectants everywhere, into the air of our bed-rooms, and kitchens and with special energy into our bath-rooms since it is our own germs that seem the worst kind. We are advised to explode clouds of aerosols, mixed with good luck for the manufacturers of deodorants into our noses, mouths, underarms, privileged crevices — even, as I have amusingly encountered, into the intimate insides of our telephone. We apply potent antibiotics to minor scratches and seal them with plastics. Plastic is the new protector; we wrap up the already plastic tumblers of hotels into more plastics and seal the toilet seats after irradiating them with ultraviolet light. I have seen in some Scandinavian countries, gleaming stainless steel hospital beds, autoclaved and sealed in giant polythene covers, before another patient is permitted to occupy it. We live in a world where the microbes seem always to be trying to get at us, to destroy us, and we only stay alive and whole through diligence and fear.

Surely there must be something extremely silly about this kind of an imagery. This has been a perversion of Pasteur's painstaking work which has been converted into an organized, modern kind of demonology. We assume that bacteria somehow relish what they do. Good hygiene is one thing but these are paranoid delusions on a societal scale. Remember Pasteur himself confessing on his death-bed, "Bacteria are nothing; terrain is every thing."

In real life we have always been a relatively minor interest of the vast microbial world. Pathogenicity is not the rule. Indeed, it occurs so infrequently and involves such a small number of species, considering the huge population of bacteria on earth, that it has a freakish aspect. Staphylococci live all over us on our skin. When you count them up, and us, it is remarkable how little trouble we have with

them; only a few of us are plagued with boils. Streptococci are amongst our closest inmates in our throats and it is our own reaction to their presence, in the form of rheumatic fever, that gets us into trouble.

There is in fact, a marvellous symbiosis between us and them and you can find examples of this all over the animal and plant kingdom. We help each other. Swallow antibiotics and they get rid of the resident bacterial flora from our intestines, and there is havoc to pay. "It is only cyclically, for reasons not understood," as Lewis Thomas points out, "but probably related to immunologic reactions on our part, we sense them, and the reaction of sensing is clinical disease. Our arsenals for fighting off bacteria are so powerful that we are more in danger from them than from the invaders. We live in the midst of explosive devices; we are mined."

We are paying too little attention, and respect, to the built-in durability and sheer power of the human organism. Its surest tendency is towards stability and balance. It is a distortion, with something profoundly disloyal about it, to picture the human being as a tottering, fallible contraption, always needing watching and patching, always on the verge of flapping to pieces; this is the doctrine that people hear most often, and most eloquently, on all our information media. We ought to be developing a much better system for general education about human health, with much more curriculum time for acknowledgement, even celebration, of the absolute marvel of good health that is the lot of most of us, most of the time. Most ailments get better by themselves; many, by the next morning.

This is what Fukuoka, in essence, has been talking about in his advocacy of natural farming. This is what Gandhi believed when he treated himself. Science has, at long last, been providing legitimacy to this ecological view of health, of the bio-universe as a huge, symbiotic organism. I think as medical teachers, we have not been passing on such information to our students, and public, which could augment

confidence in their own powers of recovery and help them cope with their illnesses.

### *Some Critiques of Modern Medicine*

Those who remember what it was like to become seriously ill, as I do from my undergraduate days in the medical school, would agree that the scenario has changed very considerably. With a better understanding of our body physiology, a rational management of water and electrolyte balance, and with some useful drugs and antibiotics, there is a greater chance for our recovery than there ever was, even though this is true for a limited number of disorders.

But I am not suggesting for a moment that modern medicine has been an unmixed blessing. A great many distortions have inevitably crept in. The last two decades have been witnessing the emergence of a truly impressive amount of literature, both in volume and content, about the ills of modern medicine. Some of these relate to the pride and arrogance of some men of science who believe that they can master the universe and play around with it like predators. This is probably true of all applied sciences and is a byproduct of the post-industrial society. There are others who attack the medical establishment which, for them, has become a disease-producing agent of a most virulent kind. At a more basic level, there is a serious doubt whether the scientific method is capable of handling the very personal and subjective problems of pain, sickness and death in different cultural backgrounds.

It is interesting to note that most of the criticism of modern medicine has emerged from the affluent societies of the west. It is well to remember this before we import wholesale a technology of medicine the effectiveness of which is being seriously questioned by many western thinkers. Probably the most strident criticism against modern medical establishment has been voiced by Ivan Illich. When I first read his book, I was deeply disturbed. In a rare display of scholarship, rigour and a firm grasp of the subject, with over a thousand references gleaned from prestigious medical journals, and

with his church background, Illich acts like a medieval inquisitor, a prosecutor of a most brilliant kind, who marshals evidence rather than weighs it; he impeaches the medical establishment as a major threat to health. The medical establishment for him is sickening beyond tolerable bounds for three reasons:

- (i) It produces clinical damage which outweighs its potential benefits.
- (ii) It obscures the political conditions of an over-industrialized society which renders it unhealthy.
- (iii) It takes away (or expropriates) the power of the individual to heal himself.

It would almost appear that this is a quotation from Gandhi and not from a 20th Century critique, emerging from the west against modern medicine!

A retrospective medical audit does reveal that many of the so-called achievements of modern medicine should really be attributed to social reformers. Food, housing, working conditions, neighbourhood cohesions as well as cultural mechanisms make it possible to keep the populations stable. In this, Illich has the full support of a profound medical philosopher such as Rene Dubos. A very important point made by him is the role modern medicine has played, in transforming pain, impairment and death from a personal challenge to a technical problem. I think it is an important book for all of us to browse through. The medical profession would be forced to introspect while the patients would benefit by learning how to cope with their own problems rather than submit passively to an organized profession which has a vested interest in maintaining its hold on a captive population. The only problem with this book is that it has the distinctive irritating style of writing which Illich uses to confound his readers. I wish some one rewrites it as "Medical Nemesis Made Easy". It is too important a book to be overlooked.

Merely to reiterate the point, I would cite another book but this by a member of the medical establishment, with an arresting title, "Medicine out of Control — The Anatomy of a

Malignant Technology," by Richard Taylor. If you want to learn about the inside story of the overselling of modern medicine, over-investigation, superspecialists, coronary care units, the diseasification of pregnancy and childbirth, unnecessary surgery, the art and science of non-disease, medical imperialism, screening, and medical check-up, the medicalization of life and many such topics, here is a veritable source-book of some startling information.

You would find, therefore, that the use of science in medicine is one thing but its translation into practice is another. The analogy of nuclear science vs nuclear weapons would not be out of place.

The other variety of critique deals with some conceptual problems. The relationship between the modern doctor and his patient, one part of the critique says, is to methodologically decompose the patient as a person and convert him into a set of laboratory findings. This shadow patient (urine, blood, ECG, X-ray, etc), reconstructed from the results of laboratory tests, then acquires a medical reality and autonomy of its own; it is with this shadow that the modern hospital is concerned. The rest, that is the patient's personal and clinical realities, are seen by the medical system as variables which induce compromises with science (as opposed to the art) of medicine. They are not seen as variables having intrinsic scientific status. Indeed, as Tariq Banuri argues, a basic postulate of modernization is the inherent superiority of the impersonal over personal. The patient's 'voice', his language of suffering, is treated as 'noise', somewhat like the "Signal-noise ratio" on a radar screen. The cold reason of the medical scientist treats this 'noise' as a nuisance and attempts to smother it to be able to read the signal properly. I could not decide to look for alternative designs for our amputees or polio victims but for this 'voice' of the sufferers which made me realize that these devices could not be mere bio-mechanical solutions of a locomotor problem but had to take into account their entire life style of a floor-sitting culture of the east.

The doctor who trusts the voice of the patient more than the pathological tests results

in his own clinical work being perceived as less scientific, even though he may be a more gifted healer and more respected as a practitioner. Professional honours and fame are likely to pass him by.

Further, modern medicine has to conceptualize the patient as the sum of a finite set of subsystems, which, in turn, have to be seen, for therapeutic purposes, as relatively autonomous of each other. Each of these subsystems has to be treated separately according to the needs created by the disease process. The treatment usually consists in entering the affected subsystem with a 'counteragent' or in intervening in the subsystem surgically. If other subsystems are affected, they are handled through another set of interventions.

This is another way to break up the individual. The entire range of specializations in modern medicine is a direct outcome of this perception of the patient. Specialists are increasingly seen in modern medicine not as a tangential development or deviation from the primary agent of medicine in action, the general practitioner. The general practitioner is seen as a residual category — that which is left behind after the specialists are taken out of the field. In the medical scientist's utopia, therefore, there is no place for the GP. The GP is there today as a temporary compromise with the truly scientific medical fraternity. This, it needs to be emphasized, is completely different in the work culture of many non-modern medical systems, where the healer is expected to be a generalist first and specialist second. In fact, the specialist, when operating in a non-modern system (for instance, the osteopath in Ayurveda) often enjoys a lower status than the generalist.

While most of these voices of disillusionment emerged from the west, some interesting viewpoints are appearing from our own country. An extremely perceptive paper has been written by Ashish Nandy and Shiva Vishwanathan entitled "Modern medicine and its non-modern critics". I would commend a serious reading of this paper which analyses the responses of a colonial country to a western, non-rooted system of medicine thrust upon us.

It incidentally includes an interesting analysis of Gandhi's views on medicine as he wrote them up in 'Hind Swaraj'.

Another seminal work which ought to generate some serious thinking has been Sudhir Kakar's work on "Shamans, Mystics and Doctors". The contrasting frameworks of different cultural backgrounds have been studied in the field of mental illness through some incisive case-studies of traditional mental healers in our society who do not emerge so badly after all when compared to our mental hospitals.

My reason for citing some of these works has been to make a specific point. The practice of medicine, as opposed to its scientific base, is not, and perhaps can never be an exact science. The basic pre-requisite of objectivity, so crucial to a scientific mode of thinking, cannot be applied to the kind of variables and subjective responses which human beings are capable of offering when converted into objects for study. In addition, the pressure of the market forces, and the organized profession is too powerful to be resisted and in the ultimate analysis, it is the patient who becomes a helpless victim.

### *The Technology of Medicine*

Technology assessment has become a routine exercise for the scientific enterprises on which our country is obliged to spend vast sums for its needs. Brainy Committees are continually evaluating the effectiveness and cost of doing various things in space, defence, energy, transportation and the like, to give advice about prudent investments for the future.

Somehow medicine has not yet come in for much of this analytical treatment. It seems taken for granted that the technology of medicine simply exists, take it or leave it, and the only major technological problem which policy makers are interested in is how to deliver today's kind of health care, with equity, to all the people.

When the analysts get around to the technology of medicine, they will have to face the problem of measuring the relative cost and

effectiveness of all the things that are done in the management of disease. I wish them well, but I imagine they will have a bewildering time. For one thing, our methods of managing diseases are constantly changing — partly under the influence of new bits of information brought in from all corners of biologic science. At the same time, a great many things are done that are not so closely related to science, some none at all.

In fact, there are three quite different levels of technology in medicine, so unlike each other as to seem altogether different undertakings and the analysts will be in trouble if they are not kept separate.

1. First of all, there is a large body of what might be termed "non-technology", impossible to measure in terms of its capacity to alter either the natural course of disease or its eventual outcome. It is valued highly by the professionals as well as the patients. It consists of what is sometimes called "supportive therapy". It is what is meant by the phrases "caring for" or "standing by". It is indispensable.

It includes the large part of any good doctor's time that is taken up with simply providing reassurance, explaining to patients who fear that they have contracted one or other lethal disease that they are, in fact, quite healthy.

It is what physicians used to be engaged in at the bedside of patients with diphtheria, pneumonia, typhoid, meningitis and all the rest of the infectious diseases that have since come under control.

It is what physicians must now do for patients, with intractable cancer, rheumatoid arthritis, stroke or at least twenty other major diseases because of the absence of an effective technology. It requires not only a great deal of time but also very hard effort and skill on part of physicians; only the very best of doctors are good at coping with this kind of defeat.

2. At the next level up is a kind of technology best termed "halfway technology". This represents the kind of things that must be done in

efforts to compensate for the incapacitating effects of certain diseases whose course one is unable to do very much about. It is a technology designed to make up for disease, or to postpone death.

The outstanding examples in recent years are organ transplantation or artificial joint replacements. In the public mind this kind of technology has come to be seen like the equivalent of the high technologies of the physical sciences. These are represented as breakthroughs and therapeutic triumphs, instead of the makeshift they really are.

In fact, this level of technology is by its nature, at the same time highly sophisticated and profoundly primitive. It is the kind of thing that one must do until there is a genuine understanding of the mechanisms involved in the disease. We do not know why kidneys fail, or coronary arteries get choked or why cancer occurs and so we cannot intelligently intervene to prevent the process, or turn it around. But when this level of understanding has been reached, these will become redundant.

It is a characteristic of this kind of technology that it costs an enormous amount of money, facilities and trained man-power. This is the technology which we all dream about in our country. I do not see that anyone has much choice in this. The only thing that can move medicine away from this level of technology is new information and the only imaginable source of this information is research.

3. The third type of technology is the kind that is so effective that it seems to attract the least public notice; it has come to be taken for granted. This is the genuinely decisive technology of modern medicine, exemplified best by modern methods of immunization, the contemporary use of antibiotics and chemotherapy for bacterial infections. The capacity to deal effectively with syphilis and tuberculosis represents a milestone in human endeavour. And there are other examples; the treatment of vitamin deficiency diseases, endocrinal disorders with appropriate hormones etc. But the truth is that there are nothing as many of these as the public has been led to believe.

The point to be made about this kind of technology — the real high technology of medicine — is that it comes as the result of a genuine understanding of disease mechanisms, and when it becomes available, it is relatively inexpensive and relatively easy to deliver.

It is when physicians are bogged down by their incomplete technologies, by the innumerable things they are obliged to do in medicine when they lack a clear understanding of disease mechanisms, that the deficiencies of the health care system are most conspicuous. If I were a policy-maker, interested in saving money for health care over the long haul, I would regard it as an act of high prudence to give high priority to a lot more basic research in biologic sciences.

#### *The Art of Medicine — Physician as Communicator*

Words, when used by the doctor, can be gate-openers or gate slammers. They can open the way to recovery, or they can make a patient tremulous, dependent, fearful, resistant. The right words can potentiate the patient, mobilize the will to live, and provide a congenial environment for heroic response. The wrong words can complicate the healing environment, which is no less central in the care of patients than the factual knowledge that goes into the physician's treatment.

Being able to diagnose correctly is a good test of medical competence. Being able to tell the patient what he or she should know is a good test of medical artistry. The patients want assurance. They want to be looked after and not just looked over. They want to be listened to. They want to feel that they are in the doctor's thoughts. In short, patients are a vast collection of emotional needs. It is the physician who has most to offer in terms of those emotional needs. It is the person of the doctor and the presence of the doctor — just as much as, and more frequently than what the doctor does — that create an environment of healing.

I cannot express it more effectively than Norman Cousins did, when he was recovering from a massive heart attack "I pray", he said,

“that the medical students will never allow their knowledge to get in the way of their relationship with their patients. I pray that all the technological marvels at their command will not prevent them practicing medicine out of a little black bag if they have to. I pray that when they go into a patient’s room they will recognize that the main distance is not from the door to the bed but from the patient’s eyes to their own, and that the shortest distance between those two points is a horizontal straight line — the kind of straight line that means most when the physician bends low to the patient’s loneliness, fear, pain, and the overwhelming sense of mortality that comes flooding up out of the unknown and when the physician’s hand on the patient’s shoulder or arm is a shelter against darkness”.

Among the oldest discoveries in the practice of medicine is the fact that human beings come equipped with resources of healing that are best mobilized not by detached scientific efficiency but by communication and supportive human outreach.

#### *Needed — A Humane Technology*

I believe, from all that I have discussed so far, that informed self-care should be the main goal of any health programme or activity. Ordinary people, provided with clear, simple information, can prevent and treat most common health problems in their own homes — earlier, cheaper and often better than doctors. People with little formal education can be trusted as much as those with a lot. And they are just as smart. Basic health care should not be delivered, but encouraged. Instead of treating family members as nuisance, we have to invite them to participate in something which deeply concerns them. This calls for the medical profession trying to understand our societal structure, the ways of thinking of our people, the social and economic injustice our people are subjected to, their language and idiom. An insight into these converts a clever physician into a wise one. I very deliberately make this distinction between smartness and wisdom. Please look around and try to locate

this class of wise people. They are becoming an endangered species which may soon become extinct.

These measures, I am convinced, would be in keeping with the new paradigms which are appearing in the field of health sciences. What we need is a technology which is more appropriate (in the sense which Prof. Amulya Reddy has so clearly laid down), more humane, more scientific, less expensive and therefore more equitable, more harmonious with our belief systems but without any place for superstitions and quackery, and which augments autonomous coping with illness or death rather than a passive, indifferent and expensive caring available in our institutional systems.

The physician, as knowledge-seeker and therapist, must understand the technique of the scientist and the vision of the humanist. Unbalanced development in either direction, continued too long, imperils the enterprise of healing. This is what Gandhi stood for and this is what Raman would have approved.

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*Reproduced below are introduction of Dr P. K. Sethi by Prof. S. Ramaseshan and Dr Sethi’s preliminary remarks before the lecture.*

This is the 119th anniversary of the birth of the Mahatma. This also happens to be the centennial year of the birth of C. V. Raman. Professor Raman believed that the only way of paying homage to a person — particularly one you revere and love, is to present him with something of yourself — with something you yourself can do best. That is why his tributes to Gandhi were in the form of Popular Lectures in Science-fields in which he was an acknowledged master.

Raman delivered his first Gandhi Memorial Lecture in 1959 — *On Light, Colour and Vision*. Since then, the Gandhi Memorial Lectures were important annual events in his life. He delivered twelve lectures in all. The last one he delivered was a few weeks before he died (when he was almost 82 years old). The title of the lecture was *On the Cochlea and the Perception of Sound* and he gave a masterly

performance. But there was one difference between this lecture and all the previous ones. When it was almost coming to a close — for the first and probably the only time in his life he asked of his audience permission to sit down and speak!

Today we have with us Dr P. K. Sethi to deliver this year's Gandhi Memorial Lecture. When I went to invite him I told him that Prof. Raman had a student with the same name as his — in the early 20's — one N. K. Sethi from Banaras, for whom Raman seems to have had a special affection. I asked whether he had known this person or had met him. Dr P. K. Sethi replied — "Yes I knew him rather well — and met him often — you see he was my father!"

It is said of Jesus Christ that he made the blind see and the lame walk. I do not think Sethi made the blind see. But he did make the lame walk — yes, many thousands of them — and he made a few of them even dance.

I shall never forget the first time I heard Dr Sethi — about 10 years ago. The story of how he produced an artificial leg whose end looked not like a shoe but like a human foot — with toes and all. Using the skills of a friendly craftsman and scraps of retreads of motor car and cycle tyres, vulcanizing the rubber in the crudest possible way but shaping a flexible foot — flexible at the proper places — which could be used by the poor and barefooted of the world. As a scientist and as a lay-man, I marvelled at the inspiration he had in doing this and I could not but admire his ingenuity.

What Sethi thus produced works — and it has relieved human misery and has given hope and joy to so many human beings every year. Dr Sethi belongs to that rare category of those who in their chosen profession combine the joy of working with the spirit of compassion.

Ladies and Gentlemen, I have the honour to request Dr Pramod Karan Sethi to deliver this year's Gandhi Memorial Lecture.

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I am grateful to the Trustees of this Annual Lecture for the honour they have done me. As a mere practitioner of medicine, I am aware of my own inadequacies for an occasion like this. I am neither a scientist in the mould of Raman nor a Gandhian scholar. I can only confess that in many ways both have deeply influenced me.

My father was one of Prof. Raman's students during his early Calcutta days and this made Raman a very special person in our family. It gave me a chance to see Prof. Raman in my young student days when he occasionally visited my father. This left an indelible impression on me of his vast range of interests and of his intellectual prowess. He could pick up the most ordinary topic and transform it into a matter of intense curiosity. He made me sense what creativity meant. An encounter with him always shook me up.

Mahatma Gandhi, to our generation, gave us not only self-respect — an unusual phenomenon in those colonial days — but more importantly, he made us aware of the fundamental issue of ends and means. Amongst other things, his deep concern for our humble villagers possibly influenced my ways of thinking and sometimes I legitimize my work for our rural amputees as an off-shoot of this Gandhian heritage.

But I have chosen not to talk about this work. Against the larger backdrop of medical practice it seems insignificant. And so, I have attempted to look at some of the issues which ought to be provided more curricular time in our medical schools, and which should be debated fearlessly within the medical profession. To the extent that it is an insider's view, it may be of some relevance for this particular occasion.

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