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INTERVIEW

Ted Postol



The Patriot will not be effective against Pakistan's Shaheen I, says missile defence expert.

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INSIGHT

Will India become another France?



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Expert delegation to advise India on Patriot missile defense system

SUMAN GUHA MOZUMDER
in New York

A group of academics from the Massachusetts Institute of Technology, led by Ted Postol, Professor of Science, Technology and National Security Policy in the Program in Science, Technology and Society, is visiting India this month to acquaint government officials and defense experts with independent analysis on critical weapons systems that India may want to pursue in future.

One of the key thrusts of the visit will also be to inform India's policy makers that the Patriot missile defense system may not be of much use in case of a missile attack, especially in the South Asian context.

The October 22 through October 26 visit by the delegation that will first go to Pakistan includes George Lewis of Cornell University and Dr Geoff Fordon as well as Subrata Ghoshroy, both of MIT, besides Postol.

"As they are beginning to modernize the armed forces and moving ahead with missile defense we realized that there is not much analysis of the weapons systems to the decision makers except whatever they hear from the Pentagon or those who sell the weapons," Ghoshroy, Research Associate in STS and a former senior defense analyst at the US General Accounting Office and profession-

al staff member of the House Armed Services committee, told *India Abroad*.

The visit assumes significance in the light of a trip by Lt General Jeffrey Kohler, chief of the US Defense Security Cooperation Agency, to New Delhi last month in which the US side is said to have made a classified presentation on the capabilities of the Patriot Advanced Capability (PAC 3) to defense ministry officials. The Indian government, however, has not said that it would be opting to buy Patriot missiles.

Ghoshroy noted that there is very little parliamentary oversight on India's defense ministry and defense procurement unlike in the US where independent analysis on weapons systems are provided routinely to the administration as well members of Congress.

"We thought it would be a good idea to try and link up with people both in and outside the government and provide them independent analysis on critical systems that India wants to pursue and see whether we could do something in developing capabilities of indigenous research in India," he said.

During their visit, Ghoshroy said, the delegation is expected to meet with Debnath Shaw, joint secretary for International Security cooperation in the MoD and other senior defense ministry officials. The delegation will also have a meeting



■ Subrata Ghoshroy

with the Indian Pugwash, headed by C Rajamohan at the India Habitat Center.

Among the issues expected to be taken up during the visit are the system issues relating to the Patriot, its performance in the Gulf War of 1991 and 2003, and the significance of its introduction in the context of South Asia.

"If missile defense is one of the things that India is interested in, they are not going to get any [from the Patriot system]. And if it is air defense, they will have to make an internal evaluation of the trade off between buying more airplanes or buying ground based surface to air

missile systems or building a cheaper ground-based surface to air missile instead of the Patriot," Postol told *India Abroad* (See Interview, page A22).

"That, in a nutshell, are the kind of issues that we will be discussing with the military and political specialists and non-specialists in India and Pakistan" he said.

At press time it was not clear whether the delegation members would be getting to meet with Defense Minister Pranab Mukherjee, too.

"If the Institute for Defense Studies and Analysis holds a seminar, then we will have side meetings with a lot of other people and possibly with the Minister as well," Ghoshroy said. However, he said, the IDSA is yet to confirm if it would host a seminar.

Diplomatic sources confirmed that such a delegation was going to India this month, but described the visit as a routine one. "Academics and experts are going to India all the time and we welcome them to visit India and discuss issues of relevance," highly placed diplomatic sources said.

Besides the Patriot system, other issues expected to be discussed include US experience with one-point safety and history of accidents involving nuclear weapons and shared missile surveillance in the context of South Asia to promote nuclear stability.

If it is missile defense, Patriot will not do the job, and one needs to be very clear on that

You run a significant risk of having the Patriot shoot down your own airplanes

The Patriot is essentially going to have a very low chance of dealing with the Shaheen I

Ted Postol

The award-winning missile defense expert critiques the Patriot system in conversation with Senior Editor Suman Guha Mozumder

Theodore (Ted) Postol, professor of Science, Technology and National Security Policy in the Program in Science Technology and Society at The Massachusetts Institute of Technology, is a leading expert and critic of the US National Missile Defense Program, a system designed to intercept and destroy incoming nuclear warheads before they re-enter the atmosphere. Postol, who was previously scientific advisor to the Chief of Naval Operations at the Pentagon, has sought to demolish what he describes as a myth that Patriot Missiles shot down Scuds successfully during the Gulf Wars.

This month the celebrated scientist is visiting India and Pakistan October 22-26 at the head of a four-member delegation of MIT and Cornell University experts on weapons system and missile defense.

Postol, who left the Pentagon to help build a program at Stanford University to train mid-career scientists to study developments in weapons technology of relevance to defense and arms control policy before joining MIT, received the Norbert Wiener Award from Computer Professionals for Social Responsibility in 2001 for uncovering numerous and important false claims about missile defense systems.

Although the Indian government has said that it does not have plans to acquire Patriot Missiles, a high level delegation of US Military Officials visited New Delhi last month to make a classified presentation on the efficacy of the Patriot System. In case India decides to acquire Patriot from the US, what are the issues that New Delhi needs take into consideration?

I think there are two different issues. The first one is to understand what the primary interest of India in Patriot is - is it missile defense or air defense, and by air defense, I mean shooting at airplanes? If it is missile defense, Patriot will not do the job, and one needs to be very clear on that. If it is air defense, Patriot is enormously capable against airplanes. But it is so expensive that it competes with the purchase of combat airplanes. In other words if you are thinking of air defense, a Patriot unit can basically defend an area within several tens of kilometers of distance around it against airplanes. It has a longer-range capability in some situations, but basically it is defending a

fixed location. Now, let's say - and I do not know what they are charging because the contractors charge extra money to foreign governments relative to what they charge the United States - it is just \$200 million for fire units. But for \$200 million you can buy a significant number of F-16s, may be five or six F-16s. Five or six F-16s can do air defense anywhere you deploy them. So, for the same amount of money, you can have a much more versatile weapon system relative to this fixed ground-based system. This is basically due to the enormous expense of Patriot relative to that of earlier types of air defenses.

So, it is basically the cost and ...

The secondary problem with Patriot is that the US government has been attempting to conceal - and I am very disturbed by this - that the Patriot has very serious problems with firing on friendly forces. If you have airplanes operating in the same area, where Patriot is operating, you run a significant risk of having the Patriot shoot down your own airplanes. I think that would matter to me if I were a military planner because that has to be considered as part of the overall cost of Patriot, not to mention the loss of lives. So, those are the tradeoffs that you would think about if you want to internally assess whether or not you would purchase Patriots for air defense. I will provide them (Indian officials) information about the shoot-downs of the British Tornado and US Navy planes during Operation Iraqi Freedom by US Army Patriot Units. It is not the only, but just one of the problems that they are trying to conceal. A lot of these problems can be solved eventually but if you do not acknowledge it, it does not get addressed and this has been a problem with Patriots since the Gulf War of 1991.

What about missile defense? What are the issues involved here?

With missile defense, the Patriot is essentially going to have a very low chance of dealing with the Shaheen I of Pakistan. The speed of Shaheen I and its potential to maneuver as it re-enters the earth's atmosphere will make it extremely unlikely under almost all conditions that even the much improved Patriot PAC III interceptor will be able to intercept the target. In the case of the Patriot PAC-II interceptor, it will for all practical purposes, have no chance of intercepting Pakistani Shaheen I missiles.



Why not, I mean, could you explain in a little more detail?

Let me give you the basic outline of why this is the case. It is not a rocket science issue that US proponents of the Patriot missile defense would like you to believe.

Think of two football players, in this case American football, where one player is trying to run with the ball and evade the one who will tackle him. The runner wants to evade the defender and so he takes a lateral (*sideways*) acceleration. If the pursuer instantaneously does the same, he can intercept. But if there is a time delay before the defender realizes this, then he can intercept

the runner if he can out-accelerate the runner. If the runner has an inherently faster lateral acceleration than the maximum of the defender, it is twice as bad because if they both accelerate instantaneously at their maximum, the defender still misses the runner. But in this case he misses the runner much more severely because there is also a delay in trying to accelerate.

I can show that the lateral acceleration and the response time for both the Patriot PAC II and Patriot PAC III is much too small to intercept either Iraqi Al-Husayn Scud or the Pakistani Shaheen I.

So, going for a Patriot PAC III

Interceptor which could cost three, four or even five million dollars each is very expensive and will do nothing but spend a lot of money without any additional missile defense capability. If it is air defense, they have to make an internal evaluation of the tradeoff between buying more airplanes or buying ground based SAM systems or building a cheaper ground-based SAM system instead of Patriot. Those are the kind of issues that I will be discussing with the military and political specialists and non-specialists in India and Pakistan.

Let me understand clearly

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-how much is going to be the cost of a Patriot Missile?

A Patriot PAC II interceptor, which is not the whole system, probably costs the US government about \$600,000 each, but the Indians would probably have to pay a million dollars each because US Government gets a discount because they paid for Raytheon to develop the Patriot.

But how much would be the cost for the entire system, and not just an interceptor?

Well, what is called the fire unit, which consists of the radar unit, along with a truck to pull it, an engagement control station, a sealed container containing electronics to manage the radar and to send command to missiles plus an electric power plant, which is a big truck, as well as the launchers. My guess is that they are going to charge \$200 to \$250 million for the package. Probably, the US Military officials would have told the Indian officials - although I do not know whether they actually did or not - that the fire units they will sell them (the Indians) will allow them to use both Patriot PAC II and III interceptors. But if the US officials have made such promises to the Indians they were clearly misleading the Indian Military. This is because they know or should know that the Patriot PAC III interceptor is not up to the job of intercepting the Shaheen I.

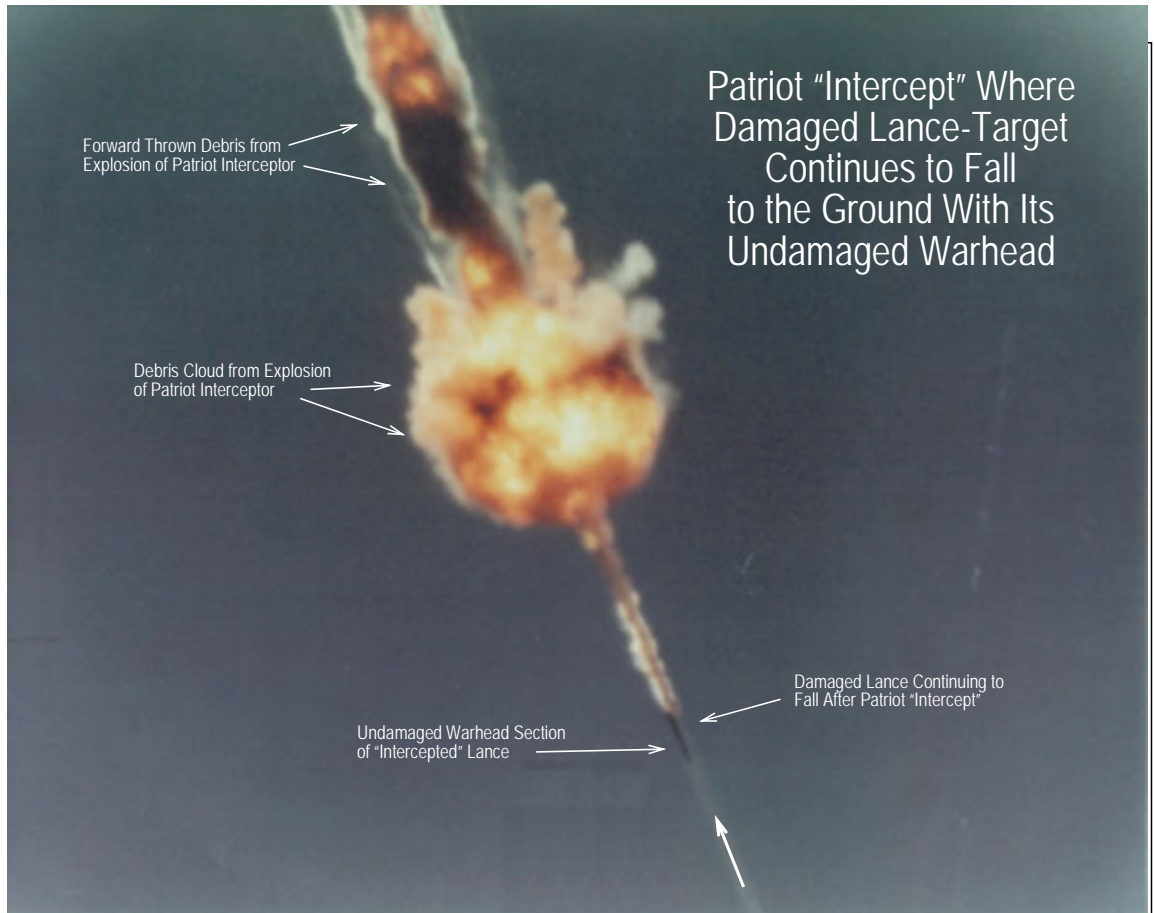
Q. Then why...

A. They really should not be trying to sell PAC III to the Indian Government as a missile defense capability simply because it is not up to the job. I do not really know what these guys have been telling the Indian Government, but the fact they have given them classified briefings does not necessarily mean that the briefings are accurate.

What kind of option does the Indian government have at present - in terms of countering the threat from Shaheen I?

I think the reality of the South Asian nuclear standoff is on a different scale from the US- Russian standoff in terms of distances and time for missiles to travel between the two adversaries. However, both in the case of the US and Russia and the case of India and Pakistan the reality is that neither side has any technology that is up to the job of defending itself from ballistic missiles. This reality is why the US and Soviet Union eventually developed the ABM treaty and agreed to do certain things that would not produce an artificial competition that would result in both sides being in worse shape. It seems to me that this existential and historic reality is true in the case of Shaheen I and the India-Pakistan standoff - that neither side can hope to protect itself, especially if they (*the missiles*) are nuclear armed.

It seems to me that the Indian and Pakistanis would serve both their securities best if they do things to forgo an arms competition that involves missile defence. In terms of a ballistic defense competition between India and Pakistan, the only winners would be the companies from the American military industry sell-



Forward Thrown Debris from Explosion of Patriot Interceptor

Debris Cloud from Explosion of Patriot Interceptor

Undamaged Warhead Section of "Intercepted" Lance

Damaged Lance Continuing to Fall After Patriot "Intercept"

Patriot "Intercept" Where Damaged Lance-Target Continues to Fall to the Ground With Its Undamaged Warhead

ing weapon systems that would not do the job for either side.

Why do you think the US government is concealing facts about systems produced by the likes of Raytheon?

This is a complicated and multifaceted social phenomenon. There are many reasons: First of all, in the case of India and Pakistan, I think they want to be able to tell people that they can do missile defense even though it is almost certainly not true. Even in the Operation Iraqi Freedom, the Gulf War of 2003, it is not clear that they had successfully intercepted these nine extremely slow moving and stable ballistic missiles that they have claimed to have intercepted.

Q. Why do you believe so?

What I think had happened in the Operation Iraqi Freedom was that the Patriots were shooting at very short range Iraqi Ballistic missiles, which were 130 kilometer range and very slow relative to the Iraqi Al-Husayn Scud from the Gulf War of 1991, which they still do not have any chance of intercepting. In some cases this time, intercept attempts against the East Iraqi short-range missiles were seen by warships off the coast of Kuwait. The radar could see a dramatic change in the trajectory of the incoming ballistic missiles when Patriot interceptors hit the body of the missile. So, while there is evidence of successful hits, it does not mean that the Patriot interceptors had destroyed the warheads.

When this kind of damage is done to the attacking missile its warhead will fall short, which protects the target. But if you are trying to protect an Indian city,

and there is a nuclear warhead falling short, it is just going to fall in another place in the city.

In the Gulf War of 1991, even when they hit targets, which was very rare, they failed to destroy a single warhead. If you are defending a local target that is very small in area then causing the warhead to fall short would be a good defense. If instead you are defending a city, it does nothing.

implication of their introduction as far as South Asia is concerned?

Here is my concern as an independent person. I want to underscore that I have a lot of friends who are from an Indian background and I know it for a fact that one of the things that they hate, and I fully appreciate it, is that Americans lecture them. I am just speaking to you as someone

'The Indian and the Pakistanis would serve both their securities best if they do things to forgo an arms competition that involves missile defense. In terms of a ballistic missile defense competition between India and Pakistan, the only winners would be the companies from the American military industry selling weapon systems that would not do the job for either side'

So, that is another game that US proponents of missile defense used to make misleading claims about intercepts in the Gulf war of 2003. First they were intercepting a non-maneuvering, slow moving missile, which is much easier, than a Shaheen I or Al-Husayn would be. Secondly, they have no evidence of destroying the warheads on these missiles. My guess is that they are lying about that too. I realized in 1991 to my great surprise that they were also lying then about how well Patriot was working. Those are the pitfalls I will be warning Pakistani and Indian military analysts about.

If the Indian government does go for Patriot missiles, what would be the larger

concerned about the stability of the India-Pakistan region. That is the basic context of my comment.

The problem that will be created if India pursues the Patriot with the idea that they can get even some missile defense (*will be*).

But, from the point of view of a Pakistani military planner, the only thing that the Pakistanis have against India is Shaheen I.I am talking about the reality of Pakistan's military predicament...(*which is*), these guys then are tremendously outgunned by India in every conventional way. The Shaheen I is currently the only threat that the Pakistanis have in response if India decides to come after them. So, any appearance that India

might be able to undermine that deterrent is likely to cause an overreaction, even though there would be people who will understand that the Patriot provides little or no capability against Shaheen I.

In fact, there are statements made by President (Pervez) Musharraf that indicates that he understands that - but the political pressure and the bureaucratic pressure to take action is very hard to resist. What India could actually do is cause a Pakistani reaction that basically puts India in a worse situation than it would otherwise be in because one gets the worst of both worlds, a defense that really does not work, but a reaction as if the defense actually has some capability. This is a social dynamic, not a technical one, but it is very important one because we have seen this in the US and the Soviet competition.

How important is this social dynamic?

A. Incidentally, one of the problems that the so-called American experts have with this whole nuclear situation is that a lot of these ideas from conventional military competition do not play out the same way in a nuclear competition. So these dynamics have to be carefully thought through in a logical way that takes into account the specific weapons one is dealing with. What happened in US-Soviet case is that people just treated nuclear the standoff as a conventional standoff and they made arguments that are sound in conventional standoffs, but make no sense at all when one looks at the details of a nuclear stand off. I would hope that South Asia can avoid these pitfalls.