

Some thoughts on Leadership and Knowledge

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Dr. Sanak Mishra is the Managing Director of Rourkela Steel Plant and Member of the Board of Directors of the Steel Authority of India Limited.

Dr. Mishra stood first in Orissa State in the Matriculation examination in 1961. He received B.Sc. Honours in Physics from Ravenshaw College, BE degree in Metallurgical Engineering from the Indian Institute of Science and an MS and a Ph.D in Materials Science & Metallurgical Engineering from the University of Illinois at Urbana-Champaign, USA, working with Prof. Paul A.Beck. He then joined SAIL in 1973 as a founder member of the Research & Development Centre for Iron & Steel (RDCIS) at Ranchi and was indeed one of its chief architects, rising to the position of Executive Director in 1986. At RDCIS he provided technological leadership in steelmaking continuous casting, rolling, product development and process automation. He holds patents on steels for domestic gas cylinder, high strength steel for construction, weather resistant steel for railway wagons, etc.

In 1998, Dr. Mishra moved from RDCIS to SAIL's Headquarters at Delhi as the Executive Director of Corporate Planning. In this capacity, he spearheaded the formulation of SAIL's Turnaround and Transformation Strategy, which was approved by the Government of India as a Financial & Business Restructuring package. Subsequently, as the Head of the Office of Restructuring, he coordinated the implementation of all business restructuring measures, including the divestment of Power Plants. Further, as Chairman of SAIL's Task Force on e-Commerce, he was a key driver in creating, in collaboration with TATA Steel, one of India's first digital marketplaces, namely Metaljunction.com.

Dr. Mishra has received a number of national honours for his outstanding contributions to science, technology and industry, for example, the National Metallurgists' Day Award of the Government of India, JRD Gold Medal, GD Birla Gold Medal, Kamani Gold Medal, Visvesvaraya Gold Medal, SAIL Gold Medal, Medal of the Materials Research Society of India, Metallurgy & Materials Science Gold Medal, Golden Jubilee Plaque of the Indian Institute of Metals, etc. He has delivered Honour Lectures such as the Prof. A.K. Seal Memorial Lecture and the Prof. B. Behera Memorial Lecture.

Amongst the international honours received by him is the prestigious Alexander von Humboldt Fellowship from Germany, which has only rarely been awarded to industry persons. He was Visiting Scholar at the Technical University in Aachen during 1980 and 1981 where he collaborated with Prof. Kurt Lucke. His other research collaborators include Prof. Anthony de Ardo at University of Pittsburgh and Prof. Warren Garrison at the Carnegie Institute of Technology. He has published over 100 technical papers in international journals, books and the Encyclopaedia of Materials. His work and models have been cited and used by many research groups in USA, Europe, Japan and India. Dr. Mishra has been the Editor of several journals including Transactions of IIM and Chief Editor, STEEL INDIA. He was also the Editor of many published volumes on steel technology.

Dr. Mishra is Fellow of the Indian National Academy of Engineering, National Academy of Sciences, Indian Institute of Metals and Institution of Engineers. He is also an elected Member of the Asia Pacific Academy of Materials. He is Member of the Board of Governors of the National Institute of Technology and the newly formed Biju Patnaik University of Technology, both at Rourkela and the Biju Patnaik National Steel Institute at Puri. He has served as the Chairman of the Research Advisory Committee of the Electronics Research & Development Centres of India and as member of the National Technology Council of CII and various materials science advisory committees like that of the Board of Research in Nuclear Science, Department of Science and Technology and the Council of Scientific and Industrial Research. He has been member of the International Scientific Committee of several conferences held in and outside India.

He is listed in Who is Who in the World, published by Marquis in USA. He has also been named as Man of the Year 2003 by the American Biographical Institute.

Thank you Prof. Mehrotra, for your very kind introduction. I would also like to thank Dr. Goel who has been my scientific escort here, I mean for today. At the outset I must say that I am very pleased to be here again at the National Metallurgical Laboratory at Jamshedpur. I had the privilege of coming here quite a few times and had interactions with a number of scientists. I have seen it grow over the years and I would like to start my lecture by wishing a great future for the National Metallurgical Laboratory.

I am quite honoured, I must say, to have been asked to deliver one of the Diamond Jubilee Series Lectures. My first reaction to the invitation of Prof. Mehrotra was that should I talk on industry or should I depart from the trodden path and do something else ? Then I thought, the Diamond Jubilee Lecture Series is something special and may be a departure is justified. Over the last few years I am concerned with one issue that is constantly on my mind i.e. leadership and whether we work in a scientific community or academic community or industry or in society at large, I think leadership is one issue that looms large over our head. So, today what I would like to do is share some thoughts on leadership and some thoughts on knowledge also. These are principally ideas only and, I would like to believe, nothing more than that. But I thought I may share these ideas with you because by sharing ideas, one can test the validity of the ideas from the response one gets from the people who are willing to hear the ideas. Now to start with, one thinks he knows what leadership is all about. One can go and look up in a dictionary to find the meaning of leadership. But, I would like to caution you because I think there isn't any global, universal definition of leadership and I would try to explain that in a short while. My premise is that you cannot find a global definition of leadership because there is no such thing as global leadership or universal leadership. My thesis on the other hand is that leadership is highly contextual. I will, therefore, start with that particular perspective that leadership is contextual. I think each one of us, at some point or other in our life, asks a question to himself or herself: who do I consider as my leader, who is my hero. I have thought of it myself quite at length and I will tell you who my heroes are. One is Mohandas Karamchand Gandhi or Mahatma Gandhi, as we call him, or the Father of the Nation. Another one is Albert Einstein and then I would also like to mention Abraham Lincoln. One belonged to the Asian continent, one to the American continent, and one originally to the European continent. That's just a coincidence. The point is that all three of them belong to different spheres of life and society. I would like to take Mohandas

Karamchand Gandhi for consideration right now, because he is closer to home and he is one whose biography most of us have read. We know that he grew up as a young boy in Porbandar in what is now Gujarat and he was burning with an inner urge that he wanted to be a barrister or a lawyer. In the British days it was called bar-at-law. So he sailed on a ship to England and he studied law and then he found that the conditions in England weren't exactly to his liking because he perceived there was a certain amount of racism in the British courts. Then somebody said to him, O.K, why don't you go to South Africa; thousands of Indians are living there and the same British Law prevails and you can actually become a lawyer or a barrister for the Indian Community. That was exactly what he did at the age of about 25; he sailed to South Africa. As he took up the cases of the Indians he had to face the grim reality of the exploitation of the Indian community there. Then he became a rebel of sorts, albeit for the right cause and I think the rest is history. But let me remind you that he spent as many as around 20 years there. It was only when he was about 45 years old that I think he received a call from Lokamanya Bal Gangadhar Tilak who had already said "Swaraj is my birthright". He apparently said to Gandhi: You are in South Africa fighting for thousands of Indians, no doubt about that; why don't you come back and fight on behalf millions of Indians. So, Gandhi sailed again at the mature age of 45 or 46 to reach the shores of Bombay. I believe, Gopal Krishna Gokhale was there to receive him. Gandhi lost no time in expanding the theme of Bal Gangadhar Tilak from Swaraj, that is self determination or self rule, to full freedom. So, Gandhi defined the context. Gandhi's leadership for the next three decades, till India got independence, was focused on freedom for India. Gandhiji's leadership was, thus, highly contextual. If you look at Albert Einstein also, you'll find that his scientific leadership was contextual in a sense that he broke path from Newtonian Mechanics to Relativistic Mechanics and there was a context there. Abraham Lincoln talked of the equality of men irrespective of their race, an issue that almost divided the American nation. So, the leaders that you encounter in history are all contextual leaders and not global leaders. Like-wise leadership is contextual and not global. In a sense, there is a silver lining in the sky here, which is that there is an opportunity for everyday leaders because everyday we face different contexts. Each one of us can aspire to develop and practice leadership and lead other people. Now, if we accept that, I have then the simplest definition of leadership: Leadership is all about influencing the mindset and the behavior and the actions of other people, the people that we come across in our lives, the people who are next door neighbours, the people who are working with us in the laboratory or in industry or in academic

institutions, or in the factory, for that matter anywhere. Such people may be his devout followers, or may not even be his followers. For example, there are lots of people I know who have made an impact on my life and I am not necessarily their followers but they are my leaders in one sense or the other.

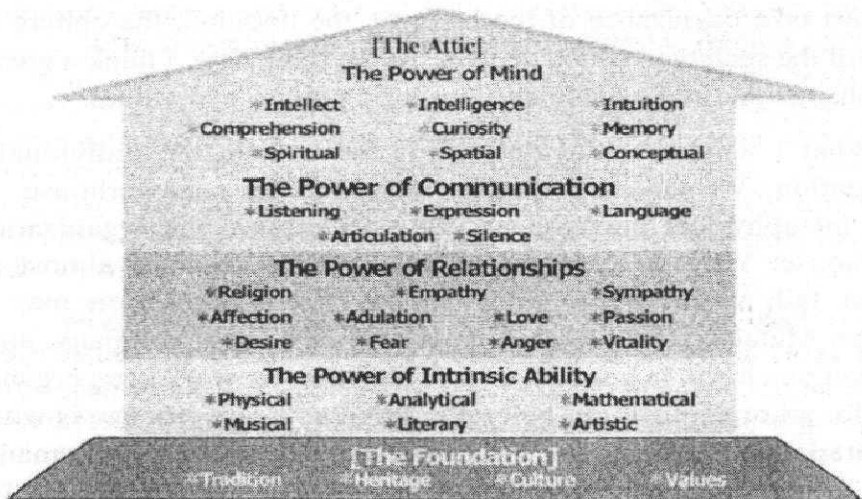
Now, I come to the second important point in my lecture today. That is the individual as a leader. A leader is ultimately a person. So, ultimately a leader is an individual. So, let's look at the leader as an individual or an individual as a leader and of course, when we use the word leadership or leader, we always think that a leader has some special attributes, some special qualities, some special powers. So, power and leadership are inseparable. When we look at the individual as a leader I would like to propose the concept of the hierarchy of power. Because power is, again, not of a universal character. In fact there are many different types of power. I would like to say there are powers that are more powerful than other powers, or that all powers are not equally powerful. So, let's do one thing, let's look at the powers of an individual as a leader and we'll look at it as per the hierarchy of power. At this point I would like to introduce what I call the metaphysical powerhouse. This is what I constructed actually around 1995. The concept has been developed based on our own Vedas, but I must say that one should not take it as having any religious overtones. Now, you'll find that in the hierarchy of power, the power of the mind is the supreme power and in the metaphysical powerhouse, it is the attic or the upper storey. Let me elaborate on what is metaphysics. Metaphysics is the branch of philosophy that seeks to explain the nature of being or reality. Now, the point is that this is the very basis of science also in as much as science seeks to explain the nature of being or reality. Metaphysics is therefore, nothing very different in concept from the concept of science itself. I thought the point should be made that there is no contradiction between metaphysics and science. Let us now look at the power of the mind and the power of the mind has many elements such as intellect, intelligence, intuition, curiosity, memory, conceptual power, power of comprehension, spiritual power, and spatial power too, which is being able to conceive space in its totality. Like, when Einstein discussed the fourth dimension time, he conceived a new space, which was quite radically different from the limited concept of space covering length, breadth and height only.

Next to the power of the mind comes the power of communication. The most easily understood aspects of communication are articulation and language but there is nothing more powerful than listening and even silence is often very overpowering in communication. I personally have gone to very senior level

board-room type meetings and I have found that there will be arguments for 45 minutes and at the end of the long discussion somebody will raise his finger who has not spoken even a word and he will say a few words and that would be the end of the discussion. Everybody would accept what he said. As a matter of fact you cannot communicate if you don't listen. I think that is the first principle of communication and this also leads to trust. If you don't listen, people don't trust you.

Next to the power of communication comes the power of relationships. That's very easy to understand. As we grow up in a family and most of us have grown up in a family with neighbours, we are subjected to many different types of relationships from childhood itself. Take for example religion, we have no choice but very often we are born into a religion. The fact that ten people belong to the same religion automatically establishes an unspoken, an unwritten, unheralded relationship. The other facets of relationship are empathy, sympathy, affection, adulation, love, passion, desire, fear, anger, vitality. Vitality is important in a relationship because when people have vitality, charisma, lots of personal energy, then the other people are drawn towards them. So, this is very important in relationships: It directly has a hold on other people. Let me explain this; take John Kennedy, for one; even after 40 years of his death, people say John Kennedy was a charismatic leader. He was like a magnet. People were drawn towards him. He unquestionably had a high level of vitality.

THE METAPHYSICAL POWERHOUSE



METAPHYSICS

The branch of philosophy
That seeks to explain
The Nature of being and reality

Foot-note : Concept borrowed from
"The hierarchy of power"
Mishra, 1995

Next to the power of relationships comes the power of intrinsic ability. The ability may be physical. Some people are born with better physique, or some try to have a better physique by going to the gym. The other powers of intrinsic ability are analytical power, mathematical power, musical power, literary power and artistic power. Now, one thing that needs to be pointed out here is that there are ways of honing intrinsic abilities. There are ways of enhancing the effectiveness of one's ability through training programmes, or for example, through a Ph.D. degree for a mathematician; but the point remains that there are some people who have the flair for mathematics, some people have the flair for music and some people have flair for writing and some have flair for painting and so on and so forth.

Now, the whole metaphysical powerhouse, it sits on what I call the foundation. The foundation is a composite of the tradition of the society, the heritage, the culture and values.

Now, there is something to be said about culture and values, because these are susceptible to change. You can't change tradition, however. Tradition is very historical has very strong historical roots. You can't change heritage, either. It is something that you inherit and it is also historical. Culture is part historical and part evolutionary. You can change culture. Value systems always keep changing from time to time, depending on social needs. The important point is that when an individual exercises leadership, an individual exercises the power of his mind, the power of communication, the power of relationships, the power of intrinsic ability; however, to be effective, the individual should and must take cognizance of the heritage, the tradition, the culture and the values of the society in which he lives. At the same time, I think a great leader must change and must make an impact on culture and values.

What I would like to do now is move from the individual to the organization. We talked about the individual as a powerhouse, the so-called metaphysical powerhouse. We will explore the organization as a powerhouse. Why do we need to do that? Because we almost always, without fail, work for an organisation. The organisation may be the National Metallurgical Laboratory, it may be a steel company, an IIT, or whatever you have. In general, in grown up life, we work in an organization, if not for an organisation. The organisation as a powerhouse is what I call the materialistic powerhouse because it deals not only with human beings but it also deals with matter and substance. Such a powerhouse is like a tent house and the structure of the hierarchy here is that it starts with authority. The authority can be of different types. It can be a political

authority; for example, the Prime Minister of India holds the maximum political authority as the elected leader of the people and as the leader of the Parliament. In an administrative set up, you know the Director or the Chairman holds the authority. In a dynastic system, the authority flows in a lineage i.e. the king, the queen, the prince or the princess. If you take a business house, the son of the proprietor or owner or the daughter or the wife, whoever it is, he or she, holds authority after the proprietor.

THE MATERIALISTIC POWERHOUSE

The
Penthouse

Authority		
* Dynastic	* Political	* Administrative
Human Resources		
* Size	* Quality	* Skill
* Competence	* Capability	* Health
Finances		
* Currency	* Gold	* Mortgages
	* Shares	* Taxes
Information		
* Archives	* Audios	* Videos
* Computers	* Telecommunications	* Networks
Mobility		
* Exploration	* Transportation	* Energy
Might		
* Influence	* Clout	* Muscle
		* Guns
Plans		
* Programs	* Projects	
* Documents	* Systems	
Technology		
* Engineering	* Manufacturing	* Servicing
Infrastructure		
* Land	* Water	* Air
* Fuels	* Electricity	* Shelter

The
Foundation

In an organisation, the next powerful force is the human resource, but there are many aspects of the human resource that one has to look at. The size is not always necessarily a positive aspect of human resource. Sometimes you may have over-abundance of human beings in an organization. You may be needing five hundred people, but you may actually be having 5,000 people, which can very easily slow down the organizational processes.

So, size is not always an advantage, but you can talk about a critical size depending upon the need of the organization and of course, we have to look also into the quality of human resource in terms of their education and the skill level. The competence and the skill level of the human resource can be partly enhanced through training but to a large measure; they must come from the self-motivation of the people who constitute the human resource. Last but not

the least in importance is the health of the human resource, that is the health of the members of the work-force. If you take an example of an organization of 30 years old and an organization which was 55 years old, the organization which was 30 years old is stronger and therefore is a more powerful organization than that of 55 years old.

Third in the hierarchy of power in a materialistic powerhouse is the financial aspect, which can be understood in terms of currency, gold, mortgages, shares, taxes, deficits, surpluses, equity and the like.

Next, we must recognize that organizations which have very well developed information-sharing systems are more powerful organizations than those where information flow doesn't take place.

In an organization what is also very important is mobility. The mobility can be reflected in internal transportation within an organization, it may also be reflected in terms of the energetics of an organization. The energetics of an organization is very tricky. Within the organization you must be able to move people from one location to another location. For example, in Rourkela Steel Plant, I must have the facility to move an engineer from a cold rolling mill to a hot rolling mill or from the steel melting shop to let's say the blast furnace. Now, that sort of easy mobility is not found in an industry, in general. It is not easily found anywhere in fact and it is one of the limiting factors in an organization. There is always a resistance, from the Union, from Officers, from individuals, literally from everybody. The point is that any organization which has high internal mobility is a stronger organization, is a more powerful organization than one where the mobility is limited or restricted, because it can put the right people in the right position.

Somewhere in the second half of the hierarchy of the materialistic powerhouse comes what I call "might". In any organization you will always find an influence group. An influence group, if it is positive in character, is very desirable i.e. you have opinion-makers who are trying to propagate and consolidate the objectives, the mission and the goals of an organization. You may have groups in an organization, however, who may have a lot of clout. They may come and tell you, I know the Director, so I will tell him to promote you or transfer you, whatever it is. Now, this is a very negative influence in an organization but it can sometimes be very powerful indeed, and destructive as well.

Next in the hierarchy of the materialistic powerhouse come plans, programmes and projects, documents, systems etc. An organization which

has plans for the future is a more powerful organization than one that does not have future plans. An organization which doesn't have future plans is going to perish and if you look at the history of organisations and start wondering why certain institutions and organization have survived for decades while others have not, you will most likely find that the survivors had plans for their future.

You will find that technology comes at the very bottom part of the hierarchy in the materialistic powerhouse. People always ask me how is that, this is the 21st Century and how can you say that technology is so low in the hierarchy of power in an organization. My answer is very simple. The technology is primarily a tool. It's a tool in the hands of the human resource. So technology is only as powerful as people who use it. I will give an example; in 1968 man landed on the moon and if some of you remember this, the computer that was used to land the man on the moon was an IBM 370 class which in terms of capability probably was weaker than a PC 386 which is now junk. Now, how did man land on the moon? How did the space programme land the man on the moon? It did so, because man said I am going to land on the moon no matter what comes in my way. So, the computer was important but incidental. Of course technology is important because technology produces cost effectiveness and technology reduces the time period of doing a job. Technology is advancing all the time; therefore there is a necessity to move to advanced technology, but the point is that technology has to be used by the people and they should be capable to use the technology to the maximum advantage. That is why it comes at the bottom end of the organizational powerhouse.

Finally the foundation of the powerhouse of an organization rests on infrastructure like land, water, air, fuels, electricity and shelter, etc.

Let me now summarise what I have elaborated upon so far. We looked at the power of an individual as a leader. We looked at the organization as a powerhouse. Why did we look at the organization as a powerhouse? Because the individual as a leader can draw power from the organization. While he conducts his leadership or while he practices leadership, he not only would like to use his own powers, he should also use the powers of an organization if he belongs to an organization or he has founded an organization or he is heading an organization. So, he can have a double-edged sword in his hands, his own powers as an individual, namely, the power of the mind, the power of communication, the power of relationships and the power of intrinsic ability, plus all the powers of the organization.

I must emphasize that every leader must have a mission, and as I said, Gandhiji had a mission of freedom from the subjugation of the British. Please don't forget something here: that was not the only mission that Gandhiji worked on. Gandhiji worked on other missions too and he was a great success at that. To cite: he fought against the caste system, his mission was to level the caste system. To cite another of his missions, I have looked into history books and I have realized that he was the first leader or may be the first human being who was able to champion the cause of women. Gandhiji was also the first person articulated said that in societies which have an internal urge to move forward, the women must participate in the developmental processes of that society. I think no other person before Gandhiji had such missions.

I have said that every leader must have a mission. What is relevant is that his followers should be able to subscribe to the mission. The best thing would be that the mission is evolved by the people who are not the leader. The leader should only guide and facilitate the evolution of the mission. In Rourkela Steel Plant we evolved a mission statement through mass contact exercises, which are held every week with around 500 employees. We have covered around 25,000 people in Rourkela Steel Plant in about 15 months. The Mission Statement at Rourkela Steel Plant goes like this: The future of our steel plant lies in our own hands. It is our individual and collective responsibility to rebuild our plant into a profitable, harmonious and vibrant organization. We shall do whatever is good for our plant and we shall never do anything that hurts our plant.

There is a Vision that we are working at Rourkela Steel Plant and that is again derived from the Vedas and we are calling it "Our Samskar". Samskar as such is a very powerful concept in our civilization. I mentioned somewhere along the line that certain institutions survive for centuries because they have well-defined future plans. Institutions survive also because they are clever enough to carry out what I call a continuous Samskar. Samskar is not a one-stop affair. It is a continuum in which you actually overcome the challenges of the future. The Samskar Statement at the Rourkela Steel Plant is quite simple and down to earth. It says: "We have to create and sustain a peaceful environment where every employee can contribute to the plant, in assigned area of work, with full freedom and dignity and without fear".

One can ask, what does a leader deliver to his people? Ultimately what a leader delivers or what a leader promises to his followers is that he will help to create and sustain an environment where people can work with freedom, where people can live with dignity and without fear. I think each and every leader I have come across in history gave nothing less to his people.

After having talked about leadership, what I would like to do now is to talk about knowledge, since yours is a knowledge-based organization and I come from another knowledge-based organization. But before I do that I would like to go through conventional wisdom about knowledge, just to refresh ourselves. What do people think about knowledge? What do people say knowledge is all about? If you look at it dispassionately, knowledge is very vague like beauty or quality. People often say "he has knowledge". I get confused. I start asking myself, let me first understand what is knowledge. I looked at the Webster Dictionary, as that is my favourite dictionary. There are many meanings given about knowledge. Webster says knowledge is understanding gained by actual experience. The point is that if you are gaining something by actual experience, it is really wisdom; because it is empirical - as what you see or hear forms an opinion in your mind; you then form your own view. The second definition Webster gives is that knowledge is the state of being aware of something, having information. Anyway it's a very vague explanation. The state of being aware of something isn't very comforting, because we don't know what that something is. Having information does not mean much, according to me, because everybody thinks that he has information and not everybody has enough information, not everybody has all the information. We will come back to this. The third definition Webster gives is that knowledge is the act of understanding: clear perception of truth. The fact is nobody knows what is the truth. One seeks what one thinks may be or is the truth and there are many people who claim that they have sighted the truth but I think what we can say at best is that people have uncovered certain facts or that people have come across certain facts. Truth is something that is certainly very elusive. I have grave doubts that anybody at all ever reached the truth.

Webster also says that knowledge is something learnt and kept in mind. Maybe, this is a very practical thing that you read a book and you think you have learnt something. But may be you didn't learn anything at all.

Nowadays one comes across a lot of printed matter about knowledge management. But what do people in management talk about knowledge.

Peter Drucker has written a book on "Realities". Peter Drucker says "knowledge is information that changes something or somebody". Now, again there is a vagueness about it. It changes something, we don't know what it changes. It changes somebody, that is more down-to-earth. Remember, when I talked about leadership, I said leadership is about influencing the mindset and the behavior and the actions of the people who are the followers of the leader or even people at large. Knowledge obviously has something to do with

leadership, but if you recall, when I talked about the power of the mind, I did not talk about the power of knowledge and instead I talked about the power of comprehension.

Now, the interesting thing is that Peter Drucker talked about change. Let us look at what kind of changes one can conceive and let's classify them, though we may not achieve the best classification. First of all, changes can be anarchic; they can produce, they can generate a very high level of entropy. Of course you know that entropy is ever increasing in the universe. That the entropy is always on the rise is what some people call a universal truth. (I rather think it is a universal law and not necessarily a universal truth). The point is that anarchy speeds up the generation of entropy because it produces a lot of disturbances and discrepancies in the system. Secondly you can have systemic changes in the society from time to time. You can also have structural changes in an organization; for example some years back when I was in Delhi, I was the Head of the Office of Restructuring of SAIL and we were trying to restructure the Steel Authority of India Ltd. But the ultimate change is of course transforming yourself or others or an organization. Here, you want to take the collective energy people in one unified direction. I mean this is again like Einstein's great dream of the unified theory of relativity. Any dream of producing transformational changes is organization-specific, where you want all the employees, all the members of the institution and the organization to act collectively and in unison, in one direction. I have seen such a phenomenon only in ferromagnetism i.e. in the Heisenberg Exchange Model where you have all the spin vectors oriented in the same direction in a classic example of cooperative phenomena. Now, in a society you can produce anarchic changes or systemic changes or structural changes and you can also produce transformational changes. When you want to produce transformational changes, though, you need leadership because only the leaders are capable of unifying the collective energy of their followers in one direction and we have seen that in history. We have seen that leaders who are transformational leaders, are able to synergize the minds of the people.

As I said earlier, I had great difficulty in understanding knowledge and so I constructed a hierarchy, a sort pyramid and said, O.K. let me start with the base. I said to myself I understand data because as a scientist I was collecting some in the laboratory for several years of my life. So, I am at home with data and indeed most people are at home with data.

Data could be financial data also, like how much money you have at the bank, how much salary you are getting. So, data is usually easy to identify and

define. On another plane, data is very discrete. Then we come to information. We are getting a little vague already but I can say information is something beyond data, something more than data, i.e. groups of data with inter-correlation. When I pick up a book on the history of India I say that it has a lot of information on Mughal emperors. I watch TV and I say I get information. Yesterday there was a debate in Parliament and so and so said so and so; there was a flood in such and such place. That is information. That may or may not contain much data. For example, you may get a headline in the T.V: Earthquake in Gujarat on the Richter Scale came to 6.5. That is information.

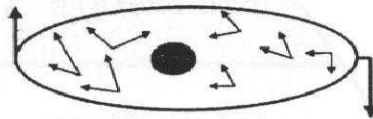
Then I come to knowledge. Knowledge to me is what I learn, knowledge is what I pick up either from watching, observing, hearing, reading or making mental notes. I will give you an example of what I think is knowledge. I will

CHANGE

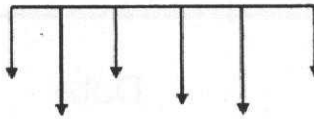
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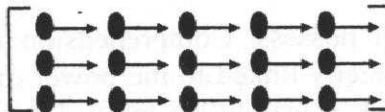
Systemic



Structural



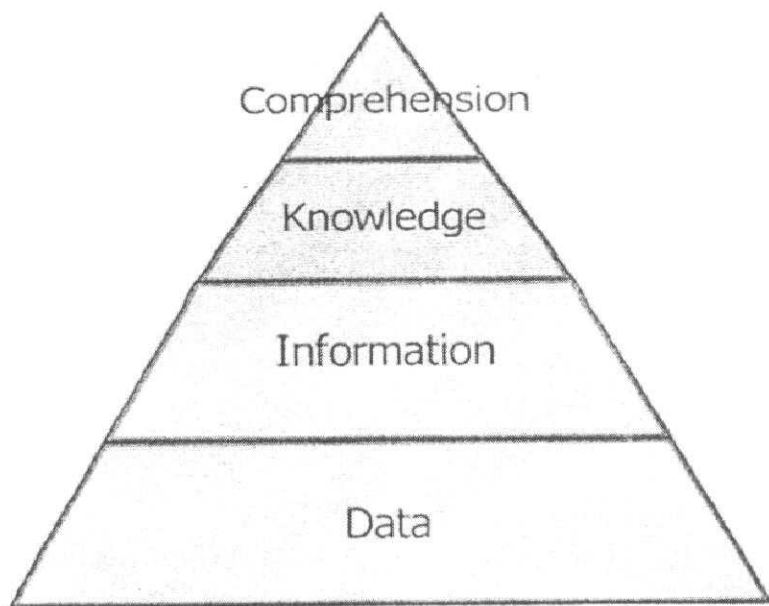
Transformational



say I have knowledge that X was married to Y before he married Z. You will tell me that it is information. I will say no it is not information because not everybody knows it, not even his second wife Z. Only I know it because I fixed that marriage with Y. Information is, according to me, a more public

phenomenon. It is accessible to more people. By the time you can come upward to knowledge, you are entering the arena of the individual. Knowledge is primarily with the individual. Knowledge can also be with the institution also. Today I saw the Business Development Centre here and I saw the archives. Basically it mostly has information and may be some knowledge. Somebody told me that if the documents were not available, the archive was not there, where would the knowledge be? The knowledge could be there with an individual who might have already retired or gone into hibernation.

Then we come finally to comprehension at the top of the pyramid. Comprehension is what I call the sum total of your ability to conclude, the ability to read into different situations and connect them, e.g. the ability to connect a historical incident which took place in 1857 to something that took place in 1947; the ability to form a theory, for example, the theory of relativity. To do that, you need comprehension. It is not enough to have knowledge, it is something higher than that and you will find that comprehension is something



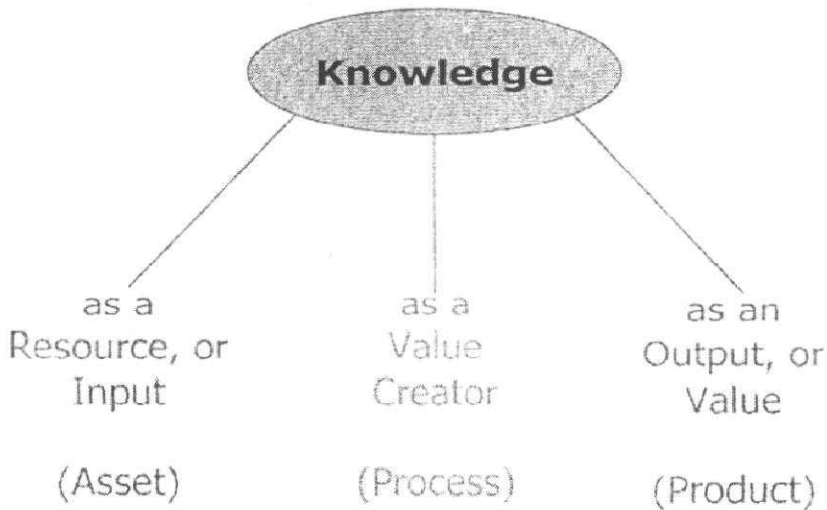
that institutions don't possess. Comprehension is right there is your head. Comprehension is directly linked to the power of the mind. Gautam Buddha found *Nirvana*; I think it was in his mind. I don't think we know, we don't have any knowledge, information or data that he actually achieved *Nirvana*. Only Buddha comprehended that he had *Nirvana* and he also said that others can have what he conceived to be *Nirvana*. So, comprehension is highly individual-centered. Fortunately, leaders have comprehension. Leaders have

comprehension because they can connect situations and therefore can decide on a mission or develop a vision. Unless one has comprehension, one cannot form a vision. Thus, my definition of comprehension is that it is the ability to perceive and to conceive and to generalize or theorise and it is always with the individual. It can never come to an institution.

Let's go forward, if we use this as the basis. Now, when we come to an organization, we can say that the organization can have data, information and knowledge in different dimensions and I have three dimensions for knowledge itself. One is knowledge as a resource or input; then it becomes an asset. When NML hires a Ph.D., say from an IIT, it is actually acquiring an asset because that individual is coming with knowledge. (That person is actually coming with information, data and knowledge). Secondly knowledge is also a value creator, but then to create value you have to have knowledge-creating processes. Knowledge-creating processes are essentially organizational processes. Finally (thirdly) you can have knowledge as an output, say a Ph.D. thesis, a research publication, a patent, whatever. So, knowledge may be a product. To repeat, knowledge has three dimensions in an organizational context; in other contexts, it may have other dimensions, but I am not concerned with that right now. Now we can talk of "Knowledge Management". For example, the information technology industry is very deeply concerned with knowledge management, using information technology as a tool. It must be understood, I think though, that information technology by itself is not knowledge management.

Knowledge management has three basic futures. The first is managing the context of knowledge, the second is managing the content of knowledge and the third is managing the process of knowledge. Is this very difficult to understand? People do ask me: What do you mean by managing the context of knowledge? The point is that there is always a context to knowledge, though we gloss-over it. For example, take sex education in schools. There is a context here. Some societies say that they don't want sex education in schools because we don't want to corrupt the minds of our children at such a young age. Now, somebody has to manage that context before even the knowledge is imparted or before the content of knowledge is managed: Thus, you have to convince the society, you have to convince the school board, you have to convince the managing trust or the local management committee or the governing body of the school that the sex education is essential, at least in the limited context of Aids awareness, or whatever it is. So, the context of the knowledge has to be managed first; before, one can manage the content

of knowledge. Very often this point is missed. I found in my own 35 years of professional life that mostly it is missed and therefore managing the content of knowledge becomes an extremely difficult task. Then of course, finally one needs to concentrate on managing the process of knowledge. Organisations which are concerned with creating values, creating more knowledge, they have to manage the process of knowledge. The fundamental issue here is the mobilization of knowledge resources. You have to have plans and activities and human resource and instruments and tools to generate new knowledge. Once you generate new knowledge you have to have systems and structures to sustain and retain that knowledge. Ultimately, if you are a business organization, you will have to think of marketing the knowledge because you want to have a healthy bottom line so that you can say you, more than made up for all the money that was spent in generating knowledge in the first place.



In any systematic approach to knowledge management, it has to be asked first if knowledge exists in the organization as a value creator. Now, here I will tell you one thing, an asset (read: knowledge) that you have is not necessarily a value. Like if you have a piece of land, it is an asset but not a value creator until the moment you actually cultivate it or until you construct a house on it and give it on rent to people. So, an asset per say is not value. An asset has value when it creates value. So, therefore, the mere fact that knowledge exists in your organization does not mean very much. Value will exist only when that knowledge is used.

I am going now to get into a related field i.e. skills and I will talk about a new term that I have coined called knowledge skill. But first let us look into

the hierarchy of skills. What comes to our mind right away is the multitude of human skills. There are three kinds of human skills, and according to my scheme of classification, one is physical skill, one is mental skill and I have added a new skill i.e. knowledge skill. I would like to explain these different kinds of skills and what they mean in professional and social spheres. Physical skill, you know, is very easy to understand. Physical skill comprises quite often sheer manual prowess or intrinsic physical ability, not just a big body but a good coordination of hands and feet and head and whatever. Some physical skills can be mostly acquired through training. The desired training can be one to one, in the form of coaching. In some cases natural talent may be a pre-requisite. It is not necessary that a man who is born tall, is going to put the basketball into the net. He has to have some natural talent, apart from the need for coaching. He has to have flair, he has to have inner urge to play the game. In case of mental skill, it comprises mostly of analytical ability, what it is called intrinsic analytical capability, although the capacity to think out things can be acquired to some extent.

Finally I come to knowledge skills. A knowledge skill comprises of high degree of application. It requires motivation to finish tasks. In physical skills also there is a motivation to finish the task. Thus, to play a game where physical skill is required, say a game of football or basketball or baseball, there is a motivation to finish the task as the game lasts for one hour or something like that. In the case of mental skill, motivation to finish the task is minimum. There are ample examples of people having high mental skills but not able to finish the task; motivation is not there or the motivation is not required to finish the task to bring a mental skill to a conclusion or to some kind of gainful endpoint. But in knowledge skill, it is highly important that there is motivation to finish the task. Knowledge skills can be acquired to a large extent through training whereas you cannot really acquire mental skill through training.

Let's examine the knowledge requirements for various skills. The knowledge requirement for physical skill is average; for mental skill, obviously it is very high and for knowledge skills you can do with average to medium to high. The required IQ level for physical skill is average, for mental skill the IQ level is very high and for knowledge skill average is good, medium is better and high is best. Who practice these kinds of skills? Physical skill: a plumber, a welder, a trapeze artist in a circus, a drummer, an acrobat, an opera singer, a painter, a film actor who does constantly what his director is telling him, a football player, an athlete. Then we look at mental skill: a mathematician, a philosopher, a writer or an author, a stage actor (because a stage actor actually

improvises when he is on the stage; at the centre of the stage he doesn't listen much to the director), a professor, a lawyer, a music composer, a chess player. Who uses knowledge skills? An IT professional, a doctor or a surgeon, a film director, a chartered accountant, a concert pianist, a campaign manager, a fashion designer. Now, these examples do not constitute an exhaustive list; some of them are admittedly borderline.

Now, let us look at the application time for these skills, the time taken to put the skills to use. In case of physical skill it is short; very short sometimes. In case of mental skill, one would first take time to understand and so the time taken for application of mental skill is medium to normal. In case of knowledge skill it is short to medium. Knowledge skills in fact can be applied very fast.

What about the revenue earning potential of the different skills. In the case of physical skill, you can very quickly earn revenues; the revenues will be from small to medium. Now, if one excels in physical skill, then of course one can earn large revenues but I am not talking here of excellence but of general situations. In the case of mental skill, a lawyer will probably, take years to establish himself as a good lawyer, a mathematician probably would never get a high salary and so basically these people get medium salaries, medium revenues. On the other hand, for people, who use knowledge skills, the revenue earning is very quick because they can apply their knowledge skill very quickly and generally they earn very large revenues. Somebody asked me to give a classical example of a person with knowledge skill and I said a Brahmin who does Puja. He knows the mantras; he knows the materials required for carrying out the homa or the yagnya and he knows how to conduct it. He has both the knowledge and also the skill to perform the Puja.

There is something unique about people who have mental skills. They don't need knowledge first of all; they don't need any physical skill either.

We must note that physical skills, mental skills knowledge-skills are the skills of human beings. In modern times we also have the special skills of our supporting systems. What are supporting systems? They are the automated equipments, industrial robots, microprocessors, micro-controllers, etc. What kind of skills do they have? Without exception, the skills of all such man-made inanimate objects (which we may call machine skills) are knowledge-based. However, they do not fall into the category of knowledge skills in the manner in which human skills are defined. This perhaps needs a bit of an explanation: All machine skills you'll find are built-in or trained-in externally and so thereby

they are also pre-assigned skills, to perform pre-determined tasks. Human skills on the other hand are not built-in;. What is really special about human skills is that, they can be self-learnt or self-taught or even self-developed.

There was a lot of confusion in the late 90's and I read a lot of articles written by very important people that the IT industry is a knowledge-based industry, that the manufacturing industry is not a knowledge-based industry. Nothing can be farther from the truth. The point is that all modern industries are knowledge-based and certainly those which are manufacturing industries or process industries. For example, the steel industry today is heavily dependent on automation and is therefore primarily driven by pre-assigned machine skills of automated systems. It does not depend heavily, of course, on knowledge skills like the IT industry does but that's the only difference. So, any modern industry is in fact knowledge-based; whether it is the IT industry or the manufacturing industry or the engineering industry; every single industry is knowledge based. Hence let there be no misconceptions, misgivings in anybody's mind that a particular industry is not knowledge-based and that a particular industry only is knowledge-based.

To summarize very briefly, I started with leadership and I said leadership is not a global phenomena, that leadership is highly contextual, that a leader as an individual or individual as a leader can exercise certain powers and I discussed the hierarchy of power of an individual or leader. Then I talked about the organization as a powerhouse which I called the materialistic powerhouse. I went further to talk about knowledge and stressed that we must question conventional understanding of what is knowledge, also I said that comprehension is a power of the mind, which institutions cannot possess, which only individuals can possess. Finally I talked about a new concept called knowledge skills as opposed to physical skills and mental skills and I concluded by saying that all industries are knowledge-based and that the real distinction is that certain industries use machine skills, which are in any case knowledge-based and certain other industries use the knowledge skills which are primarily dependent on human beings.

Thank you very much for giving me an opportunity of sharing my ideas with you and I wish you all the very best in your own endeavours.