

Interview with Professor John Westcott

Sergio Bittanti*

Politecnico di Milano and Academy of Science and Literature of Milano, Milano, Italy

(Received 7 April 2015; accepted 16 May 2015)

Foreword

This paper is the transcription of the interview with John Westcott conducted on 2 June 2011 at the Imperial College in London. The interview was conceived for the 18th IFAC World Congress, held in Milan (Italy) from 28 August to 2 September. Among the various Congress events, it was decided to organise a historical session by inviting Stephen Kahne, Rudolf Kalman, Manfred Thoma, Tibor Vamos, and John Westcott as speakers, with Alexander Kurzhanski as chairman. These distinguished pioneers of Control Science were asked to report about the early days of IFAC, especially about the 1st IFAC World Congress of Moscow (1960). Some months after the letter of invitation to John, it became clear that his participation in the historical session would not be possible. Hence, the Congress President went to London in order to record this video interview, to be partly presented during the historical session. In the interview, John offers us his recollections on the IFAC World Congress of 1960. Moreover, his memory goes back to the Conference on Control Technique held in Heidelberg in 1956. By the way, at the time of the interview, John was the only living signee of the celebrated ‘resolution for IFAC’ conceived during that memorable event.

The video of the interview with Professor John Westcott can be found at the You Tube Channel of IFAC:

<https://www.youtube.com/watch?v=g6HGbQ16oyE>.

In the same channel, one can watch the whole historical session of the 18th IFAC World Congress of 2 September 2011:

<https://www.youtube.com/watch?v=G0735ZFOK2s>.

Interview

S.B. We are very glad today to have here Professor John Westcott, the living legend of IFAC and control science and we would like to have some of his recollections about the early days of IFAC. So, my first question is about your impressions on the foundation of IFAC in 1956 during the famous Conference on Control Technique in Heidelberg.

J.W. Yes, well the conference had been advertised as being of interest to overseas people, and I had submitted a paper, but I had not expected to be there. As a young lecturer I had committed myself to a month’s consulting with the Royal Dutch Shell at their research station in Delft, and when I got there, I explained this to the head of the group – they were concerned with the control of distillation columns, which was a tricky business. And he said, ‘oh I’d like to go to that conference, I’ll borrow a car from the company and I’ll invite you to join me’. And I was very pleased to do that; so in a way it was almost an accident that I was at that conference.

When we got there, we were surprised to find this group of Russians – Tsypkin and Letov and the rest – it was the first time that they had come out to a conference in the West. This gave a great burst to the conference, so when we got to the Thursday at the banquet an American called Rufus Oldenberger said ‘we ought to form an international federation, I’ll draw up a charter and you’ll all sign it’. Some people were a little nervous about it, but we thought, ‘well, you know, it’s all harmless’ so we cheerfully signed, never dreaming what would follow from it. We should have been more respectful really, because, well, look how it is now. Anyway, the next day he produced the thing and we signed it, and three weeks after the conference he sent me his review of the constitution, this horrible blue reproduction process that was the only thing you could do in those days. That of course was much modified, there was another conference in Germany, in Dusseldorf, where more modifications were made, and then finally it was finalised in Paris.

Now in those days, the early days of IFAC, if you wanted to be successful, you had to be a gifted linguist. And Professor Broida of France could speak all the official IFAC languages, so he was very necessary in pushing it through to a successful conclusion. So finally in Paris in 1957, in September, we had a formal constitution for IFAC, and it was agreed that the first president should be an American, Harold Chestnut, the author of the text of the time, Chestnut and Mayer, and the venue would be in Moscow. Under the

*Email: Sergio.Bittanti@polimi.it

leadership of Letov, and so there we were, the constitution now existed.

Just before we went to the congress, there was a diplomatic incident where an American U2 spy plane was shot down, and the pilot captured. We were a little bit nervous about this, as you might imagine, but come September we all got there all right, and it was really a splendid occasion. 1100 delegates – half of them Russian, it is true – but the rest from all over the world, and the preprints: about 280 papers, about 3" thick and weighing about 5 kg. Fortunately, they gave us bags to carry them around, but we had to lug these things around for five days. And of course with 10 panel sessions it was only possible to do at most a tenth of it all; but even with that sort of thing it was clear that as far as the Russians were concerned, automatic control was a serious subject.

To our surprise, we were getting the latest work from Russia, which had obviously been backed up by a lot of previous work, which we had not known about. It was rather overwhelming really. However, even for the small bit that you could attend, it was clear a big step forward was imminent for automatic control. There was quite an excitement about this. In fact, you might even say a panic, because it was felt that the chap who was going to get there first would get all the rewards! So there was some excitement about that.

The topic of the time was adaptive systems. A remarkably large proportion of the papers had something to say with it. And the coverage covered the whole gamut from pure theory to crossbred practice. The nagging thought that overhang the whole thing was 'were these systems going to be economically viable?' At that early stage nobody knew; but there was somehow a feeling that the rewards were going to be very great, and whoever got there first would get them. So there was a sense of urgency about it, I think, which was very nice. I must say that the arrangements the Russians made for us were very nice indeed, they allowed us to go to the ballet, and they took us on a tour of the Kremlin. In the Kremlin, I had never seen so much gold leaf in my life before, it was splendid, it really was.

Then after the conference, there came the visit. And this is where, I think in the West we thought you know we going to have a great difficulty ever matching this. They took us to the main institute in Moscow, to not only Leningrad but also to Kiev. In Moscow – it is difficult to give a balanced view of the Institution of Automation and Telemechanics – which after all was the premium research institute in the Soviet Union, and even after a week of learning not to judge things by what they seemed, it still seemed remarkable to us that this was the premium institute. From our point of view it looked more like a workshop than a research institute. The reason is that Trapeznikov, who was the head of the thing, gave us an introduction, and he invited us to discuss our work with his staff, and also to make criticism if we felt they were justified. Now this business of the criticisms,

we found very awkward really, we were not accustomed to this and it required more diplomacy than we were used to I think. So the net result was we said very little.

After that the director invited us to ask questions. This was a very important phase of the visit, because you had the chance – it seemed to be an axiom in Soviet Russian that you never gave information as it was asked for, so the thing to do was ask the right question and it could be very revealing if you got it right. And I think at the Institute of Automation and Telemechanics we did quite well, because by the time we had left the director's office, we knew that they had a staff of 400, that they had 10 main groups headed by a significant research person who was a known expert in the particular region, and they had 25 interpreters who would scour the world's publications in any given subject, which explained why they knew all about our work whereas we had hardly any idea of theirs. They did say – I think it was very difficult to get stuff done outside – so they said that they did have a few mechanics; in fact, of course, in any one laboratory, they had draughtsman and wirers and everybody all together. That is why it had a rather curious impression on us because we were not used to this, but by the end of the tour we had a better appreciation of what was going on. We asked them about finances and they said 'it was no problem' so we asked them about the building and they said 'oh well the government will provide a new building when it's justified', but they gave us to understand that would be pretty soon now.

Of the 10 research sections – I will not describe them all – there were two which were quite interesting. Under Professor Aizerman, there was a laboratory that specialised in hydraulic and pneumatic systems; they took the view that these were more reliable than the electronic ones, and for the timescale it was appropriate for process control, that this was the best thing. So that was quite interesting. The other one, which I will mention, is that of Professor Feldbaum who had a laboratory that was concerned with the extremum regulators. He had one that leapt to its optimum in eight steps, we were not very impressed by that because they were no dimension in it, they waved an arm over to some bigger boxes which they said were suitable for optimising on the five variables or ten variables or even twelve variables.

The next visit was Leningrad, city of light, a recognizably European city, and where the people were more relaxed, I think, than in Moscow. The Institute of Electromechanics was concerned, for about half of its work, with the control of telescopes (so city of light once again). The director explained to us that their main business was concerned with electric transmission and distribution, and they had a wide selection of automatic devices for this work. They took us in to the laboratory where the telescope work was developed, and they said that they did the design, and when the design was complete they put it out. They showed us some examples of the work that had been put out, and I

must say, they had our sympathies, there were all sorts of problems with that.

The next visit was Kiev, that involved flying, you know, through Aeroflot, and we were a bit embarrassed, because the scheduling scheme with Aeroflot was a bit haphazard, so when we arrived there some unfortunate citizens were just thrown out of the flights to make space for us, as the VIPs. But there we are.

Kiev, which had been very much destroyed during the war, was being rebuilt, and the atmosphere there was entirely different. The people were friendly, just as though they had been moved into a new housing estate, and the premises were also relatively new; in fact it was the nearest thing we saw to what we would regard as normal. Except that once more they had what they described as 'a few mechanics' – but really a lot of mechanics by our standard – to make special equipment. They said they specialised in complex automation, so we had to ask them what that was. Well that meant the automating of complete plants, so we said 'well how do they get their problems?', and they answered 'oh they were provided by the users'. They took us around what they called the demonstration laboratories; it was like a sales office, they had on show what you could have, and they said once a user had committed himself to having an installation, then the institute set up a laboratory in their factory and the whole thing was organised from that, and they stayed there until it was done. I think that the attitude of the people in the Ukraine – the Ukraine is not Russia, if you see what I mean – they were different, the director, for example, moved freely among his people and treated them as equals, which was unusual. There did somehow seem to be a more relaxed atmosphere about the place. They had surprised us too, when we arrived there they issued us all white overalls, for going around the institute, and so after we came we had to go through the criticisms, which we did not say very much about, and then he invited his staff to ask us some questions, which they pitched in and did with gusto, I must say.

By this time – timing is not a Russian specialty – it was getting pretty late, I think it was about three o'clock by then, and we were beginning to feel a little limp. So then we came to the final ceremony, which was the taking of the photograph on the steps of the institution, and the returning of the overalls.

Then back to Moscow; back to Moscow because Moscow was the only eye through which you could leave and take access to the external world – if it actually existed. Fortunately for us it did, and so: home.

S.B. I know that you studied for some time at MIT after the war; can you tell us something about that period?

J.W. Yes, that was very fortunate, I was very lucky there. The thing was, the wartime really messed up one's

education; everything was different. I decided after the war that I really needed to get educated properly, and that is why I came to Imperial College. I had the good fortune to be invited to be a guest of the Institute, which was almost a soft position, even though I was just an undergraduate. I had a scholarship, from the Institute of Electrical Engineers, which would provide me with £500, and in those days converting £500 became \$2000. A bit different today. Anyway, when I finally got to MIT I was given an interview by the dean, and I was not looking forward to it, thinking he had quiz me about my technical knowledge and so on. But oh no, not at all, the first thing he said was 'how much money have you got?'. So I said, \$2000. And he said, 'oh you'll have to be careful'. In fact, since they gave me a free place in their graduate accommodation I was able to manage; they were very generous, anyway.

The great thing about it was, being just after the war, all this sort of concealed work that had been kept secret was now being revealed, so it was a very good time to be there. And some quite famous people were there. I had the advantage too, that, although I could take courses – for example, I took a course on Wiener's filtering – I did not have to be quizzed about them. I was just allowed to drift on, whereas the normal students had to be rather more serious about it. So that was excellent. Even so, I had quite considerable trouble keeping up with these Americans, who had all so well fed – because during the wartime you were not terribly well fed – so occasionally I had to sort of retire and recover.

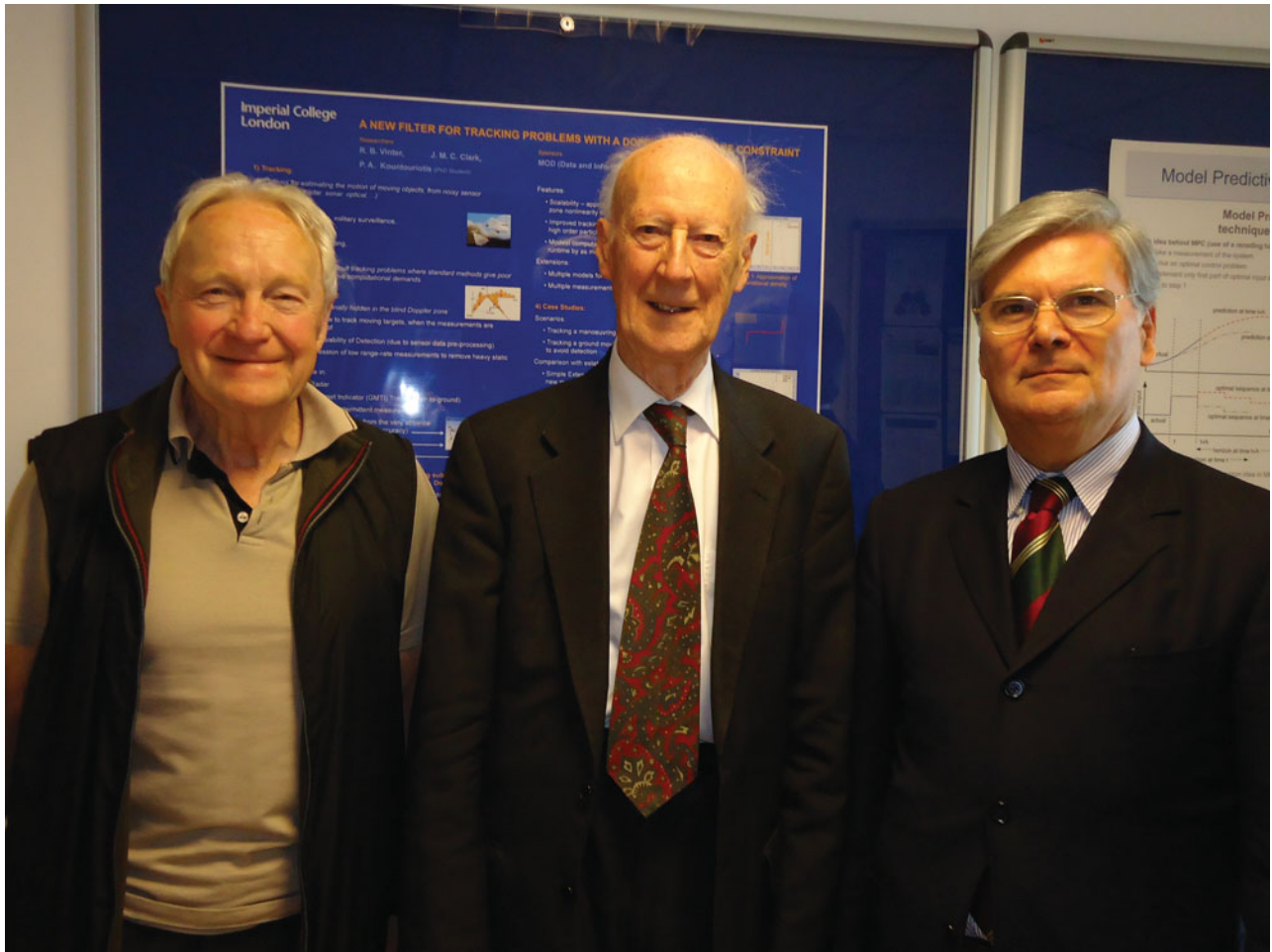
I met some quite famous people there, people like Truxel and Jimmy Ham, it was most fortunate to be there just at that time. The two people who ran the control side were Gordon Brown and Donald Campbell, of the Brown and Campbell text, who were very famous then. I had the good fortune to make the acquaintance of Norbert Wiener, who seemed to like Englishmen; he allowed me to see the text of his book, called *Cybernetics*, before it was published. So when I got back to England I gave a lecture on cybernetics and nobody knew what it was. So I was ahead of the market in way really. I was very lucky.

S.B. Thank you very much. Just a last word: do you remember Giorgio Quazza ? Can you say a few words about him, his personality?

J.W. Oh yes. He was a very a nice man, I must say, and I enjoyed his company very much. It was really very sad when he was lost on that climb, I was very sad about that.

S.B. Yes, it was 1978.

Thank you very much Professor Westcott, see you maybe in the summer 2011 at the 18th IFAC World Congress in Milan, I hope you can be there. You will be very welcome.



This picture was taken on 2 June 2011 at the Imperial College in London, at the end of this interview. Professor John Westcott is at the centre. Either side are Professors David Mayne (left) and Sergio Bittanti (right).