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Interaction on
India and the Indian Ocean Region: A Maritime
Perspective

with

Rear Admiral(retd) Mohan Raman

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A product of IIT, Kharagpur, Rear Admiral Mohan Raman(retd) studied Naval Architecture at a time when Naval Architecture was not at all a fashionable subject, Admiral Mohan Raman then did a degree in Ocean Engineering from the University

College, London. An alumnus of NDC, he has worked on ship-design, ship-building and ship repair. He has also helped in several projects related to ship-based constructions.

Dr Suryanarayan (Academic): Whenever I teach a course on the Indian Ocean, I put a map of South Asia upside down, and that is the only way to make the people specially in the North, realise how much the oceans are important for us. South Block needs to realise how close Indonesia is to the Indira Point, and Thailand is to Indira Point. Thailand and Indonesia are in our immediate neighbourhood, and not in the emerging neighbourhood as the annual reports of the external Affairs Ministry put it. Given the maritime traditions of Tamil Nadu, Andhra, Kerala, Orissa and West Bengal, at least in these states there should have been greater sensitivity to the significance of oceans, not only as rich for sea-faring also for strategic importance, potential for economic-exploitation, as an instrument of regional co-operation, etc. One of the first books on the significance of the Indian Ocean to India was written by Sardar K.M.Pannikar, called *India and the Indian Ocean*. It was a very small book, and a few others have followed, but the fact still remains that most people in Delhi still continue to be sea-blind.

In this context, it is very timely that Admiral Mohan Raman is speaking to us on “India and the Indian Ocean Region: a Maritime Perspective”. Indian Ocean is the only one in the world that has been named after a country, and to that extent one can understand how significant it is.

Rear Admiral Mohan Raman (retd): With all this having been said I would put to you that human endeavour through the ages has really been case of a race between the speed of ideas and the speed of movement. Initially, up to the Middle Ages the race was fairly close, but I am afraid that ideas now travel much faster than physical movement. Which then brings us to the importance of issues like knowledge-based industry, software, biotech, etc. Nevertheless, movement remains important, physical movement. As movement becomes important, the notion that oceans are barriers, are defence barriers, have given way to the view that the oceans are really mediums for international interaction. This interaction can be benign, or it can be non-benign. It can be trade, it can be strategic, flexing of muscles. It can be State-sponsored. It can be a privateer who is a pirate, a gun-runner, or what have you. So, the problems of the world are multifarious, and the oceans are merely mediums where all this transpires.

The Indian Ocean is the third largest ocean, after the Atlantic and the Pacific, and extends to about 68.5 million sq.kms, about five-and-half times the size of the US. It washes some 65,000 km of shores because of a very large number of islands. The Indian Ocean starts from the Cape of Good Hope, the tip of South Africa, goes all the way around, and eventually encompasses the north, the west and the south of the Australian continent. Within this spread, there are choke-points, traffic jams, as you would say in the motorway. There is the Mozambique Channel, between Africa and the Mozambique. The Suez Canal, and incidentally you might remember how Egypt put a few long-range guns at the mouth of the Gulf of Aquaba, and triggered the Arab-Israeli war of 1967. Today, at the head of the Gulf of Aquaba, Ailat, which is the Israeli port, and also the Jordanian position, the Egyptian position are all massive holiday condominiums. So, it really

transpires that what applies today might not apply tomorrow. It is not just the Berlin Wall that has fallen down, barriers do fall down in many places.

There is the Bab-el-Mandeb separating Yemen from Djibouti, the Straits of Hormuz between Oman and Iran. Before the Gulf War I it was unsafe for American warships to enter the Gulf. They used to stand off and tackle problems by air effort. Thanks to the Gulf War I, the coalition forces got right in. The Malacca Straits, the Ten-Degree Channel, south of the Andamans. Then you know, there is the alternative sea-lane of communication for people who want to avoid the Malacca Straits, which is the Lumbox Straits and the Sunda Straits, but all of them are narrow and all of them are choke-points.

Like any good motorway, the Indian Ocean carries the world's commerce, pretty near all of its marketable crude and gas. There is a lot of cereal export, greens from Australia, agriculture exports from New Zealand, iron-ore to Japan, you name it, it is there. So, it not only the people who live in the Indian Ocean littorals who are affected by the Indian Ocean but, there is a lot of transit-traffic. So it is really the world's ocean, you might say.

Roughly about forty per cent of the world's population is directly related to the Indian Ocean. If you consider that, apart from East Africa, the Arabian Peninsula, South Asia, South-East Asia, Australia, and Central Asia, at least the Soviet Republics west of China and east of Azerbaijan are probably interested in having outlets to the Indian Ocean. Within this, there is a wide variety of wealth, human development, and so forth. For example, the World Bank, says that Australia, Brunei, Kuwait, Qatar, Singapore and the UAE had a per capita income of over \$9000 in the year 2000. Everybody else is a middle-income or a lower-income country. Now if you look at the list of developing nations, a list produced by the United Nations, everybody is a developing nation other than Australia. The UNDP lists the UAE, Qatar, Singapore, Kuwait, Brunei, Bahrain and Australia in the list of 53 nations which have high human development parameters. All these factors have to be taken into account and an Indian view of the Indian Ocean region must be tailored to the country.

Talking about our ancient links of historical vintage, cultural or religious, is not going to wash much. For one thing, it is true that just about every organised religion, Hinduism, Christianity, Islam and Buddhism from the Indian Ocean littoral. Nevertheless, the ancient Hindu cultural heritage is not exactly terribly popular. You can use that as the icing on the cake, if you think fit, but that cannot be the frontal point. The Indian diaspora is also well distributed, but here again, in most countries, is not exactly liked by the host country, for good reasons and bad. If we all get upset and angry about it, the Indian diaspora does expect support from India, but does not necessarily feel that their future, as a sort of insurance policy, lies with India. They are not going to come here and settle down with their savings and make us prosperous. I have the examples of East African Asians, and Indians in Fiji. In both cases, the Government of India was accommodative, but by the NRIs settled down in Australia, New Zealand, Canada, the US and the UK. Since everybody is doing it why shouldn't they? One has therefore to be a little bit careful.

Peninsular India is right in the middle of the spread of the Indian Ocean, and therefore we are buffeted by events on all sides. On the western, African side, there is a level of, benign acceptance. It is not particularly a hot spot. On the north-western side, we have faced a lot of problems. On the north-western sides dangers are very often State-sponsored. That is not quite the case on the eastern side, where everybody seems to be on the same boat. This again brings us to the point that if it is our response to make life comfortable, it will have to be tailored to the specific country in question. If that were to be so, then, we should always bear in mind Abraham Maslow's *Five principles of Human Needs*, and judge what is the need that we hope to address. What is the Indian need that we hope to address with a certain interaction with a foreign country? What is the foreign country's need that we hope to support with our actions?

The first is called the physiological need: food, cereals, and oxygen. We often make the mistake by thinking downwards, but we must measure that against the human being. When you do something, think of the poorest Indian, and if it will benefit him, then, go ahead. If not, no. Now that kind of approach is slightly refined here.

The next higher thing is safety and security, which is important. The third higher level is love and a sense of belonging, the fourth is esteem, and the fifth, self-actualisation, when you are well above all these things. We are all trying to get in there, but in between, the previous four have to be addressed.

The fact that India is fortunately in a growth plan, and in about 20 years ours will be the third largest economy, after China and America. This gives us space to think about these issues, and to make measured responses. As a local official once told me with some when a small iciness when a small Indian-made vessel visited a neighbouring contry, "In our country, the Indians are very poor. They live in rundown houses, drive old rusted cars, we think of India as a poor nation. Now see at the naval review you sent along a small ship, and we are told that you designed and built it. We don't like it, and we don't know what is going to happen". So you see, even if we are going to be slightly better off than what we are today, our neighbours are not going to stand back and clap. That is something we have to watch out for. We have to reassure them all the time that our intentions are not in anyway adverse to their interests.

Other than oil and gas, we are now a major global exporter of wheat, rice and sugar. Our somewhat outdated but modified engineering products, if they are of the right quality, would find a ready market in most places which are not particularly rich. Scooters and two-wheelers are ready examples. Small cars, pumps, electrical equipment, furniture, you name it, anything that is made here which is marketable in India is equally marketable in other developing or poor countries. And we often forget this. We have sent a lot of our consumer goods to the whole Soviet Union and we bemoan the loss of that market. In fact, the bigger and the more sustainable market is the Indian Ocean littoral. For all this, there are only two external powers policing the Indian Ocean. The US is there, and will continue to be there, till such time the Gulf oil is crucial to it. In the process, it will create problems, which will become our problems. That is part one. Part two comes China. The Chinese presence in the Indian Ocean is not entirely related to energy-security line. They

have a line of communication, and consequently Kazakh oil and Siberian oil gets piped to East Asia to feed the requirements of China or Japan. I have a feeling that the more overt Chinese presence will be modified. There is no reason for them to spend money and time coming around to the Indian Ocean when they can create enough trouble for us on our land borders through Burma or through our friends on the West.

Having come to this conclusion where are we getting? Our country will face problems such as religious fundamentalism or even extremism, militancy extending to terrorism, drugs, gun-running, piracy, sub-nationalism, ethnic strife, HIV and AIDS, poaching in our exclusive economic zones by organised and unorganised fishing fleets. For instance, the Pakistani fishing in our waters, our fishermen going into the Sri Lankan waters that sort of thing. This means that if we were to look at the eastern side where by doing the right thing, by sponsoring government-to-government efforts in the policing, everybody has a reasonably placid time of it.

In the process, we will have to leave our hopes, our idealism, and our heart, which belong to the people who are oppressed those countries. The people of Burma have been badly oppressed, but it is important that we are not put into undue danger by a regime in Burma that is adverse to us. The drugs triangle of Burma, Thailand and Laos can become a huge problem. So realpolitik will have to be taken into account. Maritime dangers on the west will come about because our land and air frontiers will be increasingly better-policed. Technology-induction and the focussed attention of the public make it ever more difficult for trouble-makers to get across and make trouble through the land frontiers. Which means we will have organised attempts to get attacked through our sea frontiers on the west. That means we need to have layered-defence with a naval forces a little further apart, and inshore forces and Coast Guard forces. This will have to be a self-driven process with tremendous satellite-imagery and command centres. That implies a degree of autonomy, and better recruitment and training norms.

It is a mistake to think of the Indian Ocean and its maritime challenges as a security challenge. It is a case of trade potential. Starting from nowhere **JNPT** has become the world's 49th most-effective container port. We are still, JNPT does about a million TEUs, i.e., 20-foot equivalent units per year. For Colombo, 70 per cent of whose traffic is India-origin, is 1.7 million TEU, or around 20 in the world pecking order. It is reasonable to presume that with the Sagarmala Programme, road development, reforms in the labour and the power sectors, it should be within bounds to think of an export-oriented economy gradually catching on.

Right now, we are not an export-oriented economy. We are not on the global list. But slowly things are catching up, and certainly getting a bit better. It looks as though the ports are getting a bit better and the attention that they certainly need. They are going to develop minor ports, roughly spaced 150 km apart, all along our coast. There may be one or two hubs, major-container ports, on each coast.

By way of an aside, it is very difficult for a conventional general cargo port, Chennai for example, to transform itself into a hub-port. This is because the length of the wharfage

and the width of the fallback area behind it are not entirely suitable for the purpose. Which is possibly why Ennore is rapidly being developed.

I think it is correct to say that our shipyards have not been developed as they ought to have been in the merchant-marine field. There is little point in attempting to be powerful on the basis of a bought-out equipment, whether it be a merchant ship or a warship. The moment you do things yourself and what you do is contemporary in quality, then you have reached where you belong. If you are simply buying things, then it is like being a very rich Arab. When the oil runs out they will be like us, and we don't want to be in that boat. In other words, if we are to have a vigorous-ship repair and ship-building industry, than what do we need to do? We need to have an industrial regeneration, and a good way to begin is the automobile way because the quality that is required of a first-rate product in a car can be duplicated in many ways on anything you put aboard a ship.

On the other hand our ship repair and our ship building capabilities are bad because

- a) Our yards are not running all that well,
- b) We do not have the infrastructure to supply them with what they need. The shipyard is an assembly-point of inputs gotten from somewhere else.

We seem to be world leaders in ship-breaking, in Alang, and we have joined China and Bangladesh. This is a distinction one should not be particularly proud of. Everybody else's junk is dumped on our shores. We cut it down, we melt it down, we reuse the steel – and we are steel short, so it is useful. But it is ship-building which matters, or even ship-repair is more significant.

Coming to ship-repair, even 30years ago, the quality of underwater paint was such, it would give some nine months protection from marine-fouling. Ship-repair and painting was a huge foreign exchange-earner for us, and a low degree of marine paints were also manufactured in large quantities in our country. This is no longer true. As the market developed, you had container ships that travelled faster than a frigate, they do 25 knots, you have bulk carriers, or VLCCs which don't even enter shallow-water ports, and discharge at sea. Such ships get into dry docks for inspection and repairs in cycles of roughly five years. So, where is nine months' paint protection, and where is five years? That is the kind of underwater paint that is demanded, and we don't make it. So, ship-repair and ship-building is something which we have to wake-up to, and we really have to catch up on that in the next five years or so.

We seem to be getting our infrastructure-conundrum right. The ports are probably going to be better organised in the next two or three years. Let us focus on merchant ship-building and ship-repair. We would be able to get that sorted out in about five or six years. Warship-building and warship-design and warship-construction is something that we are reasonably well off on. It takes a very long time to build a warship, from the initial pencil-and paper thing to the time it is inducted. Ten years is quite normal. We can do a great deal better and we will do better as ship-building and ship-repair improves.

So, I would advocate a lower priority to issues like warship-design and warship-construction at the developmental stage. We need a lot more money of course, but the Finance Ministry hardly give us any money for new warships. In the end, when things get really bad, we buy a warship from abroad. We thus manage to keep the shipyards in Germany, Russia above water, thanks to our orders. How does it benefit the Indian industry or the Indian workers? We could have built the same ship here in India with the same kind of equipment, at perhaps half or three-quarters of the price, had we begun early enough and had infused enough money.

Aruna Sivakami, Academic: Talking about ship repair and ship building activity. The Singapore port is very efficient in repairing merchant ships and hence they get good business, when compared to Kochi, which is a major merchant ship repairing shipyard. I read a while ago that India takes three years to build a ship, and this means we will lag behind China.

Mohan Raman: Why is Singapore a ship-repair centre, more so is not a ship-building centre of note? Its because over time, Singapore has developed into a container-hub and therefore it is convenient for ships to spend an extra week there for their mandatory five - year leak-checks. The British developed Singapore into a huge naval base. Which was why the Japanese attacked Singapore through the Malayan Peninsula. The dry docks that they built still exist and they are the backbone of the Singapore ship-repair facility.

Going back to the very valid point that you made about the ship-building delays, and the time and cost overruns in India, as compared to Japan, South Korea and China. In each one of those cases, the manufacturer of the essential input into ship-building, whether it is steel or furniture or galley equipment or electrical switches, it is of the requisite quality. That is not the case with India. We have got used to something that was designed in Europe towards the end of World War II. But our bureaucracy is certainly getting channelised into expertise, which was not the case 10 years ago. The case now and the results are there to see. In most cases we are moving forward.

Dr Suryanarayan: When the Britishers were withdrawing from the Singapore base, Lee Kuan Yew visited New Delhi, and tried to persuade India to take interest in the facilities there. One of the points that he mentioned was ship-building and ship-repair. But then, those were the days when we used to consider the Governments of South-East Asia to be the lackeys of the Imperialists, incapable of accomplishing anything.

I happened to be in Nagapattinam last year, and I found that the once-thriving port to be a very, very languishing town, though Tuticorini is developing for its own reasons. When we say we are taking so much of interests in the small ports, I was just struck by the decadence of, Nagapattinam, which was once very busy and bustling, when we used to have a lot of shipping in between Tamil Nadu and Malaysia-Singapore. Also your comments on the Sethu Samudram Project.

Ananthachari IPS (retd),ex-DGP,BSF: Some time ago when we were looking at the problems on border management one of the things that came up was the strategic location

of the Minicoy Islands. The Minicoy Islands is vital because the entire Indian Ocean-linked sea-faring traffic passes through that place. It is a compulsory stop, where there is also an exchange of crew and all that. So, there is time-lag also. How is that we have not thought of a development of a hub there as in Singapore, and if done, what are its prospects?

You mentioned the minor ports. To the best of my understanding, the maximum development of minor ports has taken place on the Gulf of Cambay. It's really littered with minor ports, and no strategic aspect was built into it. There is no thinking about the overall strategic value of that place, or the security of that place.

Mohan Raman: When on minor ports, on the one hand, Cuddalore and Nagapattinam examples, and the Gulf of Cambay is on the other hand. Our East coast is unfortunately shallow, the ground slopes in a very gradual, and consequently as ships get larger they have to anchor farther and farther off-shore. Then comes all the traffic to and fro, and it gets limited to lighterage. So there are road-heads. For that matter, even Madras Port has the same problem. This problem of dredging, building breakwaters, etc, is an exceedingly expensive process. The East coast has a peculiar hydrographic problem, which is called the littoral-drift. There is a sort of current which flows close inshore, south to north. If you happen to build a breakwater by way of a harbour, as happened in Madras, south of the breakwater there was a pile up of sand, and your beaches get wider. The Marina of course has benefitted. But north of the breakwater, there is always substantial sea-erosion. That is why the Ennore expressway is always in the news. Now this is the problem along the eastern coast.

Coming to the Gulf of Cambay and the Gulf of Kutch, the waters there are deeper. What we call modern Bombay Port is a 20th century creation. The princess of the Saurashtra region were able to develop the lighterage and the wharfage along those ports, and were able to offer very competitive rates for trade to feed north-western India. To such an extent that the Bombay Port was in doldrums, and the British instituted, what is called the Viramgaum Customs cordon, which levied a customs duty on goods out of it.

Apparently the Saudi Arabians value white cotton textiles, and during the War this was rationed. Maharaja Ranjitsinghjee had passed away, but the subsequent Jam got hold of the entire allocation of Navnagar's white cotton textiles, and smuggled it to Saudi Arabia for a hefty premium. So, that area does have a history of being maritime-minded. The loss of Karachi resulted not only in Kandla being developed, but Kandla got choked, and so also all the other new ports. Pipava and others were established.

I am not very certain about the Minicoy Islands being the centre for large-ships stopping over. Generally speaking, if they are coming through the Suez Canal, they stop somewhere on the Gulf. Except for the fact that our islands in the Bay of Bengal, the Lakshadweep and the Minicoy Islands, have traditionally supplied a large number of sea-faring people, it is not as though there is a crew-change. Nowadays, what happens is a ship changes engineer, captain, crew, maybe in the Gulf ports, and people are flown out

at the end of their three months or six months furlough – and then flown back. So, ships no longer come to the base-port to pick up such people.

On Sethu Samudram project, I have reservations on it. The Palk Bay and the Gulf of Mannar are shallow, and it is going to cost a lot of money to widen and deepen the ship channel, and it is going to be a choke-point much like the Straits of Hormuz. If the ‘Sea Tigers’ get recognition, they can choke this off at a moment’s notice. In any event the width of the seaway being what it is, any kind of anti-ship, ground-based missile would be a potent threat, difficult to handle. You can also have mobile-launchers at will. This is something that is worrying.

The idea that this is somehow going to improve communications between our East and the West coast is somewhat specious, because by the time the gauge-conversion projects are executed and by the time the roadways are created, it is not going to be particularly difficult for somebody to move a container from, Madurai to Tuticorin. You don’t have to go to a port on the East coast and travel along the other way. In terms of competitiveness, roads will always win over rail, and rail will win over water. This is the world’s trend. You cannot have these competing things and hope to win. But this is a flag that we have nailed to our own Tamil Nadu mast and sooner or later we will get it, come what may.

Dr. Suryanarayan: The argument is the other way around. Since the waters are shallow the fibreglass boats of the LTTE can operate very easily, but it is very difficult for our Coast Guards and the Navy ships to go. Once you deepen it, and the bigger ships can go, and the security aspect can be looked into.

Sea transport still constitutes the cheapest mode of transport. Unfortunately we have not utilised that. With the development of the roads slowly it has been given away. The project would also reduce the distance between the east and the west coasts. So, once the Sethu Samudram Canal comes into existence, some of the present problems will be relegated, the problem of fishing and all. It will give a fillip to economic development.

Mohan Raman: Well, it is not feasible when you are manoeuvring a warship to fight off effectively, boat-based attacks. So, I had brought this issue of the US standing off the Straits of Hormuz as an example. When the Malayan insurgency was on, there were often worries that an insurgent could climb a coconut tree and very effectively puncture a sophisticated warship’s hull with a high-velocity rifle bullet. This remains true even today. So, the method to address the small craft is not by deepening a restricted channel and you are not going to be able to send any kind of deep-water vessels there. On going round from east to west and *vice versa*, if you can’t deepen the seas to a minimum of 20 meters, it won’t help. And to mobilise a fleet for a defensive posture, India has enough time to go around. you have two fleets, anyway.

I am more interested in trade. We have got Tuticorin developing exceedingly well, west of the Gulf of Mannar, and we have got one or two candidates in Kerala, which could aspire to become a container-hub, which could beat Colombo, a little to the north of Tuticorin. Any traffic that needs to go from west to east or *vice versa*, will probably take

the road or rail option despite the fact that it is cheaper to transport by sea. But if the sea route proves useful then, that is a very good thing.

R Swaminathan, IPS (retd), ex-DG, BSF: About the maritime traffic, as common sense conventional wisdom would dictate, the East Coast, from Howrah to Nagapattinam, all the traffic that it would generate would be terminal, they have to get to be for cargo which terminates in India. Otherwise, the ship would have to make hundreds of miles of travel just to discharge one-third of its cargo, refill, recharge and then travel hundreds of miles to get into the main searoutes. Whereas ports like Colombo and Singapore have the distinct advantage of being on the main sea-lanes.

On the western side, we are slightly better-placed, geographically. We were talking of these container ports. Again the way India is placed geographically, I feel that the entire maritime traffic that we can generate other than ship repairs – if we can become experts in that – it has to be India-based. We are not going to be either a transit-point or a transshipment-point. It is the question of chicken-and-egg, do we develop the port facilities first, or do we develop our international trade first? We will have to do both, as has been pointed out. Ours is not an export-oriented economy. Look at the United States, and how much of its produce does it export? The United States exports very little of its products. It manufactures outside. It imports more. The US' trade-balance is negative in trillions of dollars – probably 70 per cent imports and 30 per cent exports, as far as its international trade is concerned. We are probably better off than that. And they don't have poor, illiterate people in the Gulf sending money to the United States, and they are getting it by pegging the dollar as the international currency.

One of the reasons that have been stated, which has not been fully followed up on for the invasion of Iraq, was Saddam Hussein's efforts to go into Euro-dollar for oil-pricing, instead of the US dollar. The US' economic strength in the international market is based on its paper currency, not the gold-backing.. So, whether the money comes from a poor person or a rich person, whom you swindle and take away, doesn't really matter, as long as it comes.

We really need to develop an internationally workable import-export economy. We have gone a part of the way, in the sense that import-restrictions have been reduced, and exports made easier. So the two-fold, parallel approaches that have been suggested would be most beneficial one for India. We have to develop the export-import infrastructure, we are doing it on the inland, road and rail, but are not doing it on the maritime front. Along with this, an expanded industrial development, and freer import-export trade might be long time solution for us to have a viable maritime presence on the Indian Ocean, because ultimately trade-traffic on the oceans is probably 80-90 per cent, and naval-military presence constitute just about 10-20 per cent of the whole.

There was a mention about how the Chinese were able to undersell us. The Chinese have still not got an open-market economy, as opposed to our near-total open-market economy. Their very structure is still extremely artificial, and if you have an artificial structure, you can compete in any manner you want. How is the domestic industry kept afloat in the US? We are blamed for 'protectionism', but the US does this in a different

way, through tariff-barriers. The Chinese are winning over us in many areas of export by their wage-barriers and labour-barriers. Somebody else from outside of China cannot go and work in China, and the Chinese labour get limited wages. Of course, the control is exercised by controlling the prices. It is much different now than it was eight or ten years ago, but it still is to a large extent a managed economy. It was controlled economy before; it is now a managed-economy. When it becomes a market economy, Chinese will find it more difficult to export.

Secondly, exporting flashlights, bicycles and fountain-pens is not the thing. Our emphasis, as Admiral Mohan Raman pointed out, should be on developing high-technology hardware, software exports where we have an edge already. If we can design a rocket, a satellite to put on a rocket, and send it into space, and succeed with a higher percentage of success than almost any other country, there is no reason why if we apply our minds, we cannot build ship-repair facilities of world order.

Mohan Raman: The latest statistics suggest that Japan and South Korea each have about 30 per cent of the world's merchant ship-building market, and China is close to 10 per cent, it is growing very fast. How is it that the Chinese have moved forward, one factor is the way the economy is managed. The other factor is what is called the light-engineering, which could be the pumps, switches, switchboards, motors. They have focussed on that for 20-30 years, and the quality is quite good. Thirdly, because it is a controlled or managed-economy, productivity is very high. In India we first nationalise even the private sector-yards which were profitable, flooded them with men to provide employment. The wherewithal for ship-building or ship-repair process is very difficult to get because much of it is imported, and there is a lot of paper-work. The time overruns these factors. It is also important to have employment in the equipment-supplier's plant than in the shipyard. This mental change attitudinal change is yet to come.

We are also not adequately skilled and staffed in planning ahead on the shipyard, ship-repair and ship-building activities. In the old days, the moment you got an order, you cut a steel plate, you laid the keel, and one by one you welded something. Those days are over and things are exceedingly closely integrated between the drawing office, the planning office, the logistics base and the yard itself. We haven't come to even anyway near bridging the gap in terms of pre-outfitting. It is true that we have sent satellites, but they are all individually-engineered. If you come into the mass-market like building a motorcar or inputs to build ships, that attitude won't work. It is one thing to have a missiles-test through the DRDO and quite another to raise a squadron of surface-to-air missiles for the Army.

N Ramadurai, Journalist: Indian warships are playing a major role in policing the Malacca Straits. Is it an indication that the regional powers as well as the western powers expect India to play a major role in the Indian Ocean region in the coming years? If so, are we up to the task?

Mohan Raman: Policing the Malacca Straits is a partnership-task. We are not doing it exclusively, everybody is sharing the job. By so sharing, we are building a lot of bonds with the professionals on the other side because when the time comes to catch a pirate or a gun-runner, we all need to work together, not only in the procedures but also in having proper communication. These things cannot be developed overnight. In the old days when the British Royal Navy was strong, they used to have an annual exercise called the Joint Exercise, JET it used to be called, operating off Trincomalee, everybody used to go there, but it doesn't exist any more. Now everyone works on his own, even the frequencies for communication are unique, and so to be able to have a hand-shaking operation, you need to be able to work together. Singapore and Malaysia were the first to develop some sort of a policing system for the Malacca Straits because that is the hot bed of piracy. People come from Indonesia, Malaysia – those islands are practically unpoliceable. With the Ten-degree Channel being where it is, another choke-point, India joining them makes eminent sense.

This policing of the Malacca Straits, taking it one step further, to a kind of sea-denial role, is highly speculative. We are not going to put in an exceedingly good army, but that doesn't mean we are going to do the American's bidding in Iraq. There is no reason why we should change our stance in relation to the navy. Everything is integrated today, our Andaman and Nicobar forces are a tr-service force, and I think, the Andaman and Nicobar Command is in fact the school where all this is being learnt on the maritime front. Designing a landing-craft in the Andaman and Nicobar Islands is a tremendously difficult job because the beaches have a very shallow inclination, and we succeeded. We got the drawings of the second-class sleepers of the Indian railways to replicate them, to make it as familiar to the Army jawans as possible. Use your initiative to get to such answers. Get the data where you can, but that landing craft is very successful.

Dr Suryanarayan: What we are doing at present is to accompany the US naval ships up to the Malacca Straits. Some sort of *chowkidari* we do, but real regional cooperation to prevent maritime-terrorism is yet to take off the ground. This is one area that New Delhi should really cooperate with the countries of the region. The reason why that region is infested with pirates is that there are a lot of traditional trade between Malaysia and the islands in Indonesia, and also Singapore. In fact the most efficient government in the world, namely the Singapore, does not include the trade with Indonesia in its statistics and leaves it blank. In those days of confrontation when the trade between the two countries was stopped, the Indonesians would calculate the neighbour's incomes in terms of the number of cigarettes he had smuggled for local trial. Indonesia has a population of a hundred million, of which 30 millions smoke. Today the Achenese revolt against Jakarta, they are getting all their weapons through the sea. We had the instance of an LTTE ship near Indonesia, and the information was passed on, etc. We do have bi-lateral naval exercises with individual countries, and with ASEAN too, but it is high time we shared intelligence and acted jointly to prevent maritime terrorism.

The other area, is some sort of an Asian 'solidarity'. In Andaman Sea fish die of old age, and a lot of Taiwanese, Japanese and South Korean trawlers come fishing. Why not we cooperate in that area for fishing? New Delhi being little more advanced, and we being a

little more sensitive to bilateral and regional cooperation, we have to put in efforts to see that it is an area of cooperation.

V K Mohan, Social Activist: We seem to be specialists as ship-breakers. When the Twin Towers fell, all the steel that came out of it was taken up by a Kolkatta company, which made tons of money out of it.

Anantachari : The old Russian submarine, that we purchased, does it introduce a difference in concept, instead of having an aircraft-carrier, taking the battle closer to the enemy and do away with much of the conventional means of fighting?

Mohan Raman: There are two schools of thought. There is a continental force, and an outward-looking force. The continental concept is best exemplified by the old school, the Soviet Union and China. They are going to have a very, very strong air forces, air assets totally dedicated to the maritime defence. They will have swarms of small craft, and an outer cordon of submarines, which will be listening posts and so forth. This is a very, very expensive process. For instance to get to that stage, first of all China received a lot of hardware transfer from the Soviet Union, before they broke, but they proceeded to start universities dedicated to ship-design and ship-building right back in the sixties, in Mao's days. At that time we were still producing just about half a dozen naval architects a year from Kharagpur, whereas they had hundreds of them. So that kind of effort is something I doubt whether we will ever be able to afford. Despite the problem of having the need of a little bit of everything, you need an aircraft-carrier, you need a submarine, you need a frigate, you need a corvette, you need a landing craft, and you need the small craft as well. Getting the mix right then becomes important.

The Chakra, was more a case of, keeping up with procedures, because what one does with operating a nuclear submarine is somewhat different from how you would operate a diesel-electric. In many ways a diesel-electric scores over the nuclear submarine, and in many ways, it may be more suited to us for insured defence, or activities of that nature. The Chakra project was related to that.

S Kalyanaraman, ex-ADB: In a situation where the Chinese are present in a big way, not too far from Myanmar, the strategic perspectives of the Indian Ocean States' initiative should not be forgotten. Culture yes, but the strategic considerations are more important. As the centre of gravity of the 'civilisational clashes' tends towards the Middle-East and then further South, for example the Farghana Valley in Central Asia, I think there will be a lot of activity in the Indian Ocean. So, we are being besieged. The defence lines that existed on the Himalayan Frontier have been breached with the occupation of Tibet by China. The Chinese cannot similarly encircle us. The US wants to treat India on par only with Pakistan. We have to flex our muscles, and reorient and re-establish ourselves. It is not a new contact. For a thousand years we have had a presence in the region. They consider themselves Indians. So the intervention of the Muslim presence there is only an interregnum. In the centre of Jakarta, in front of Parliament there is the *Gitaopadesam*. On the 20,000-rupee note, they have the *Dharma Chakra*. They are taught the *Ramayana* and the *Mahabharat* in their schools. The same thing is happening in Sri Lanka. There are thousands of inscriptions in Sanskrit available there which has not been studied at all.

Just as how we have lost India to a secular philosophy, we should not allow these States also to lose their Hindu pride. There is a very strong foundation because everybody has an identity and that identity, cannot be erased. To the extent that one would be able to strengthen that identity without being, a hegemonistic power.

We are not going to ask for land, occupy there and take it over for ruling. To the extent that with a central identity you give them a sense of belonging, and they will flourish. We have a role to play, and they are hungering for leadership, and it is time India took up that leadership.

N Ramadurai, Journalist: Regarding this nuclear submarines, is it confronted by resources or design problems?

Mohan Raman: It is a technology-demonstrator, piloted by the DRDO. The difficulties are manifold because a nuclear reactor is actually powering in the end, a steel turbine. So every possible bit of equipment, particularly at the interface between the reactor-shield and outside, has to be carefully-designed. Otherwise there will be radiation. The difficulty between reactors for civilian-use and a nuclear weapon is that a nuclear weapon is expected to explode and cause havoc. A reactor is a process that is supposed to be controlled, in order to derive energy. So there is complexity not only in engineering terms for each bit of equipment, but also for things like control systems. Now transpires that many of the bits and pieces that behaved perfectly well on a land-environment had to be almost redesigned from the scratch for a sea-environment. The submarine is after all a moving platform. It operates in three dimensions. This is not so of the power reactors at Trombay or Kalpakkam, that are static and fixed. So, if one were to consider the challenges, I would say that the technological challenges are really mind-boggling, and that would explain the time that has taken over it, because we cannot afford to make mistakes and lose valuable lives.

L V Krishanan, Nuclear scientist: It is not going to be very difficult to build a reactor. Of course, we are going to build the first of its kind, and there will certainly be a difficulty, but that is not beyond our capabilities. We build a nuclear submarine is to be able launch missiles from deep underwater. Even the Chinese are having problems in launching missiles. Launching a missile is going to be more of a problem than building a reactor.

Mohan Raman: Sea-launched missiles are not going to be a bigger challenge as some of them that we have in service can launch torpedoes. Of course, you can float them out, you can power them out, the difficulty really comes when you are trying to have a vertical-launch missile. This is because once you have a vertical-launch missile, you are required to stack these missiles in a vertical mode in the fore part and the aft part of the submarine. This makes the submarine huge in terms of diameter, and difficult to enter the harbour. This explains why the Akula submarine is larger than most cruisers in terms of displacement and size. Our ship-launched missile Brahmos could be the forerunner. The Russians lost a submarine because the torpedo exploded. The moment I heard about it, I

said the torpedo must have exploded in the fore-body. I don't know why people went on and on about a great mystery, and all that. There is no mystery about it. These things happen.

Dr Kalpana Chittaranjan, ORF: What is your read on the Indian CBM move for the resumption of ferry services between Mumbai and Karachi?

Mohan Raman: You only have to take a morning stroll around Nehru Park in Delhi to see the hundreds of people who camp outside the Pakistan High Commission to get a visa to visit Pakistan. Nearly all of them are not rich. They cannot afford the air fares, and certainly not this lengthy airfare to the Gulf and backwards. The trading communities of southern India certainly have many family links with people in Karachi, the Dawoodi Bohras, for instance. There is, even now very close links between Sindh and Gujarat, also the Bijapur side of peninsular India. So if it at all it is possible to have a ferry service there is no reason why one shouldn't go in for it.

The shipping Corporation of India had a subsidiary called the Moghul Lines. It existed only to run these haj ships. They had a few ships called the Akbar, which were used only for the haj trips. Over the years, they found that it was cheaper to send them by air, and then subsidised them perhaps to send them by air. Maybe this business of having a ferry service to Karachi is a trial balloon. Suppose it is possible for you and me to go to Karachi in some degree of comfort by sea, or for students going to and fro, why not?

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