

How the System Dynamics Society Came to Be: A Collective Memoir

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with

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Abstract: In this paper several of the early workers in the field of system dynamics tell both a consensus story of how the System Dynamics Society came into being over 25 years ago and some of the early history of the Society itself. Several slightly different versions of this story have been told over the past several years and we thought it would be interesting to involve a broader group in this kind of modified oral history project. The paper is based on a series of separate written recollections that have been posted in full on the web at http://www.systemdynamics.org/history/oral_history.htm.

Introduction

The 2007 International Conference of the System Dynamics Society in Boston marks the 50th anniversary of our field and the silver anniversary of the System Dynamics Society. Over the years several slightly different, partial stories have been told about how the Society was founded. For example, some persons recall 1983 and others 1982 as the founding date (a lawyer might look at the incorporation papers for the Society and discover a yet later date of November 1985). These slight differences in memory occur because so many persons were involved in the founding and launching of the Society, its conferences, and its journal. This paper brings together recollections from a number of these early workers in the field in an attempt to align their collective mental models. We hope that you enjoy these collective memories.

The Founding Events

In 1983, 120 delegates to the system dynamics research conference held at Pine Manor College, Chestnut Hill, just outside Boston unanimously passed a resolution affirming the creation of the System Dynamics Society and naming Jay Forrester as the first president.

However, this resolution was actually the reaffirmation of a similar resolution to create a society passed at the Association Française pour la Cybernétique Économique et Technique (AFCET) conference in Brussels during the summer of 1982. Between 1982 and 1983, an energetic team organized the 1983 research conference at Pine Manor College and managed to initiate the first annual offering of the Jay W. Forrester Award,

evidence that some sort of an informal society was already functioning in 1982 but without the benefit of a constitution or officers.

Those with long enough memories recall Jean Lebel at a small meeting in Rensselaerville New York in 1981 calling for the creation of the “Trans-National Society of System Dynamics” making public a private conversation that had begun at the Paris conference in 1980. Lebel also invited those present at Rensselaerville to join him and his European partners the next summer in 1982. In a prescient twist of fate, Roberta Spencer was the young staff person who helped to organize the meeting in 1981.¹

Even though the Society was officially acclaimed into existence in 1983, it took some years to get its operations in order. The first issue of the *System Dynamics Review* arrived in summer 1985. The very first issue of the *System Dynamics Review* incorporated the backlog from *Dynamica* into its first issues. At the same time, Eric Wolstenholme, outgoing editor of *Dynamica*, became the inaugural editor of the *System Dynamics Review* working with George Richardson, the newly-formed Society’s vice president for publications and chair of its publications committee.

Below we present a set of collective memories that tell some of the history leading up to these founding events and then trace some of the major directions of the Society, its research conference, its publications, and other activities since the founding.

Key Events Leading up to the Founding Events

Since its founding at the Pine Manor College in 1983, two key activities of the System Dynamics Society have been to hold an annual research conference and to sponsor high quality publications to document research results in the field. Both of these activities were well developed before the Society was founded.

Precursor conference-related events

The 1983 Pine Manor conference represented the inter-twining of several until then distinct conference traditions in the field of system dynamics. Michel Karsky and Bernard Paulré recall that the first conference focused fully on system dynamics was organized by Jean Lebel in Toulouse. The year was 1975. As shown in Table 1, a continuing stream of research conferences, held mostly in France and Belgium, led directly to the Pine Manor Conference in 1983.

**Table 1: System Dynamics Conferences
Pre-Dating the Creation of the System Dynamics Society (1975-1983)²**

¹ For a slightly different published history of the Society see Coyle and Morecroft (1999)

² For a list of conference sites see <http://www.systemdynamics.org/SDS%20PC%20Web/confsite.htm>

Place	Year	Chairman/Organizer	Comments
Toulouse, France	1975	Jean Lebel	Decision made to hold annual SD conferences
Grenoble, France	1976	F. Rechenmann	Conference held same summer as Geilo conference
Geilo, Norway	1976	Jorgen Randers and Leif Ervik	Financed by Norwegian, Swedish, and Danish technical research councils. Led to publication of <i>Elements of the System Dynamics Method</i> .
Solaize (Lyon), France	1977	Michel Karsky	First non-French participants: Aracil (Spain), DeBruyn (Belgium)
Rouen, France	1978	Joel de Rosnay	Conference by Joel de Rosnay, who was one of the first to explain System Dynamics to French readers in an important book, <i>The Macroscope</i> .
Mons, Belgium	1979	P. Couvreur and Van Snyck	Presentations by (among others) Prigogine, G. Coyle, B. Parker, J. Sharp, B. Dangerfield, H. Krallman, Hurtubise, and first American Participant—David Peterson (with two presentations)
Paris, France	1980	Bernard Paulré (sponsored by AFCET)	Presentations by (among others) J. Forrester, J. Rahn, St. Beer, R. Day, S. des Clers, and B. Richmond. [In fact there are 26 named authors]. Led to the Publication of <i>System Dynamics and the Analysis of Change</i> .
Rensselaerville, New York USA	1981	David Andersen and John Morecroft	First North American conference devoted exclusively to System Dynamics. Jean Lebel proposes that a formal System Dynamics Society be created.
Brussels, Belgium	1982	Bernard Paulré	“From physical sciences to social sciences—7 th International Conference on SD” (Sponsored by Universities of Bruxelles, Liege, and Mons, AFCET and SOGESCI)
Pine Manor, Chestnut Hill, Boston USA	1983	John Morecroft, David Andersen and Jack Pugh	Conference followed the Rensselaerville (North American) and Brussels (European) conferences and created the System Dynamics Society.

Karsky and Paulré (2007) can trace the origins of the System Dynamics Society to this early stream of conferences.

“As can be seen from the above list [Table 1], the international aspect of these annual conferences, as well as the idea of an international SD Society, developed progressively, through a slow maturing process. The suggestion to create a SD International organisation was first proposed by Jean Lebel and Bernard Paulré during the Paris conference of 1980, at a cocktail organised by the MIT club in honor of Jay Forrester and during the conference in an aside room in the University Paris Dauphine. This idea was pursued and developed at the Rensselaerville conference by Jean Lebel and formalized in Brussels in 1982.”

Others recall their first conference experiences in system dynamics taking place in 1976 in Geilo, Norway. The Geilo conference was sponsored by Norway’s Resource Policy Group and took place at just about the same time that Rechenmann was organizing a second European conference in Grenoble. Jørgen Randers (2007) recalls the Geilo conference.

“In 1974 the Resource Policy Group was established in Oslo, Norway as one of the first centers of system dynamics research outside the US. The initiator was Jørgen Randers, who had spent the preceding 4 years in the System Dynamics Group at MIT. By the spring of 1976 the Resource Policy Group had grown to some 7 full time system dynamicists. In Bergen, Norway Leif Ervik was in full swing in his effort to establish the second Norwegian system dynamics center. Ervik had spent 2 years in the Dartmouth SD group, and thus the Norwegian centers were tightly coupled to the American SD effort.

The Norwegian centers were largely financed by the Norwegian, Swedish and Danish technical research councils. The councils were used to the idea of ‘summer schools’ to advance science, and thus the idea emerged that it might help further the field of SD to organize an international conference on Norwegian soil. The decision to go was made by Randers and Ervik in the winter of 1975-76 and the mountain resort of Geilo (a political compromise: mid-way between Oslo and Bergen) was chosen as the venue. Bente Jones and Carsten Tank-Nielsen in the Resource Policy Group did an enormous amount of work in order to organize the conference, and a scientific committee did a great job in obtaining 37 papers from scientists from Canada, Denmark, France, Germany, Netherlands, Norway, Sweden, UK, and the US. Impressively, these papers were published in a pre-conference document dated May 27, 1976 and mailed to all conference participants for perusal prior to the actual conference August 8 -15, 1976.” A selection of these papers was later published in *Elements of the System Dynamics Method* (1980). The picture below [Figure 1] indicates there were more than 70 participants.”



Figure 1: Attendees at the Geilo Conference, August 1976

For a key to “who is who” see http://www.systemdynamics.org/history/geilo_1976_2b.jpg

While European centers were doing a good job organizing system dynamics research conferences, attendance by North Americans at these conferences was quite limited (with the possible exception of the Geilo conference) and no single conference in North America emerged as a uniquely system dynamics conference. Persons interested in system dynamics formed small special interest groups at conferences sponsored by the Society for Computer Simulation, the IEEE Section on Systems, Man, and Cybernetics, and the annual Pittsburgh Simulation Conference. Jack Pugh remembers that the Summer Computer Simulation Conference (sponsored by SCS) regularly had a separate session on system dynamics, which was attended by Americans who were reluctant to afford the trip to Europe. Andersen, Morecroft, and Spencer (2007) recall an effort to create a conference devoted only to system dynamics at Rensselaerville, NY in 1981.

“The initial idea to hold a conference in North America exclusively devoted to system dynamics was first discussed in 1980 at the IEEE meetings held in Cambridge. We recall that Peter Senge, Alan Graham, and others had organized a special track of papers in system dynamics as part of the section on Systems, Man,

and Cybernetics. At an informal dinner held at the MIT Faculty Club, several persons attending this meeting floated the idea of holding a meeting exclusively devoted to system dynamics, much as had been done at the Geilo meetings in Norway several years before. It fell to John Morecroft, who was an assistant professor at the Sloan School and to David Andersen who was an assistant professor at the Graduate School of Public Affairs, University at Albany to follow through on this idea.

This first conference consisted of 20 papers presented in plenary and 53 papers presented in parallel sessions. The printed proceedings ran to 350 pages and contained a wide variety of topics, broadly representing the field around the world. We recall that Ed Roberts presented a plenary talk at the 1981 Rensselaerville meeting that envisioned “The Third Wave” of researchers in system dynamics. The second wave represented a small number of researchers who had come to know and work with system dynamics by working directly with Jay Forrester at MIT. Roberts saw at this conference a much larger wave of researchers who had connected to the field in multiple other ways, previewing the dawn of a larger view of the field. Jean Lebel, who had been attending the system dynamics meetings sponsored by AFCET, gave a major address where he called for the creation of a ‘Transnational Society of System Dynamics.’ He invited all present to come to Brussels the next year to attend the 1982 AFCET conference that was scheduled to have many papers from around the world on system dynamics....”

The annual system dynamics research conferences, begun in 1983 and since then sponsored by the Society, blended features from these several traditions and have routinely rotated around the globe.

Publications prior to the *System Dynamics Review*

As was the case with research conferences, the System Dynamics Society inherited a number of on-going publications. Jay Forrester (2007) recalls the history of the D-Memo series (now available on DVD from the System Dynamics Society) as the earliest record of research in the field of system dynamics.

“The MIT D-memos in system dynamics have a history that started in the 1940s at the MIT Digital Computer Laboratory. At that time I had a large staff of engineers designing and building Whirlwind, the first digital computer at MIT. To coordinate the group, I had every technical note serial numbered, distributed to all members for coordination of activity, and filed for future reference and as a record of progress. That practice was re-established for activities in system dynamics starting with D-0 in November 1956. That first D-memo was my note to the faculty research seminar on ‘Dynamic Models of Economic Systems and Industrial Organizations,’ which evolved into the beginning of system dynamics. That original memo was published in the Winter 2003 (Volume 19, Number 4) issue of the *System Dynamics Review*. D-5 in 1957 described how the memos would be

formatted, distributed, and filed. In the 1990s the MIT group had begun to fragment and the D-memo procedure faltered as memoranda and working papers were handled in various ways. The last D-memo on the DVD disk is my D-4886-1 of July 21, 2003, 'Economic Theory for the New Millennium' presented at the 2003 International System Dynamics Conference. As the D-memo era came to a close, the D-memos were scanned and have been preserved in the DVD disk that is available from the System Dynamics Society.

The *System Dynamics Newsletter*, which was first called the *Industrial Dynamics Newsletter*, appears to have started before 1968 as inferred from reference to it in D-1169 of October 1968. The asserted purpose of the *Newsletter* was:

1. to provide information about a wide range of investigations, teaching activities, and applications within the emerging system dynamics profession,
2. to facilitate and stimulate communication among system dynamics practitioners, and
3. to furnish an updated bibliography of books, articles, and theses which deal with topics in system dynamics.

In 1973 the *Newsletter* had 79 pages. By 1985 it had grown to 196 pages. The 1985 *Newsletter* contained sections on system dynamics at MIT, system dynamics teaching at 31 other institutions, system dynamics research at 43 other institutions, a list of 67 MIT theses, and 105 pages of system dynamics bibliography.

The *Newsletter* was discontinued when the *System Dynamics Review* and other publications made it unnecessary.”

However, as was the case with research conferences, a parallel publication tradition had emerged, this time in the UK. Eric Wolstenholme (2007) recalls the early history of *Dynamica*, the journal that preceded the *System Dynamics Review*.

“The story of *Dynamica* and its development into the *System Dynamics Review* is very closely intertwined with the evolution of the Bradford University System Dynamics Group.

The group was formed by Geoff Coyle in 1970 and, mirroring the foundations of the subject, reported to the University's Department of Control Engineering. The first 5 years saw the group build up to 3 members of staff and 9 graduate students studying for PhDs. Early successes were reflected in two important decisions in 1975. First, the group was consolidated into the newly formed Bradford Management Centre and second a decision was made to establish a journal dedicated to group research output. The rationale for the creation of *Dynamica* is

best captured in the forward to the first edition by Chris Higgins the Director of the Management Centre who stated:

'The System Dynamics Group has now grown into one of the most enterprising and innovative research groups in the University. Its reputation has been recognised by the award of a number of substantial research grants and it has now reached the stage of development where a substantial stream of publications is anticipated. It is apposite that a new journal Dynamica should be instigated by the Unit.'

Editorial responsibility for the journal was given to Graham Winch, and Graham and John Sharp ran the publication until 1980. During this period the journal did indeed fulfill its promise of being a prestigious outlet for dissemination of the research of the group across a wide range of studies.”

Even with the creation of *Dynamica*, Khalid Saeed (2007) recalls how the search for peer-reviewed publication outlets before the existence of the *System Dynamics Review* took authors to multiple journals as outlets.

“It is always difficult for the students of a new emerging discipline to publish in recognized peer reviewed fora. Given that there was a substantial publication requirement in our doctoral program, it was important to find a journal that would be receptive to our articles and would have the expertise to judge their content. It is not surprising that our earliest publications went to *IEEE Transactions* and *Simulation*, both dominated by engineers but not limited to engineering agendas. My first paper, coauthored with Tony Picardi, was published in *Simulation*. Other journals my students and I targeted after I graduated included *Technological Forecasting and Social Change*, *Socio-Economic Planning Sciences*, and *World Development*.”

These multiple streams of publication outlets for work in the field of system dynamics ultimately led to the creation of the *System Dynamics Review*.

Key Events Subsequent to the Founding Events

The 1983 resolution proclaiming the System Dynamics Society into existence with a full slate of officers intact (see the addendum: “First Officers of the Society” www.systemdynamics.org/history/1st-officers.htm) begged a significant number of legal, organizational, logistical, financial, and even political questions. What would be the legal structure of the society? How should it be organized and how would it function given that it had no funding? A delicate political question centered on how to harmoniously balance the interests and preferences of all those who had contributed to the founding with those of

a single dominant founding group—the System Dynamics Group at MIT. Coyle and Morecroft (1999) recount how some of these issues were resolved.

It fell to the four elected officers of the Society most closely located to Cambridge to work on these issues. Jack Pugh, with an established operating base at Pugh Roberts Associates, set up an accounting system and laid the groundwork for future sound financial management of the Society. Jack then gave the Society a boost when he recruited his wife, Julie, to serve as the first executive director of the Society. In addition, Jack Pugh (2007) recalls the task of creating a legal basis for the Society.

“When we gathered in Jay’s office to organize the Society, one of the first tasks was to create a constitution. As no one else had any lawyers to suggest I recommended an acquaintance of mine. He produced a document that Jay totally disapproved of (for reasons that I do not recall). As this lawyer was not a specialist in professional societies, we began studying the constitutions of other such organizations. The constitution of The Institute of Management Science appealed to us. So we adapted it to what we felt that we needed. As it has been modified several times since then it is obvious that we did not do a perfect job, although we have grown twenty fold in twenty-five years.”

As founding president, Jay Forrester was given the diplomatic task of contacting leaders of the active groups around the world to secure their support for and cooperation with the new Society. As secretary, John Morecroft, a newly minted assistant professor at MIT, took on the job of recording key aspects of the Society’s history (see Morecroft 1983A and 1983B). In addition, Morecroft took on, with David Andersen, the task of initially drafting and managing many of Jay’s letters and external correspondence on behalf of the Society. We all had a fear (subsequently discovered to be unfounded) that Jay’s well-known strong personality and ability to take a firm position on any given issue might impede his role as a diplomat on behalf of the Society. Mike Radzicki (2006) in his presidential address to the Society’s annual research conference tells the story of how he found copies of these Forrester-Andersen-Morecroft diplomatic collaborations in the earliest archives from the Society. Apparently their collaborations were successful. However, we recall that the Society did inherit an implicit European-North American tension from the way it was founded with a friction around the MIT-centric nature of the emerging society. This tension still seems to play itself out over the issue of conference scheduling, especially when the Society chooses to mount a conference outside the traditional European-North American rotation.

David Andersen, then serving as president-elect, helped these efforts along by scheduling a series of monthly meetings during the academic year when all of the volunteers working to lay the groundwork of the Society would meet, usually in Jay Forrester’s office at MIT. His job was to drive in from Albany, New York to help create a sense of pace and deadline to the various jobs being completed by early volunteers.

Michael Radzicki, (2007) recalls the voluntary nature of early Society business, noting,

“The early operations of the central office were primarily undertaken by whoever held the following Society positions: Vice President for Finance, Secretary, and Executive Director. The vice president for finance kept the books, met annually with the auditor to make sure the Society was complying with U.S. tax laws, and made sure the Society’s modest endowment was properly earning interest. The secretary kept the minutes of the policy council meetings, helped the president set the agenda for the meetings, and was typically the person who best remembered what the policy council had done in the past and was scheduled to do in the future. The executive director essentially did everything else. In fact, the people filling these three roles typically served multiple terms in office and basically were unofficially responsible for the early institutional memory of the Society.”

As the Society came into existence, the need for an official peer-review publication that could set standards in the field became apparent. George Richardson (2007) tells the story of how the *System Dynamics Review* was born.

“It was late at night (well, early in the morning) at the 1984 System Dynamics Conference in Oslo at a particularly convivial and well-lubricated gathering of participants, that David Andersen, in his role as the 1985 President of the newly formed System Dynamics Society, asked me to serve as the Society’s first vice president for publications, with the charge of bringing into being the journal of the Society. Given the hour and heady spirits of the evening, I said I’d be happy to do it.

Under the broad direction of the Society’s Publication Committee, consisting of Jay Forrester, Eric Wolstenholme, David Andersen, Richard Day, and me, plans for the as yet unnamed journal began shortly after the conference.

With a small group of student supporters in the MIT System Dynamics Group (Becky Waring and Janet Gould), I sought publishers. We began with an appropriately long list, and rather quickly winnowed it down to three, MIT Press, and the U.S. offices of Elsevier, and John Wiley.... By May 1985 we had reached the stage of comparing draft contract agreements with these publishers, when, to my consternation, all three dropped out.

In a stroke of great good fortune, the editor at MIT Press put us in touch with Laura Fillmore and her then little company called Editorial Inc. Laura saved the day. She linked me with a designer, Larry Brown, and a copy editor, Alice Cheyer, and worked with me to find a printer. We began the process of publishing the *Review* ourselves, as a wholly owned operation of the System Dynamics Society.

The tasks of establishing the editorial structure and the contents of the first issue were made every so much easier by Eric Wolstenholme, who did (at least) two great things for the new journal. First, Eric accepted the nomination to be the *Review's* first executive editor, a post he went on to serve in for six years. Second, he agreed to support the new Society and its new journal by ending the publication of *Dynamica* and turning over its entire paper backlog to the *System Dynamics Review*.

The arrangement with Editorial Inc, particularly Laura Fillmore and Alice Cheyer, continued for seven years. Eric handled the content of each issue and the review processes, and I handled getting each one produced and mailed. It was a somewhat unusual editorial arrangement, for I was the one who worked with Alice as she copy-edited everything that would go into the *Review*. Alice was amazing. (There are many Alice stories, but perhaps the best is the time she found in a complicated model diagram an arrow with the arrow head on the wrong end. To this day I have no idea how she did that.) We worked together on every article for seven years, often on every sentence in each article, and that entire time we never met.

As the *Review* became more famous, we came to the attention of Diane Taylor at John Wiley & Sons in Chichester, who wanted to publish the *Review*. After more than a year of negotiations, involving most of the early founders of the Society and the then current policy council, the Society agreed to an arrangement in which Wiley in the UK would publish the *Review*”

The story of the founding of the Society would not be complete without a brief description of the transition from a voluntary enterprise to an organization with professional staff. In the 1992 winter policy council meeting there were discussions about the Society selling the vinyl board version of the beer game as discussed by Martínez-Moyano et al. (2005). Julie Pugh had managed the packaging and sales of these games over the years and this was the primary activity that contributed approximately one-third in the accumulation of close to \$150,000 cash surplus for the Society by 1996. Jack and Julie Pugh were by this point in their careers considering retirement and were seeking an alternative to their continuing volunteer service to the Society.

Also in 1996, Roberta Spencer, David Andersen, and George Richardson had been reunited at the University at Albany where Roberta was working on a part-time basis on a number of research grants. Looking at the modest cash balance in the Society's reserves, the University at Albany proposed a plan that would allow the Society to move its home office from MIT (and Julie Pugh's basement) to Albany with Roberta Spencer serving as its first professional staff person, replacing Julie Pugh as executive director. David Andersen was nominated to replace Jack Pugh as vice president for finance, a post that he has held since that time. Since then, the trajectory of growth can be traced on the Society web site (www.systemdynamics.org). From its initial founding, the Society has grown due

to the heroic efforts of too many volunteers to mention here. This should be the subject of a future oral history project.

Addendum: First Officers of the Society

President: Jay W. Forrester (1983-1984)

President Elect: David F. Andersen (1983-1984)

Past President: None

Secretary: John D. W. Morecroft (1983-1984)

Treasurer: Alexander L. Pugh, III (1983-1984)

Vice President: Jørgen Randers (1983-1984)

Vice President: Jean D. Lebel (1983-1984)

Policy Council (1983-1984): R. Geoffrey Coyle, Frank P. Davidson, Richard H. Day, Willard R. Fey, Nathan B. Forrester, Roger I. Hall, Michel Karsky, Hermann Krallmann, Dennis L. Meadows, Pratap K. J. Mohapatra, R. Joel Rahn, Barry M. Richmond, Edward B. Roberts, Khalid Saeed, John J. Uhran, Jr., Eric F. Wolstenholme

Brief Author Bios (in alphabetical order)

David Andersen was the President-Elect at the founding of the System Dynamics Society and presently serves as the Vice President for Finance.

Jay Forrester is the founder of the field of system dynamics and the founding President of the System Dynamics Society.

Michel Karsky organized the 1977 system dynamics meetings, was a founding member of the System Dynamics Society, and has served as Vice President of Member Activities.

John Morecroft was the founding Secretary of the System Dynamics Society and served as President in 1996. He has also served as Vice President Publications.

Bernard Paulre organized the 1981 System Dynamics meetings on Brussels and was a founding member of the System Dynamics Society

Jack Pugh was the Vice President for Finance at the founding of the System Dynamics Society and continued in that role until 1997. He also served as President in 1999.

Mike Radzicki was Secretary of the System Dynamics Society between 1995 and 2000 and served as its President in 2006.

Jorgen Randers organized the Geilo conference in 1975 and served as the President of the Society in 1985.

George Richardson was a founder of the *System Dynamics Review* and President of the Society in 1997. He also served as the founding Vice President Publications.

Khalid Saeed was a founding member of the System Dynamics Society and a member of the Policy Council. He served as President in 1995.

Roberta Spencer organized the 1981 meetings in Rensselaerville, New York and has served as Executive Director of the Society since 1997.

Eric Wolstenholme was the editor of *Dynamica* and the founding editor of the *System Dynamics Review*, serving as President of the Society in 1989.

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