Thank you! I'd also like to thank our ESS colleagues for organizing this ICANS-XXV conference, and especially My for the marvelous logistical arrangements. And I'd like to thank Guenter and Rolando for asking me to share a few thoughts about our friend and colleague, Jack Carpenter, who passed away in March, 2020, shortly after ICANS XXIII - the first ICANS he did not attend. Jack would be delighted to see the great things discussed this week. ICANS is the sort of collaboration effort that was his favorite - as much working session as conference; large enough to come up with new ideas but still small enough to share them in a working context. These collaboration meetings, ICANS, as well as UCANS, and a few VCN Workshops, along with the workshop that became the first meeting of the collaboration for Advanced Cold Moderators (ACoM) in 1997, were among Jack's proudest accomplishments - more so I think than the concept of a neutron reflector, the ideas around time-focusing, or the recognition and prevention of catastrophic burps in irradiated solid methane. Those were ideas - wonderful ideas, even crucial and essential ideas, yes, but single ideas. They could enable a new facility or technique, but would not change a community. These collaboration meetings, on the other hand, changed the field of neutron production and application. In the 49 years since these collaborations started, they have held around 45 in person meetings, and have so far generated almost 45 000 proceedings pages of good ideas, dead ends, and operational memory.

Jack was one of the instigators of ICANS as a collaboration and as a meeting series. In his own words, after a summary he gave in 2012 for the ICANS XX meeting, held in Bariloche, Argentina… In October of 1977, Rex Fluharty, Jack Carpenter, Leo Hobbis, George Stirling, and Motoharu Kimura saw the need for a forum at which to share information on accelerators, neutron sources, and scattering instrumentation, and to arrange interlaboratory collaborations. The first ICANS was held two months later at Argonne in December, 1977, with 30 attendees. So Guenter, don't complain about it taking so long to organize! We've now completed our twenty-fifth gathering.

A little personal history; Jack took his bachelor's degree in Nuclear Engineering from the Pennsylvania State University in 1957, and his Masters and PhD from the University of Michigan in 1964. He stayed on at Michigan as a Post Doc and then as a professor, supervising many graduate students, starting with David Mildner, also known well to many here. While at Michigan he built a chopper spectrometer there at the Ford Nuclear Reactor, and was unsatisfied with the measurements he could do there. The desire to get better measurements, from a better source, is what started him down the road that led to two prototypes, ZING-P, which used as a target a lead brick Jack and Motoharu were caught cutting with a hacksaw, and ZING-P', and then to the first spallation neutron source constructed for condensed matter research, the Intense Pulsed Neutron Source (IPNS) at Argonne National Laboratory. IPNS as built was only intended as a prototype - a proof of concept that would lead to funding for the "full version", yet IPNS ran for 27 years supporting thousands of visiting users and the publication of thousands of scientific articles. While serving as Project Director during IPNS construction, and Technical Director during operation, Jack also mentored students, handed out good ideas for others to run with, and served in advisory roles for every major spallation neutron source facility built, including the Lujan Center at Los Alamos National Laboratory, the KEK in Japan, ISIS in the UK, SNS at Oak Ridge National Laboratory, JPARC in Japan, CSNS in China, and ESS in Sweden. He used, helped to build, or inspired many of the facilities we've been talking about this week. In his nearly 300 publications he addressed every single aspect of target physics and engineering, moderator physics and operation, and reflector physics; he described clever and efficient design considerations for each type of neutron scattering instrument, as well as the ancillary equipment that goes with them, and he proposed and supported new uses of the existing facilities he had helped to implement. His ideas are still churning; we heard this week about more details of methane radical recombination for the ISIS TS2 solid methane moderator; the Moderator Test Station I described on Wednesday arose from discussions with Jack in 2001, and just two weeks ago I worked with the USANS instrument team at SNS to characterize the resolution of their triple

bounce monochromator and finish off the instrument paper he had helped to start.

Jack was awarded the Clifford M. Shull prize in neutron science from the Neutron Scattering Society of America, and the Ilya M Frank award for Neutron Physics from the Frank Laboratory for Neutron Physics in Dubna. He was raised to fellowship in the American Nuclear Society, the American Physical Society, and the American Association for the Advancement of Science.

I had the privilege of working closely with Jack for two summers in the late 1980s as a summer student there at IPNS, and then ten years later as his post-doc, and finally for a few years during the initial design for SNS. During that time, I got to know a lot about HOW he worked, and not just about the results. He was stubborn and relentless in pursuing the problem at hand, whether that was editing someone else's paper so that it could get published or working out pages of vector analysis about which I still have bad dreams. He was also innovative, and looked for elegant solutions, often finding a simpler perspective or a better result than what we'd originally envisioned.

But most of all, I found him to be eternally supportive, cheerful, and engaged. He always had time, in later years when he came down to Oak Ridge, to stop in and ask what I was working on. But truth be told, he did that to every random person whom he met in the elevator or the cafeteria, getting dozens of staff members, students, and visiting users excited again about their own work, just because this guy headed up to the Assistant Laboratory Director's office asked them about it! His kindness and respect for everyone he met impacted the human capital of our field as much as the technical advances he led changed the nature of our work.

More than anything, he pushed for collaboration - for working together. In that spirit, I would like to ask Rolando Granada, another of Jack's long-time colleagues to share a few words as well.