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ICANS–XI

Conference Summary

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Generally the summary speaker of a conference is expected to report on the highlights that came up, on interesting contributions to discussions and perhaps add some of his own thoughts to this. Given the series of session summaries that were produced in this meeting, repeating the highlights over again didn't seem very appealing to me. Actually, everything I feel should be said has already been said, and so I am left with the situation, where I can scatter all that information from my own views. I want to apologize, if some of this scattering is highly inelastic. I am going to restrict any reflections to the more general questions of the meeting and to the idea behind our collaboration.

As far as the operational part of the meeting is concerned, my task is relatively simple. As it often happens on such occasions, one term starts to become dominating as the meeting goes on. On this one, this term is "total performance" and I feel that it is appropriate to make this complement to the organisers and their staff:

ICANS XI – Total Performance.

The dedication of Noburo Watanabe and his collaborators went far beyond what one could normally expect and I want to extend our sincere gratitude to them for making this such a memorable event for all of us!

Let me remind you of one event, which was not included in the summaries and which to some extent, gave me the clue for this summary. I am talking about Monday night's reception. Our hosts managed to get a few of the more prominent attendees of this meeting to give short ad hoc speeches, which I found very enlightening. In the course of his speech, Jack Carpenter noted that when the collaboration was founded and a name had to be found it was clear, that the acronym could be read

I CAN(S).

So, let me ask the question:

What **can** we – look upon today?
– be proud of?
– hope to achieve?

and, referring to the general motto of total performance:

How well did we perform in total?

It is of course not easy to answer these questions. That is, why I thought I would resort to something I learned during my travel coming here: I was waiting for the departure call for my plane at Khabarowsk in Eastern Sibiria and there was a young lady sitting next to me who did not look very happy. Having seen the trouble she had had going through customs, I thought, I knew why. But I was wrong. All of a sudden she pulled a deck of cards out of her luggage, shuffeld them thoroughly and picked three at random. Looking at them, she cheered up visibly. This aroused my curiosity and I asked her what it was all about. It turned out she was using telling cards to answer questions in her mind which there was no other way to answer. She deduced the answers from the pictures on the cards she had picked – in that case good ones –, which gave her confidence that the flight would go well (she was afraid of flying). Of course she admitted that the general moods you are in when interpreting your cards plays an important role, but she felt this was all right, actually it was what it was all about.

Now, what does this have to do with preparing a conference summary? Well, I don't have a deck of telling cards and so I had to improvise to get help in answering my questions about ICANS. I decided to collect key words starting with one of the five letters throughout the week and, at the end of each day toss them around and pick a selection. I am not going to include the full list of about twenty words for each letter here or repeat on what occasions they were used, but I would like to share with you the results of my exercise.

On **Monday** night my combination read:

International Competition on Advertising New Status Symbols

Seeing this, my scepticism about the telling card game suffered a serious blow! Had it only been the question of finding the winner of this competition, Rodger Pynn's evening speech beat them all! (By the way, fax–machines for cars **are** available).

But – should this really be the way, our group was drifting? Do we really want this? Is it the purpose of our meeting to tell each other, how good we are and how many microampere–hours we have achieved? This could not possibly be true! The result left me with an almost sleepless night, eager to repeat the exercise the following day.

On **Tuesday**, with more words in the box, the outcome was:

Instant Conversion to Adopt New Specifications

Remember, this was the "total performance" day. After some pondering over this result it dawned to me that it might have something to do with reality. It sheds some light on how idle all attempts might be to optimize a system today for tomorrow's science. Frankly, I don't believe that, for example, the success of the ILL is based on the total performance of any one of its instruments. I feel that the ILL combines several favourable factors, all of which have

their share in the overall success. In my view, the most important ones of them are:

- a large number of versatile as well as highly specialised instruments
- the highest available number of useful neutrons per year anywhere in the world
- an attractive user policy with excellent support and easy access
- a competent inhouse scientific staff as partners for frequent as well as occasional visitors
- an attractive location to spend some time at
- etc.

It is my conviction that, with such overall conditions the question becomes secondary, whether or not you have to measure 10 or 15% longer to get your desired information. The real measuring time is only a small fraction of the overall effort anyway. Now, of course, apart from "some other unnamed European neutron sources", not everyone tries to compete with ILL and, as Peter Egelstaff never fails to stress, a solid home base is necessary to be able to do the opportunities justice, that exist at large international facilities. For these sources, total performance is mainly a vehicle, and a valuable one, to stimulate extra efforts for new developments as we have seen on many national facilities such as Munich, Vienna, Tohoku and Hokkaido and, in particular, here at KENS.

So, Tuesday's result left me a little more hopeful when I repeated the game on **Wednesday** night:

Incentive Club for Announcement of New Strategies

How about that? Could Jack Carpenter's excellent iterations on the booster problem, Ian Gardener's calm and serene presentation about the new plans at ISIS and the fascinating success at KEK in new accelerator development for the Hadron factory produce such a result? Of course, there was also Gen Shirane, who made it plain to us that the times were over, when the pulsed source lobby had to prove to the world that in certain cases it could outdo a steady state reactor and when the synchrotron freaks had to demonstrate that in some cases they are able to do now what neutrons had achieved long ago. I fully agree with Gen that the best strategy for the future is to accept the virtues of the other methods and to concentrate on what one is best in oneself. The scientific questions to be answered may be limited on the long run, but at present their number and complexity are increasing rather than decreasing. This leaves enough to do for everyone without jumping on the other's domain. What we really need, as Peter Egelstaff put it, is well trained and motivated young people who know their job and who are willing to use whatever tool is best suited to solve their problems. Therefore, a strategy must be worked out to improve students' training and their knowledge about what neutrons can do and how they can be used.

On Thursday we were split in three groups so my success in adding new words to my list and do everyone justice was limited. But, remember, the girl at the airport also didn't have a chance

to add new cards to her deck. According to her conviction, what counts is the mood you are in, when picking your choice.

So, let us look at **Thursday's** results:

International Complementarity of Accessible Neutron Sources

Finally, the oracle really seemed to work my way! This is probably the point to express my satisfaction over the fact that, for the first time, we were able to welcome a number of Soviet colleagues at an ICANS meeting. Although they are not formally part of the Collaboration, their participation added significantly to the international character of the meeting. For the first time we had the opportunity to learn in considerable detail about their work and their problems.

With the pulsed reactor IBR–2 operational and with the neutron target station of the Moscow Meson Factory making good progress, the complementarity of the various sources becomes almost complete on the international scale. Although Dr. Shabalin deplored the length of IBR–2's pulses with 200 μs as being too long, I am firmly convinced that this machine, if at some day it becomes more easily accessible to a wider community, would be an ideal test bed to demonstrate concepts of instruments which, I am sure, one would have to persue if heading for a super source as it has occasionally been referred to in this meeting. Such a source would most certainly be of the SNQ–type and have pulse lengths of that order of magnitude.

Easy access to the tools we want to use is important, but it is equally important to be able to select the right tool for a given task. There is probably no such thing as an universally optimum neutron source which could be afforded by any one research centre or university. So, let us accept that some things can be done better in one place and others in others. The complementarity between pulsed and steady state high flux sources is a fact and we would be poorly advised if we tried to deny this. For this reason I am sorry we did not succeed in incorporating new reactor projects in our collaboration. At least we had John Hayter here as a guest representative from the IGORR (International Group on Research Reactors) to tell us about their exciting progress on the "Advanced Neutron Source" (ANS)–project.

Going a little beyond Thursday's result of my game, I would like to come back to Gen Shirane's talk on Wednesday and remind you that this complementarity is not restricted to neutron sources among themselves but extends to synchrotron radiation as well. From another conference I attended in Alushta in the Soviet Union two weeks ago, I would like to report to you the message given there by Gen Shiranes colleague, John Axe, that the situation is now such that X–ray and neutron scattering experiments have not only become comparable in quality, but also in cost. Synchrotron light sources and spallation neutron sources are both accelerator based machines. Almost all of the proton accelerators used for neutron sources also produce muons which, as was correctly stated during one discussion, are another tool of growing importance in condensed matter research. The same may become true for positrons.

This is, what I might have had in mind when, somewhat prematurely, I picked the last combination of words this morning for **Friday's** result:

International Commitment to Advance Nuclear Methods in Science

This, I think could be the long term perspective of a collaboration which started out as a forum for the exchange of information between laboratories of common interest in a new type of neutron source. These early projects are all operational facilities now, they make their contributions to science and the focus of the meetings has shifted towards instruments. Thoughts are being given to extensions and improvements of the sources and their uses. In that sense, let us all hope that KENS–II for which Noburo Watanabe and his collaborators have worked out such exciting schemes, will become a funded project soon!

Anyway, the scope of our interest has widened considerably and the promotion of new neutron sources can hardly remain the only long term basis of our collaboration. Yet, if we manage to direct our spirits towards this broader view, I can foresee a long and fruitful collaboration and it is my sincere wish, that this shall be the case!

I would like to end this summary by thanking the organizers of this meeting for this opportunity to express my personal views on some of the problems and prospects of ICANS.