

(830)

if possible even an unanimous  
choice.

When his selection became  
firm, he asked for me to  
help him — there was a  
post for him as a package.  
That was during 1982. Money wise  
I would have gained a lot.  
But I could not think of a  
career in ~~&~~ UN. Though  
I was very keen to get out of  
ISRO and in 1982, it was  
already ~~a~~ too much for me  
(and also SD's possible extensions  
can be up to 1984 only) to  
continue. With YP's influence  
he would be able to get me  
some positions in UN systems

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and with the help of his friend  
2 mentor MGRM within India.  
But still in 1982 period, I  
was wanting to do some thing  
concrete for the country — projects  
which will help India (as  
Vikram ~~to~~ my second son used  
to partially tease me @ 2004 plus  
years and even now, that I  
was deeply in "nation building"  
activities. Vikram will pronounce  
the nation as "nason"!). So  
when an opportunity came on  
my way with lots of money I  
hesitated. YP did not ask me  
directly. He perhaps did not  
want to embarrass me. ~~So he~~

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Moreover he that without SD's approval he could not get me. He was also aware as to how critical my support was for SD. So it was not my decision alone but that of SD too!

(YP) SD asked me about YP's wish. He wanted me as first; if not Kiran Karrik. SD asked me what ~~is~~ was my reply and did not even wait for one. After a week he told me: "Rajan you have not replied to me on YP's request!" I said

"Sir, I wanted to talk to you and seek your advice" SD immediately answered: "Rajan if you are so fed up with ISKO then you go!"

"Sir I got my advice from you!"  
You ~~may~~ may inform YP that

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That I am not coming!"

So that ~~was~~ had gone.  
Kiran went with him. For him  
getting out at that time was good  
for his career. After VAS death,

Kiran was with SITE etc, wisely  
not joined PPK for INSAT-1 SSPD  
and continued in SAC. He knew  
that he ~~was~~ would not have much  
career in SAC or ISRO. He had to  
take his career with YP — in any  
case he was a part of YP tribe!

I continued to attend  
UN-COUPOUS meetings. Now URR took  
over from YP for that function of leading  
ON. URR was active and enjoyed  
the position as he as "India" was  
sought after by delegation. He retains  
me & Chandra to help him but

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added KRS Murthy from ISAC  
to the team, Chandra, KRS &  
me ~~got~~ on well.

There are so many things  
about UN coupous meetings to tell.  
Not covering all of them.

Interesting about Salim  
Mohammed <sup>(SM)</sup> the ~~of~~ SUPAEO chief  
from Pakistan. Nice gentleman.

We used to talk about many things  
Not Indo-Pak relations! We (he,  
Chandra & me) were good friends. Like  
us he also used to come on time  
10:30 AM or so, ~~as that as to~~ Mostly the

Other delegates were erratic. SM used  
to ~~to~~ say "We are brought up with  
time discipline - but these diplomats  
are a law into themselves"

He used to tell about the

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days when he, H.G.S. Murthy et al all were trained in Wallops Island NASA.

"We started almost the same time with Sounding Rockets — now ISRO has gone far aheads!"

Once he could not come and sent his junior ~~— maybe~~ ~~scintists~~ scientists to come. It was probably the first time he was travelling abroad. He looked ~~lost~~ <sup>lost</sup>.

I In the first day he came we visited him. During lunch time where we all used to go for a huge UN canteen, he was confused with so many ~~great~~ queues. He searched me out — easy to identify due to ~~to~~ long curly black hair & beard — and ~~she~~ stood behind me, "Rajan saab! I need your help

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in selecting some vegetarian food!"

He added ~~in~~ in Hindi "Here they don't have halal meat. I therefore would take only vegetarian"

"Saab! Then you are in a wrong queue. Pl. come, I will take you to my colleague - friend Chandrasekhar He is strict vegetarian. He will help you"

~~We~~ I took them to the queue and introduced to Chandrasekhar

"Chandrasekhar help him out with ~~the~~ purely veg food!"

Then I went back; Chandrasekhar & I usually sit with some one else other delegate. The usual Syrian diplomat was there. We sat and our Pakistani person also sat with him uneasily Quick introduction.

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Syrian delegate ~~started~~  
asked teasingly the Pakistani Gorbun (PG)  
"First time! Why are you having  
some vegetables & bread! UN canteen  
food is very good!"

~~But~~ PG was uneasy; he  
mumbled "Halal"

"The Syrian laughian  
quoted some verses in Arabic (which  
was after all his mother tongue)

"See, there are exemption  
in Koran: When you are in a  
foreign country; When your life is  
in danger... " I am in NY - foreign  
country. Also in NY life is always  
in danger " He laughed, cheering  
me with his wine cup, I had beer.

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The PA was very embarrassed.  
A fellow Muslim teasing Muslim  
practices of in front of two  
Indian Hindus! He did not say  
anything. But he continued to be  
with us in other days as well.

~~The~~ I was amused to see the  
(@1980's)  
typical archotyping of all South

Indians as vegetarians by the  
North Indians was followed up in Pakistan  
as well (which was North India!).

Also I did not know the seriousness  
of halal among Muslims. ~~At~~ And  
also that the halal - ~~was~~ haram  
did not apply to vegetable derived  
foods for Muslims. (I learnt it  
was so with Jews in the 2000's!)

Another ~~episod~~ thing was  
a Science Councillor (S&T) at ~~the~~ ~~UN~~ our

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Consul at N.Y., mainly to service  
~~the~~ Indian delegates to UN and due  
to its being ~~an~~ a crucial commercial  
centre. He told us about his purported  
role: He was not from DST; he  
was from IB (IPS...) He was  
supposed to get some S&T/commercial  
intelligence for use by Indian Govt.  
But he picked his situation that he  
was not able to ~~even~~ spend more  
time with us (Scientists/engineering at  
working level). "I am asked to monitor  
the movements of some senior scientists  
administrators - Pity... what all  
they do, including with foreign women."  
~~all~~ "He said he ~~was~~ was sending  
systematic reports to Delhi. "What  
it is done I don't know. ~~Those persons~~ Those persons  
continue to come & do the same!!"

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He told ~~me~~ in details about an eminent persons (SPT). Better not to say ~~it~~ it here! . . .

Then another interesting poke done by JPS to UN matters. JPS ~~was~~ always felt ~~out~~ uncomfortable unless he pokes into somebody's matters even while his territory totally closed to others. Usually it was not in terms of giving some useful inputs but was showing some ~~para~~ power play.

Using INSAT-1 as a pretext and American's adventure of coining a new term exclusively peaceful to <sup>space</sup> ~~communications~~ type applications, ~~he~~ without our knowledge and without consulting us ~~or~~ or MEA creates a scare with SD that the exclusively peaceful should be used by us as

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could get advantage with USA etc.

~~He~~ ~~no~~ SD ~~was~~ did not have any direct experience of UN discussions, negotiations etc except for browsing through papers. So ~~the~~ SD fell

into the trap and got something done in Space Commission / or elsewhere to send a secret note from Cab.

Secret to be sent to ~~to~~ our Permanent Rep to UN's office that the words "exclusively peaceful" had to

be used henceforth. ~~to~~ JPS then flanked that "Secret" paper to me & Chandra. It was no use arguing with him. UN papers ~~are~~ <sup>were (are)</sup>

not like the ~~the~~ bureaucratic paper shuffling; even in Indian bureaucracy

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Some such stupid instructions  
<sup>were</sup> (are) quietly eroded by the Ministers  
to be lost in files.

~~When~~ ~~Or~~ After this when  
we went for the UN meetings (SD  
did not tell me or Chandra about  
this matter) in NY, as per our  
general practice ~~we~~ we met  
the PR, an exceptionally brilliant  
and capable IFS officer, to brief  
him about the ~~of~~ agenda of the  
~~for~~ meeting for which we came &  
what the main issues were.

PR in his disarmingly style  
said: "You guys know what to  
do! You don't need any advice or  
direction from us. If you face any

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problems, we are always there with you. ~~You~~ feel free and do the good job you are doing!"

That is the confidence he had in himself and us.

He laughing then added "Who in DOS getting bright ideas as to how we in MEA should speak about peaceful or peace! I

got a paper; you might have seen. On going back tell

PJ Dhanan that he need not worry about this matter at all.

~~We~~ Have we any time to do DOS ~~whether~~ or DAE whether

they should <sup>[or should not]</sup> get involved in missile or bomb or any such thing? They

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Should do things what is considered best for them and the country.

If a ~~the~~ missile is shot or bomb is exploded by us, it is the job of us diplomats to describe it as peaceful!! Let not any words constrain them!

'Words' are the territory in which we play! ~~We~~ We will not follow any other instructions in that!!

He laughed and offered us ~~tea~~ tea. We talked a ~~bit~~ bit about ISRO programs & came out.

In fact ~~the~~ <sup>during</sup> that meeting there was a draft under discussion just carrying the word "peaceful uses of space" — Americans

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Said nothing .. the battle on that  
~~part~~ paper were some other words ..  
If we alone said add "exclusively"  
we would ~~be~~ have not only  
looked stupid and India would have  
been suspect! Others will wonder  
why India was pushing for a word  
not in vogue with any of the  
delegations? Any games?!

~~Thus~~ Thus it dies.

Later now fast forward to UNISPACE 82  
when SD had direct experience.

Indian team was quite  
big representing various elements  
of Space Sciences, Application &  
Technology. Prof R. R. Daniel  
~~was to~~ Chairman ADEOS of ISRO

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(Advisory Committee on Space Sciences)

~~two~~ representatives <sup>Space</sup> Science part. DGM

S. K. Das (?) on meteorology; some  
from telecom etc etc. & some

from MEA (probably local ones)

I don't remember all the names.

They will be in UNISPACE-82  
records.

SD was the leader of  
delegation. URR alternate leader  
Chandra, ~~K.R. Subramanian~~ K.R. Sridhara Murthy

(KRS) and I were to take to host  
of various recording, off line  
coordination etc. I think a couple

of ISRO admin person were taken

(May be Mahadavan URR's P.S.  
to do the Sectt. work as India  
was a key player).

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There were many working groups and a few plenary to get reports.

It was held in the Palace of Austria — don't recall name.

Excellent European architecture still maintained well.

First day was more like ceremonial inauguration. Wishing each other etc. A number of persons crowded around SD also and talking the usual diplomatic words. Most of the delegations were made of professional diplomats ~~and~~ along with some scientific groups. India was unique that it was dominated by professional experts associated with space and a few diplomats. For SD it was ~~the~~ probably the first

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exposure to formal UN meetings ~~with a~~ being a part of regular delegation — there he was the leader too. At the end of the day we were all supposed to meet and take stock. I think it went for a couple of days. SD would have assessed the regular delegation from other countries and our own members of Indian delegation.

¶ One day when serious business was to pick he told URR ~~now~~ "Rao, now you take over; I am going to go around and ~~to~~ relax". He said this with a mischievous, <sup>broad</sup> smile ↪ and went off. It was enough for him.

~~He~~ I think he went away after a couple of days, leaving things to URR to lead the Indian ~~to~~ members and foreign members.

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~~I~~ Chandra, KRS & I had to  
play the key to the key support  
to URR. Another person who handled  
the Space Science group was Prof R. R. Daniel.  
One of the members SK Das! I think I had  
picked up some quarrel with some  
delegates in the meteorology & atmospheric  
group. ~~We had to~~ He treated  
UNISPACE meetings like some scientific  
seminar where there would be critique  
and differences of opinion expressed openly,  
even in international seminar; even in some  
international scientific committees. But  
even in these, there <sup>was</sup> (are) some ~~are~~ norms  
of expression. ~~But~~ GOI meetings were  
different; but all would behave  
well when very senior (hierarchical senior)  
person chairs (Minister, Secretary)!

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But UN meetings, even the  
COCOPAS, were different. Diplomatic  
type of language had to dominate.  
Even when one had to differ  
totally from another delegate's statements  
or observations, there had to be general  
praise of discussion and ~~a~~ a mention  
of number of good points by the  
honorable delegation of such & such and  
then in courteous language even demolish  
other persons' observations etc. In COSPAR  
meetings ~~it~~ <sup>it</sup> need not be all that elaborate;  
still a direct rebuttal is not looked  
upon well.

D.M. IMO would not listen to  
them. Maybe WMO meetings were  
different or he had not attended  
~~them~~ them for serious ~~one~~ negotiations.

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When URR or us suggest he was not taking ~~at~~ these suggestions in the right spirit! So we had to handle them "diplomatically" with him, diverting him to other areas. After some time a number of Indian delegations took interest in sight seeing, shopping etc.

The load on URR, Chandra, KRS and me ~~was~~ was very high.

We ~~will~~ would see JP in between. He had to keep in touch ~~with many~~ delegations of many countries; get ideas about the final shape of the report and some key recommendations they would like to see in the final

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Recommendations. Often there would be contradictory requirements. USA was pushing for aggressive open sky policy — I think it was Reagan time: ~~the~~<sup>US</sup> looked at UN ~~as~~ needing economy; should be more responsive to US interests of free market economies. Also some anti-Soviet stance.

Non-aligned countries, the G-77 etc though talked about unity of developing countries, were clueless about what they saw as interest in Space for their own benefits.

"For the benefit of all mankind"

"Free technology transfer from the developed countries to help

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the developing world. Within that LDC (Least Developed Countries) had their own group with these. So one has their agenda with "especially more for LDC's"!

Soviets played their cleve games between NAM, their anti-US bias, use of France to balance the West etc.

While France was generally with the West for access to space by the developed countries without much regulations, consent or even countries ~~on~~ on whom the remote sensing will be done etc, and even for TV etc, they were touchy on ~~a~~ aggressive DBS

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(Direct Broadcast Service) ~~as~~  
around the world  
~~they~~ propagated by USA. French

were concerned about protecting  
their ~~at~~ "culture". It ~~was seen~~

Direct DBS ~~was~~ by other countries  
to their territory was seen as  
a cultural intrusion. Soviets were  
worried about "political" propaganda  
by the West. China Peoples Republic  
of China was not in COMINT but  
in UNISPACE-82 conference were minor  
players.

UK & USA were the clever  
manipulators of the back room  
"politics". They would cleverly confuse  
the NAM, G-77 through some

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Latin American countries, some  
of whom were active - off and  
on. Some time they used Egypt.

Also USA & UK would  
~~to~~ push for more stringent  
control of GSO (Geostationary  
Orbits). Cleverly sell the idea  
to developing countries that GSO  
should be protected for their future  
use; like ~~the~~ "parking lots" in New York.  
If the markings were not tight then  
more ~~p~~ cars cannot be accommodated.  
The early comers may might take  
away space!  
Hidden agenda was that

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Countries like India, China (P.R.) ~~were~~  
catching up in those years. If ~~the~~  
~~the~~ GSO "space box" were made  
~~more~~ tighter, they would have problems  
in controlling their satellites; they would  
need better ~~sat~~ attitude control systems,  
which were very difficult to achieve for  
them, as the West already had them.

We had to cleverly "educate"  
the developing countries how this was  
a ploy to ensure that developing  
countries could never acquire  
satellites of their own and be  
eternally dependent on ~~the~~ the  
developed countries. We would say  
how large GSO was 36000km

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~~radius~~ high ~~about~~ and had lots of space to accommodate. We should also wait till many countries acquire capability. So a question

In the mean  
of some sort of "reservation" — at least some limited priority for ~~developing~~ countries ~~in their own~~ to get GSO was mooted. Equatorial countries ~~ext~~ captured this idea to push for sovereignty extending into GSO as well — as there is sovereignty over air space. ~~Fortunately~~ This would deny access most countries in the world. Developing countries had to handle ~~this~~ this issue delicately, because all equatorial countries were

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developing ones! . . .

Space sciences, meteorology etc were relatively simple. Even then in Space Sciences at the time of going ~~for~~ towards the final report we had a (funny) problem. ~~The~~ The delegation from Iran was very particular to add in the Astronomy section, & a para on Creation as in Koran — at best he was prepared to have some changes in sentences.

He wanted the Creator to be mentioned; the Creation as given in Koran etc. He almost stalled the proceeding for two days. Some how they managed to deal with other paragraphs, deciding to visit it later.

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Indian delegate (Prof R.R. Daniel  
Chairman ADEOS of ISRO) who contributed  
a lot to the part of Space Sciences came  
to the rescue. He dealt with it  
tactfully during the informal and  
formal meetings. His approach  
was this:

"See, I am a Christian. I  
go to Church and pray. We have  
the Genesis and Creation too... But  
there are others in the world, who  
would have it differently...  
I hold my religion dear to me,  
as you should also.. But let us  
not force that on others, who have  
it in a different way. Though

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Sciences look at this issue differently  
let us leave to them in their document.  
This section is not about deciding  
who is correct. Let us leave ~~these~~  
this report limited only to science."

Some how (R1) arrives  
at some compromise sentences without  
bringing ~~it~~ in Creation etc. I don't  
remember these sentences... but it  
will be worth seeing!

~~These~~ \* \*

I made a mistake of  
purchasing a new ~~shoe~~ pair of  
shoes before leaving for Vienna. My  
earlier shoes had taken a battering

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and I did not have time! But the new pair of shoes were a new model — ~~with~~ going well above the ankles, covering all of it without, of course, looking like a cowboy shoe. I remember even the brown color. Since family likes it, I bought. ~~Did not~~ had fitted well in shop. But did not walk with it to office etc... Thought of taking a new one for travel!

All the while I had only used shoes well below the ankle. During flight one could remove shoes. After a couple of days in Vienna, I had a terrible pain in both legs. The constraining of the ankles had change my gait

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and hence the problem. It was a  
terrible nuisance. That too at

Vienna the halls of the meetings  
were quite a distance apart... with  
~~an~~ formal suit on and with papers  
in hand or gholia... I realised  
what had happened. It would be  
too costly to buy a new shoe; also  
who knows what problem it won't give.

I managed it by putting a number  
of tissue papers as padding! ...

# It took a few days, a week  
or so to come to some tolerable level!

There were other side shows:  
too many to write! Some "adventures"  
by members of the team. Some others

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in shopping spree: Chandlers,  
~~to~~ garnets etc. I don't know  
how they managed to take them.

Lots of purchases by them  
in Czechoslovakia, then under  
tight Communist rule.

In one weekend I  
also went in a car arranged by  
our embassy. I think we showed  
the payment. ~~It had~~ The driver  
was an interesting Austrian. He knew  
~~the~~ Czech language too. I was  
curious <sup>to</sup> see a communist country,  
an advanced one. I had seen  
so many heavy machinery

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from Czechoslovakia at HEC  
(Heavy Eng. Corp) which was  
built up with Cz. assistance.

A great factory, but most of  
the time under strike! That is  
why ERRO team visit ~~the~~ to  
industries which I had referred  
to in 1970-80 period, had to  
give up on using HEC though  
it had all machinery to go  
even to GSLV stages!

At the entry gate  
there was a long detention. ~~&~~  
The border police took away  
our pass books. We were curiously

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watching. They were taking photographs of each of the pages of the passbooks of us (I think we were 4 Indians plus driver and Ashman) - scanning machines & computers as they exist today were unthinkable those days.

I don't know what they ~~would~~ <sup>would</sup> do with all the copies. No internet to ~~check~~ check! It was similar to the Soviet <sup>Academy</sup> guest houses/hotels where they would take the pass ports and keep with them for days!

Anyway after 45 minutes they came back, gave back our passports

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and allowed us to go. There were other cars waiting. After we went some distance away our Austrian driver said "Others may take even 2 hours to be cleared. You were from their friendly country... That is why it was about 45 min."

We asked him why they do that. He said: "There were a number of protests in Czechoslovakia and also Czechs escaping into West. They There were people who lie under the car, holding on to some parts and escapes. That's why they look at the bottom of the

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~~The~~ Car with slanted mirrors ...."

All the way, it was a beautiful scenario. Beautiful country side and roads as well. We finally came Praha (Prague) What ~~is~~ beautiful buildings! Real best traditions of European architecture. Only thing different from Paris or Munich was ~~was~~ that they did not have the glitter make up. Left without major white wash or painting for a long time, as used to be many gov't buildings in India those days! Then we got down and

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Indian  
walked through. The Embassy had  
earlier informed everybody, not to  
~~get~~ sell dollars/pounds in the  
black market, which would fetch  
~~at~~ almost twice the Czech currency  
than in the formal Cz gov't exchange  
bureaus. I ~~decide~~ decided to be  
careful. We had also been told that  
police in disguise were also mixing  
in the crowd to "nab" such transactions.  
I saw quite a bit of such transactions  
taking place. Even some Indian  
members of our team took such  
money (they can buy twice the number of  
goods!) But I did not allow

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myself to succumb to such a temptator: One personal fear.

Another most important reason was that I ~~do~~ do not like India's name to be sullied by such actions by Indian gov. reps. I had this social consciousness

(maybe called stupidity by some) right from my young age when I

went to USA, etc. Even in throwing trash I would be careful. I don't want ~~that~~ some foreigner to say

"See the Indians misbehaving!"

Similarly in hotels, not being boisterous etc. In Germany for ~~the delegates~~ our exchange scientists to

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DFVLR, we had made a very good guide ~~tracks~~ book (SBIyer of ISRO HQ helped in shaping it very well) listing 'do's' & "don'ts". One of the important "Don't" was against being boosterous even within one's own hotel room <sup>(let alone in public places, etc!)</sup> Some of ~~DF~~ our scientists from ISRO who went to DFVLR ~~star~~ labs ~~for~~ as exchange scientist did create problems to be corrected at the <sup>DFVLR</sup> Coordinator level!

\* \*

Coming back to Praha, I was very careful in terms of not buying Czech currency in black for dollars which had some 300% advantage than official rate.

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Purchase done ~~for~~ by many  
Indian delegation members were  
remarkable — big Chandlers, lot  
of gems etc. How they would  
take home, I was really surprised.  
Too much above limits. Most of  
them were ~~50 or 50~~ ~~50 +~~.

50 +. They ~~many~~ may not  
such ~~opportunities~~ opportunities!

I bought a few granite  
stones (gem grade) ... I don't  
remember whether they were made  
into necklace later ...

~~It~~ ~~It~~ The architecture  
of Praha struck me. It was  
as good as it was in Munich,  
Austria or Paris. Great European

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heritage. But they did not even had a good wash. Reminded me of many Govt building back in India (except those of VIP, WIP's) or rich persons)

On the roads and foot paths lots of film shooting was going on. We were told that Czechs very much likes ~~the~~ films including Indian one. At that ~~the~~ time, I was not ~~at~~ aware of the ethnic divide between Czechs & Slovaks. I was more ~~at~~ aware of that country's heavy engineering capability and its assistance to IIT, Ranchi

Some of us were hosted by an official of Air India who was

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resident in Praha (AI had office there!). He was married to a Czech lady. It was common in the 1970's where India's cooperation with USSR was very large, ~~more~~ and also with Soviet-block countries, that Indians engineers / officers who went for training or long stay married ladies from there.

Lots of consumer goods, & brass ware, textile goods etc were exported to these countries from India - it was through Govt to Govt agreements.

After the break up of Soviet Union these arrangements collapsed - to a great extent

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because (as I was told) Indian  
Exporters taking umbrage of Govt/Govt  
agreements used to send poor  
quality products. Even within  
India due to heavy protective regimes  
(through customs duty) Indian  
industry ~~was so~~ did not care for  
improvement. Even competition  
within India was controlled by the  
licensing regimes!

No wonder these countries  
(Russia included) who were near  
Western European countries immediately  
switched over to products from  
them. Even we could see it. When  
I went abroad, I used to get ~~good~~

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German hot plates, & coffee grinders  
and other kitchen ware. Many Indians  
used to buy electronic products  
like <sup>watches, clocks,</sup> radio ~~Gramophone~~ tape recorders, cameras,  
VCR's, even TV's..... I did not do  
that as I did not want to get  
into cheating / bribing customs officials.

The Czech lady had  
cooked good Indian food...

While returning to  
we had similar <sup>border</sup> ~~check~~ post  
checks. Not so much about  
purchases but about any  
Czech being smuggled out  
to West! I had not gone to  
any Soviet block countries  
earlier. Only Moscow - Moscow

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most of the time....

Not even to Yugoslavia. It was because the Soviet Block countries did not have any direct space related cooperation with non-Communist countries. They had Intercosmos led by (controlled by) ~~Sov~~ USSR.

During one of the COSPAR meetings in which a few Soviet block countries were members but did not speak except for the initial statement ~~that~~ we had developed some friendship with a Professor from GDR (German Democratic Republic).

(P.T.O)

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Since we wanted to explore alternatives of for the Hasselblad ~~are~~ aerial cameras ~~we~~ I had asked the GDR Prof about Carl Zeiss ~~Zera~~ Zena — a great optics company of GDR ~~is~~; whether we can develop cooperation with them for space based cameras etc.

I remember even now how he replied to me. He looked around everywhere almost two times ~~of~~ spanning <sup>nearly</sup> 180°. Then he bit his right thumb and then spoke slowly in hushed voice:  
 " Looking whether Big Brother 12/1/99 4:54 PM  
 was watching or not.. Carl Zeiss

(79)

has capability. It is the one which supplies cameras for the Soviet cosmonauts. But they will not be allowed to talk to anybody. ~~and~~ You have to go through Moscow and they will not allow it!"

I could sense fear in other<sup>wise</sup> jovial man. Though I was still an admirer of USSR as providing a counter poise ~~to~~ against the Imperialist powers like USA, UK, etc ~~the~~ - the West - which aimed at ~~World~~ hegemony over the whole ~~east~~ world - I ~~to~~ resented the "intellectual slavery / oppression" done by Moscow

(880)

against all its allies (slaves?!).  
Western propaganda on that  
was not too wrong. Similarly  
for the Aryabhata satellite  
& its launch ~~was~~ onwards  
the satellites & ~~sat~~ r/v's  
were provided by the part  
of USSR (full part unlike  
the Soviet Bloc (Czech; <sup>GDR</sup> etc))  
calls Ukraine a little  
tongue twisting name of a place  
— — — — —, we were  
never allowed to go there. The  
scientists/engineers ~~Acad.~~  
Acad. Kovtuniyenko, Popov  
etc were flown from there to Moscow.

(881)

They will not talk anything more than the items in the agreements / minutes!

Soviet State apparatus was so tight, that I don't

think they gave any special concession even to the dominant ethnic ~~com~~ group Russians.

In fact Russians and the peoples of the Soviet Union carried forward the Communist ~~rules~~ unless, themselves suffered a great deal but helping other countries <sup>(indirectly)</sup> ~~to~~ which were colonies to carry on their struggle for national independence.

(882)

They were the bulwark  
in the ~~flis~~ fight against  
Hitler's expansionism. The  
Soviet bloc countries were not  
Communist when he expanded  
in Europe. Most of them fell  
like pop corks when his  
armies marched! Some of  
them were equally anti-Jew  
as some Western countries were (but  
not as rabid as Nazi's open  
hatred for Jews.).

and people  
↳ under Stalin which contributed  
greatly to the ~~the~~ victory of the

(883)

Allies forces in WW II.  
The reward for Stalin was  
the annexation of the Soviet  
Block countries — except  
~~the~~ Yugoslavia, a multi  
ethnic country, put together  
by Marshal ~~the~~ Tito. I think  
he had passed away ~~around~~  
in the 1960's. Still Yugoslavia  
continues.....

It ~~the~~ is the post-War  
Soviet Union along with its  
allies (forced or otherwise) were  
the real bulwark to help  
the newly independent  
nations ~~like India~~, in Asia, Africa etc.

(884)

Due to the successes of USSR in Space, Nuclear bombs, aeronautics, machine building etc which gave hope to the new countries against a near total Western monopoly over technology and trade and therefore businesses and military hardware.

Though Soviet Union was not great in transferring technology in Space to ISRO (they did better with aeronautics for HAL which was not well utilised by them) it gave ISRO an initial start with satellite making as there was

(885)

some body who would launch.

It was also fortunate that the Western Block was not fully unified under the leadership of USA. Individual nations had their ambition. UK, of course, was fully with USA obtaining in ~~the~~ turn disproportionate influence in trade, business and influence in world affairs.

Though NATO was a unifying ~~the~~ force of the West especially against the Soviet Block and Communism, ~~it~~ individual historical and nationalistic

(886)

rivalries between individual Western nations remained active.

De Gaulle gave France & the French people the vision of ~~Le~~ Grand Nation!

But for it it would not have gone ahead with an independent nuclear, space and aeronautic programme.

~~It~~ ~~which~~ ~~for~~ ~~it~~ For aeronautics & space it could bring together the other European nations, even UK, under the banner of European Space Agency (ESA) as a competitor to USA

(887)

and USSR. Often times France used to be on the side of India & developing countries in certain space matters, though they later aligned totally with USA.

But it was France and French vision of its Grand Nation that gave a real fillip to India ~~in~~ (and ISRO) in its vision (ambition) to be ~~a sat~~ an operational satellite making and operational launch vehicle making country.

(888)

Though USSR helped India to launch Aryabhata it did not give any satellite technology. That indirectly helped India as it adopts NASA design techniques (most of it available in public domain) in satellite making, tracking etc. The USSR's problem would have been that they did not have civilian/military division of Space Programme. So they would have been worried to expose those designs to Indians.

They just provides the launch

(889)

but nothing ~~but~~ of launch technology; not a bit. Even for the ~~the~~ manned flight they were very careful to insulate ~~of~~ ~~to~~ a peep by Indians into their technologies or design methodologies.

It is the ~~the~~ French who USA, of course, was even denying a launch of an India made satellite — even a small one that can go in a Scout like vehicle. That was VAS's failure.... But he got them help design INSAT. by

(890)

Lincoln Lab (Air Force Lab) and  
got a few of us park with  
NASA; we ~~knew~~ learnt a  
lot about satellite design, testing,  
quality control etc. We knew  
how to procure Space Quality  
Components — which we mostly  
bought from US companies.  
I learnt a lot about \$  
space reliability, failure  
analysis etc from the top group  
in GSFC. ~~Sent~~ Between  
Vagani & me, we had sent  
tonnes of <sup>NASA</sup> documents to  
ISRO — ~~also~~ at NASA ATSF  
project cost of posting !!

(891)

~~Vag~~ Vasagam learnt about all the NASA (USA) launch vehicles from design philosophy to manufacturing from NASA persons at least at some aggregate levels from experts.

~~One IS~~ Even for SEO-1 payload, George Joseph got a number of tips on the long stage TV camera from NASA engineers (I arranged his visit as I was in NASA).

It is strange that USA at the higher level (aggregate level) should be blocking launch of Indian satellite in those same 1970's.

(892)

Then when INSAT-1A & B  
were serious global procurement  
\* in which USA companies  
were sure to win, ~~NASA~~ US Govt  
smoothly allowed that procurement  
and launch! (Lure of the  
market with good business  
potential)!

Allowing India to receive  
Landsat data was more complex  
— it was for creating market,  
and get some ~~ground~~ 'ground truth'  
inputs (which would be useful  
for NASA to learn faster)  
etc.

Now & it was in  
the 1970's, when USSR offered

(893)

India a launch of its first satellite (also help with satellite) it was not just against USA but also against a ~~and~~ rising China whose supreme leader ~~was~~ would care-two-hoots for the Soviet hegemony!

It is under this milieu around the same 1970's, ~~the~~ France with its "Grand Nation" ~~the~~ vision was accelerating its capability to acquire geosynchronous launch capability. Since Germany <sup>(+ Japan)</sup> was crippled ~~under~~ ~~severe to~~ ~~crippled under~~

(894)

under severe restrictions  
against developing nuclear  
& missile capability (its  
& team  
Von Braun, also taken away  
by USA and all technicians  
in GDR part taken away by  
USSR), it could not  
get into making launch vehicles.  
They were limiting propulsion  
and propellant studies to ~~the~~  
academic research levels at  
DFVLR (ISRO had cooperation  
with them and I was the key  
coordinator); even for those  
limited items DFVLR will  
regret cooperation citing its  
relation to military. ~~It~~ It was

(895)

France during the <sup>1970's</sup> ~~nineties~~ and even later, who were considering themselves as a third power centre in the world other than USA & USSR and they were ready to rally Europe into those programmes.

But in 1970's while French aircraft (military ones) were advanced, their space capabilities for operational levels was to be grown. They grew it around their industries like SEP. These industries ~~also~~ saw mutual benefit by using a large number of fairly well trained ISRO

Engineers (and technicians) <sup>(896)</sup>  
at their facilities; it was a  
supplementary <sup>high tech</sup> work force for them  
them. ISRO paid for it as  
a clever move and SEP & ENES  
considered ~~them~~ that an offset  
for the Technology Transfer fee!

In addition they set up a  
Pressure Transducer Facility (PTU)  
at Bangalore for giving to Ariane  
vehicle under development. That  
was the first outsourced high tech  
centre for India! (Make in India  
for Export!)

It was one of the  
great master strokes for ISRO  
with the trio of SD, BP & TNS

(897)

clinching it and giving AEM  
the ~~role~~ key role in executing  
as VIKAS project. There was  
a lot of numbing in VSSC who  
~~could~~ could not were not familiar  
with the vicious geopolitics of  
technology denial. Perhaps  
they overrated their own capabilities  
and ~~to~~ such denials of imports  
technologies (by outside powers or  
by our own selves) as a  
strength for them; ISRO higher  
management had to depend  
upon them!

Later when ISRO bought

(898)

Six SAGEM platforms (guidance systems) for SLV-3 as ISRO's own guidance systems ~~by~~ was getting delayed, those groups said the same thing. Nav

Kalam & even solid groups which were <sup>united</sup> against VIKAS Liquid Engine Project were for SAGEM import! But French help in that purchase also was crucial. USA \$ will ban it.

About ~~USSR~~ Soviet systems we were unaware — ~~at~~ also they would have been much heavier; already SLV-3<sup>Project</sup> was struggling for payload

(899)

margins!

It is again the French help with SEP Liquid Engine funds on technology transfer helped in the close familiarity with Ariane development vehicle of ESA. ISRO's APPLE could ~~become~~ become a passenger payload. In that the "chemistry" between SD with <sup>then</sup> DG, ESA Roy Gibson helped a great deal. Similarly SD also hit off well with Herbert Curien (French high level space person - also minister later) and Prof Jordan of DFVLR work

(900)

have helped as well.

§ §

USSR help with  
satellite ~~making~~ launch  
of Aryabhata, SEO-1, SEO-2  
(Bhaskara 1 & 2) & later  
for IRS for which also agreement  
was signed during his tenure  
was crucial to start the  
satellite programme.

Of course for solid  
propellant, ~~great~~ it was  
fully indigenous and great  
credit goes to Vasant Govarikar  
(VRA). He also saw clearly

(901)

the need to do SPROB as a full hog — ~~one-shot~~ one-shot — by purchasing various equipment from USA, UK etc before they could the emerging Indian capabilities and block it. There were incrementalists within ISRO (short sighted budget controls!) and also ~~also~~ internal jealousies that VRG was getting large amount of budget. Siddhanta was ~~the~~ also for smaller size; he told me that SD once took him to Sriharikota beach for walking (very unusual for SD) and told him "Ravi, Kowarika is perhaps

(962)

having the right instinct. We should not look at it as empire building. This is perhaps the last chance for us to buy those crucial equipment before Americans realise it!"

That was a real foresight by VRG (who took an "over my dead body" for any reduction of size of SPROB and ~~SD~~ decision of SD! I am not sure about BP's stance. He perhaps left it to SD to decide as budget crunch was also real.

USA is not without credit. By denying an ~~SPV~~ Scout

(903)

like launch to India during  
VAS life time and making him  
go to USSR <sup>offer</sup> (at the behest  
of political bosses - I G - as  
Soviet offered a higher ~~fix~~ weight)  
~~he~~ turned ISRO to higher sizes  
satellite making.

At the same time  
their allowing of <sup>a classic / unique</sup> INSAT study  
by MIT-Lindber lab; have ATS-F satellite  
the most advanced satellite to have  
a special India-specific UHF band  
broadcast <sup>TV</sup> ~~per~~ transponder fully at  
the cost of USA and move the satellite  
over to India for one year for SITE

(904)

experiment; lots of R&D cost  
and payload space was necessary for  
that experiment including a huge  
(30 ft) unfurlable antenna in space.

With actual operational  
totally imported (global tender)  
INSAT-1 A & B satellites it was  
fully commercial interest. Also for  
INSAT-2 series there ~~were~~ <sup>were</sup> purchases  
(for many assemblies & subsystems)  
from USA <sup>had shuttle programmes</sup>  
continues the launches as well from  
USA. 2

For the Europe the ~~to~~ <sup>earlier</sup>  
investments (trust, good will in  
addition to commerce) ~~is for India~~

(905)

in assisting India's launch vehicle/  
rocketry programme ~~help~~ bore  
fruit in terms of India regularly  
using Ariane launches for  
INSAT-2 etc on a regular commercial  
basis. It was also partly because  
of ISRO's own problems with  
GSLV programme. SD's major  
attention was on making a solid  
base for

- PSLV

- INSAT-2 Indigenous series

- IRS operations

Plus the two great networks he  
made with ~~USA~~ Users

- ~~INSAT~~ Coord<sup>n</sup> Committee (ICC)

2 - NNRMS

(906)

Even serious studies had not started;  
it was rather premature. Only thing  
he took care was not to compromise  
on future growth of many of the  
facilities for GSLV such as SPROB,  
Engine test facilities to have space  
for cryotesting etc.

Even his successor, <sup>URR</sup> could  
not do much. But also during his  
tenure ISRO lost some important  
leaders like VRG (Kalam had  
gone away during SD's period). ~~Then~~  
But AEM/continued to suffer <sup>[and his top aides]</sup> <sup>[during VRG period even with SD's arrival]</sup>  
URR gave some relief but ~~the~~ URR  
dominated VSSC matters not allowing  
real experts to flourish there. It was

(907)

towards the end of his term URR  
attempts to have a deal with  
Russians (who had their political  
tumult with the break up of USSR)  
for imported CRYO stage with TT.

Later on US pressure Russians  
diluted it to only a supply....

Immediately after ~~URR's~~ URR's  
~~of~~ stepping down, internecine  
quarrels ~~in~~ (high level) in ISRO  
— intraneine? — led to serious  
blow for cryo development; Nambi  
Narayanan implicated in an infamous  
spy-scandal; AEM going away  
Other seniors in Liquid Propulsion group

~~908~~  
(909)

under fear since VRG's ~~tenure~~ tenure as Director VSSC (after BP) which SI could not solve effectively, etc gave a body blow to cryo development. (I had left in 1988 but I ~~was~~ was aware of some of it; also in 1993 AEM sought my advice etc after supersession. ...)

In the meanwhile one item missed ~~about~~ above was the French TT and ~~the~~ licence production agreement for production of Centaure rockets in India <sup>during 1960's itself.</sup> ~~to~~ MR Kumup

(910)

led the team. Americans gave ~~sets~~ ready-to-fire ~~the~~ sounding rockets as gift (actually phased out older missiles). USSR gave similarly a large number of M-100 ready to fire rockets. Kalan ~~a~~ was attempting small versions of Rohini rockets - made in India. That was possible because of RPP set up for Centaure production.

In a way ~~a~~ the production technology for solid propellant rockets had some French assistance through Centaure deal and subsequent indigenisation by ~~the~~ RPP; Thumba engineers as

(911)

RH-300, RH-560 sounding rockets made in India, with indigenous designs. That experience helped in SLV-3 & subsequently for PSLV & GSLV though these were done entirely by VSSC engineers.

There is an unwritten story inbetween these international ~~cooperating~~ <sup>writings. It happened</sup> when SD was at the helm... Somewhere end of 1983. ~~It was~~ perhaps after the Our ~~neg~~ serious negotiations were going on with USSR side. For SEO-1 & SEO-2 it was a simple agreement with ~~the~~

~~Operations Page~~

(912)

the USSR Academy of Sciences.  
The launches were free of cost.  
But for IRS launch they said  
it would be on commercial terms  
and persons who came were from  
a company called GLAVCOSMOS.

Relatively (to Academy) younger persons.  
They had some technical advisers  
sourced from the Academy. They  
had attempted a fairly large  
contract draft borrowed from  
~~some~~ some of USA, European  
launch contracts.

It was a great experience  
for them, much more than us

(913)

as we had gone through such an exercise with USA for INSAT-1 ~~ISI~~

A & B launches; also with ARIANE for APPLE launch though it was free of charge; they had gone through all rigours of a commercial launch except for the payment part.

That who series of talks not necessarily in a chron. order will be written by me later. Key persons in negotiations were TNS, URR, KKR & myself. The ~~the~~ Gilavcosmos person had later told after all the negotiations were over and when we signed the contract which had only a "friendship price" for the launch.

(914)

Much cheaper than the ~~Are~~ Western lunches though they were aware of the price range.

When we asked "Why you want through all these when you are putting such a friendship price?"

Answer: "It was not just for price ~~we~~ we went through several rounds. You people have the experience of negotiating many tough contracts with Western govts & companies. We wanted to learn that experience. That is all. We got it! ~~We~~ USSR is getting ready for commercial mode operations for lunches and satellites."

(915)

During one such discussion  
~~a group~~ a small group of persons  
came to URR and showed some  
~~some~~ some drawings of PROTON  
launch vehicle. They said that they  
~~are~~ were informally exploring whether  
India would be interested in manu-  
facturing PROTON ~~in~~ Launch vehicle  
in India. " USSR would help with  
complete technology transfer. " Also  
we are ready to build a complete  
launch pad & support systems  
in Sriharikota for PROTON launch.  
For geosynchronous launches  
India has special advantage of

(916)

being near equator."

URR was totally ~~surprised~~ surprised.  
~~We discussed to~~ Give a reply that  
we would study and come back. Later  
we discussed (URR, YSR & KKR).

It would be a great offer for India  
as we had ~~they~~ then not even  
scratched the surface of a

ASLV design. Here <sup>was</sup> ~~it~~ a huge one  
on platter. We were also aware  
of the resistance from VSSC which  
was ridiculing even VIKAS engine.

All in VSSC were great advocates  
of ~~side~~ 100% indigenisation

and ridiculed ISAC also as satellite

(917)

Components were imported. (For  
L/V also the components were imported  
and even ~~most~~ all important  
measurement instruments &  
critical machines were imported!  
Vibration tables etc. Even many  
parts of SPRSB etc!)

URR was aware of this  
and he was afraid to take it up  
(rare occasion!) with SD as  
he ~~may~~ might be accused of  
killing VSSC's indigenous  
efforts once & for all. So when  
he came back he handed over  
the papers they gave (I D recall it

(918)

having some broad level drawings  
of PROTON. I don't recall any  
major discussion on that with  
SD. He would have found it  
difficult to decide. I think I  
told him that it was worth  
considering as it would give a  
jump start to the slow moving  
L/V programme. Once we start  
manufacturing in India, it would  
be much more in ISRO control  
and ~~can have~~ could be indigenised

in many sub-assemblies too. (Spoke to  
Chandra. He does not recall any serious discussion. AS Pillai  
who was in HQ then did know of this at all. Chandra told me that  
he gave a note to SD on the economics of launch of PROTON  
USSR was strong at  
that time with no threat to its  
firm SAAR,)  
It may be in ISRO files. (R. Chandra said that there  
was no further discussion with him)

(919)

stability. But SD would not have had the will or stamina to ~~chew~~ "chew" the whole thing as he had done earlier in his tenure. His going away for which he was working hard, was not too far.

May be this was a one major ~~of~~ missed opportunity for India.

Had Kalam been around SD might have asked him to take it up. He was away (SDRDO) in 1982; probably that was needed for India's missile programme.

end Sept 1984 SD laid down office. Soon thereafter I G was

(920)

assassinate. Rajiv Gandhi took over.  
His ~~ex~~ familiarity with USSR was  
very low. Also URR was also very much  
involved in ISRO's internal programme  
and taking control of VSSC where he  
saw his big rival ~~#R~~ VRR!  
Till I left ISRO I ~~don't~~ ~~recall~~ ~~any~~ recent approach  
by USSR.

Coming back to the  
UNISPACE conference from which  
we digressed, ~~#R~~ it was hectic  
for URR, Chandra & myself ~~#R~~ and  
Prof R.R. Daniel took some load in  
the Space Sciences - in terms of volume  
of writing, quite a bit.

Main pressure from the  
Western groups ~~to~~ were to provide  
them avenues for continued hegemony

(921)

Over developing nations especially those like India, China who were trying to build their own Space Programmes.

They could easily ~~se~~ sway many Latin American countries to speak their language. How "open-sky" policy ~~would~~ <sup>would</sup> be ~~great~~ good to

spread the benefits of space science & technology to LDC (Least Developed Countries), DC's etc. In a way ~~they~~ those chapters were the battles which flowered from COUPOUS. But written in a comprehensive manner to cover scientific, technical and

(922)

benefits-aspects. In between a few "clever" paragraphs ~~etc~~ would be introduced. They would strengthen the Western position in COUPOS, which can eventually emerge as Space Law binding on all countries. So ~~we~~ we had to be careful. That was the main job of URR, Chandrasekhar. ~~The~~ ~~At~~ In actuality India was one of the member countries. The membership of UNISPACE was not limited to COUPOS members which was small. All UN countries could attend. Hence our coordination skills had to be lot better. We had to be alert. We knew

(923)

0/10/81  
90

that Soviet block countries ~~would~~  
would support us. We had to  
swing ~~NAM~~ ~~NA~~ non-aligned  
countries & G-77 — more  
difficult as Western block  
would cleverly manipulate  
some of them.

For some items, USA  
would be monitoring our moves.  
They had been carefully complaining  
to Conference Chairman by Yashpal.  
In his new position, he was not  
an Indian delegate. He had different  
office. ~~It~~ He was a UN official.  
We also did not embarrass him

(924)

2/1/81  
70

by going and sitting with him. If he was seen to be tilted for Indian delegation ~~and~~ it is was bad for him and also in a way bad for us. We might ~~be~~ seen in "different way" by face sitters who ~~are~~ <sup>were</sup> being

manipulated by Western interests.

Kiran Karnik also was with YP. We did not disturb him either.

One day while passing in one of the corridors, YP in his charming style ~~had~~ told.

# me: "Arre Rajan some delegates are telling me that Indian delegation is giving lots

(925)

of difficulty... It was  
a hint for us to be more  
compromising. I ~~then~~ knew  
which those "some" ~~are~~ were!

I also ~~told in a the~~  
~~to~~ gave an enigmatic reply:  
"Sir, you had passed  
on the Thanda ~~to~~ (flag)  
to us. We are carrying it  
forward!"

It was not all work -  
work - work, though it was tough  
as bringing out an unanimous  
report after taking out some

(926)

brackets and some paras  
which ~~are~~ were introduced  
as 4, 4 bis etc, was  
a time consuming job.

Still we had some cocktails,  
dinner etc thrown by ~~the~~  
some delegates ~~to~~ (mostly  
limited to some members only)  
etc. We were invited to most  
of them. URR was sought after  
for resolving some issues and  
hence was called — so ~~was~~ <sup>were</sup>

Chandra & I. ~~We~~ I enjoyed  
those events too — eating different

(927)

foods and drinkup ~~to~~ different drinks. We also enjoyed the Austrian favorite soupy meat (Borsch leg?) in coffee houses.

K. R. Sreedhar Murtu who ~~at~~ was also in our team was ~~the~~ strict vegetarian and desired to eat rice, which was sparse in ~~the~~ the UN meeting canteens and outside.

So we went once in search of a Chinese restaurant. My experience with purely vegetarian food when we went abroad was relatively poor. Chandra could

(928)

manage with any veg food such as bread, french fries etc. But when we were ~~of~~ in New York for extended periods of 2 to 3 weeks we used to hire rooms with kitchens at least for one of us. Chandra was a great cook. Used to bring some sambar / rasam powder plus tamarind. While vegetables / rice etc were plenty in New York then, in the UN / Manhattan area Indian masalas ~~was~~ were difficult to get (1980's)

So we had Chandra cook food. Will have some drinks & ~~eat~~ eat. Chandra was mostly teetotaler except on some occasions

(929)

he may sip some wine.

But such facilities were not there in Vienna. So the search for some <sup>Chinese</sup> fried rice for KRSM monthly. During that period 1982 the Chinese restaurants did not have any fried rice or other dishes without chicken / fish / egg etc

Finally when we went on explaining, the hotel ~~server~~ server said. "Oh! Monks food!". He said he would arrange. KRSM enjoyed them I had my usual ~~dishes~~ dishes.