JW Forrester - Some memories of a man ahead of his time

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It is a pity that this event has clashed with the MIT symposium to celebrate Jay Forrester's life. I am sure some members of this Chapter are absent for that reason. I had an invitation, but was unable to attend, so I am really pleased I can fulfil a version of this celebration here. However, they are taking all day and I have only 10 minutes to capture a life time of great significance.

What I want to do is say a little bit about Jay's multiple careers and achievements, but also some personal memories of him. There is much written about him on line and I encourage you to explore more details there.

I should of course start by saying that as the creator of System Dynamics he is reason we are all sitting here today. Appropriately enough forming a stock of dedicated followers …with no outflow at the moment I hope.

Jay was born in 1918 and brought up on a cattle ranch in Nebraska. He studied electrical engineering and became an assistant to Gordon Brown at MIT, a man famous for his work in control and a pioneer of servo mechanisms. Gordon and Jay went onto apply these methods to keep radar antennae and missiles on target during the second world war. There are many references (on line) to him taking prototypes of the equipment aboard ships and only narrowly avoiding being at Pearl Harbour when the Japanese attacked. He went on to design flight simulators, magnetic core memory for computers and, as director of the emerging MIT digital laboratory, led the development of the whirlwind computer a forerunner of modern computers.

In 1952 he joined the Sloan School of management at MIT. The first management school in the states I believe in an engineering University. The late 50's to early 80's was enormously productive period for him. He turned his attention to industrial problems and developed Industrial Dynamics in response to tackling inventory fluctuation problems at GEC. With the help of Jack Pugh, Ed Roberts and Will Fey amongst others, he went on to build a computer based toolset to generalise this thinking under the name System Dynamics. In the 1960's he focussed on world dynamics and the world models for the Club of Rome. As you are all no doubt aware the Limits to Growth studies by Denis and Dana Meadows and Jorgen Randers were the first indicators that population growth, industrialisation, resource depletion and pollution could combine rapidly to leave us living well beyond the earths carrying capacity. I am sure you are all aware that he also went on to tackle Urban and economic dynamics.

I first came across Jay when I read Industrial Dynamics in 1974 and it changed my life as I expect many of Jay's writings changed yours. In 1976, I took great risks with my family to leave a secure job in OR and purchasing within British Coal to join Geoff Coyle as a temporary Senior Research Fellow at the now Bradford School of Management, where he had just developed the first SD group in the UK.

By 1981 I was a permanent member of the academic staff and making regular trips to MIT and getting to know Jay and his doctoral students. John Sterman, David Andersen, John Morecroft, Peter

Senge, George Richardson, Barry Richmond and Alan Graham were all there at that time. Jay had a knack of assembling great minds.

In 1983 the MIT and Bradford SD groups were jointly instrumental in forming the International System Dynamics Society. Jay was the first president, I was on the policy council and the Braford journal Dynamica, which Graham Winch and I edited, became the SDR, with me as the first editor. The 80s and 90's were a very exciting time for me with these international roles. In 1990 I was very grateful for Jay's endorsement of my book System Enquiry. He wrote a very generous piece for the cover.

I also remember well Jay coming to the UK for the 1994 International SD Conference which I organised at Stirling University. I focussed on challenging his version of systems ideas with those being used in the UK by inviting Peter Checkland and Colin Eden to share the same stage…an interesting event. It was also his 76th birthday and we presented him with a card over dinner in the great hall at Gleneagles. (Denis Sherwood).

A distinct memory I have of that time is that he also demanded a 7-foot long bed, which we had some problem finding. He was a big man in more ways than one.

In 1989 I was President of the International Society and that was the year Jay formally retired. However, he was still very active with a mission to introduce system dynamics to secondary education in the USA.

I think you all know the story of System Dynamics beyond the 90's. In 2004 Geoff Coyle, myself and John Morecroft formed the UK Chapter of the SD Society. The first such Chapter and we were the first 3 Presidents. And here we are 13 years on and still gathering. And still no outflows – very encouraging.

I wish I could tell you more, but time is limited. What I want to conclude with is some references to why I say this man was so far ahead of his time.

First, in Jay's system dynamics heyday computing and modelling as concepts were not something people did. In fact, Jay's original supply chain calculations in industrial dynamics were done by hand. His key contribution was essentially using his engineering experiences to develop and use his own toolset – combining digital computing, the Dynamo Software and control theory in a socio- economic setting.

Even by my time of starting to use SD in the 1970s modelling and computing were still in their infancy. I was unusual in doing Operations Research and there were no spreadsheets. As I said many times about the early days of the Bradford group, we were stuck with laborious software and boxes of punched cards (the cry was always - don't drop those please). Every simulation run was a vast effort to be undertaken when we could grab the main frame computer between payroll runs - usually in the middle of the night! Remember this next time you do multiple instantaneous simulation runs without thinking! DOS when it appeared did not make things much better. Ithink only appeared on the Apple interface in 1985 and windows early 1990's.

But apart from there being little knowledge of models and computing for Jay, there was little practical systems thinking. 'Joined up thinking' was not really something people did. Responses to

the world models suffered from this ignorance. People had no idea that industrialisation screwed up the climate… and listening to Donald Trump some people have still not got this.

So, just think what Jay could have achieved if he were starting out now with our current day toolset?

I shall leave you with a question - one that we all still struggle to answer. So what did he really, really create - what is System Dynamics? To help I will give you my own current answer. I believe he created an elegant, simplifying, unifying, and relevant metaphor, that enables us to capture the essence of complex structures and to emulate their behaviour modes over time. (Note the use of the word emulate - not mimic or copy, but match and even outdo.)

It is very sad that he has gone. He will be very much missed at a time when the world needs his thinking the most. I think we all owe it to him to keep reproducing and repeating his messages. Thank you.