

# Presidential Address

## 24<sup>th</sup> International Conference of the System Dynamics Society

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# Outline of My Talk

- The Past (.J)
  - Some history
- The Present (.K)
  - Some Data
- The Future (.L)
  - Growth of the Field
  - Challenges to the Field
  - Celebration of the Field

# The Past

# Some History

- Brussels 1982
  - First call to establish a society
  - Statement of purpose for the society drafted
- Chestnut Hill 1983
  - Draft constitution and bylaws prepared from Brussels statement

# Some History

- Cambridge 1984
  - Jay Forrester sent out a letter to senior system dynamicists around the world asking for input on the draft constitution and on other issues related to the formation of the Society

# Some History

- The replies from the senior SDers were very lively and centered on three issues:
  - Details of the Society's constitution
    - Our constitution is patterned after the TIMS constitution

# Some History

- Organization of the Society
  - Several senior system dynamicists felt that the Society should be primarily composed of national chapters
    - The Society's (relatively limited) role would be to serve as an international federation of national system dynamics groups
    - This structure would encourage an equitable distribution of influence within the Society

# Some History

- Details of the Society's journal
  - Make Dynamica the Society's journal or start a new journal
  - Name of the journal
    - "Policy Design"
    - "Journal of the System Dynamics Society"



## Some History

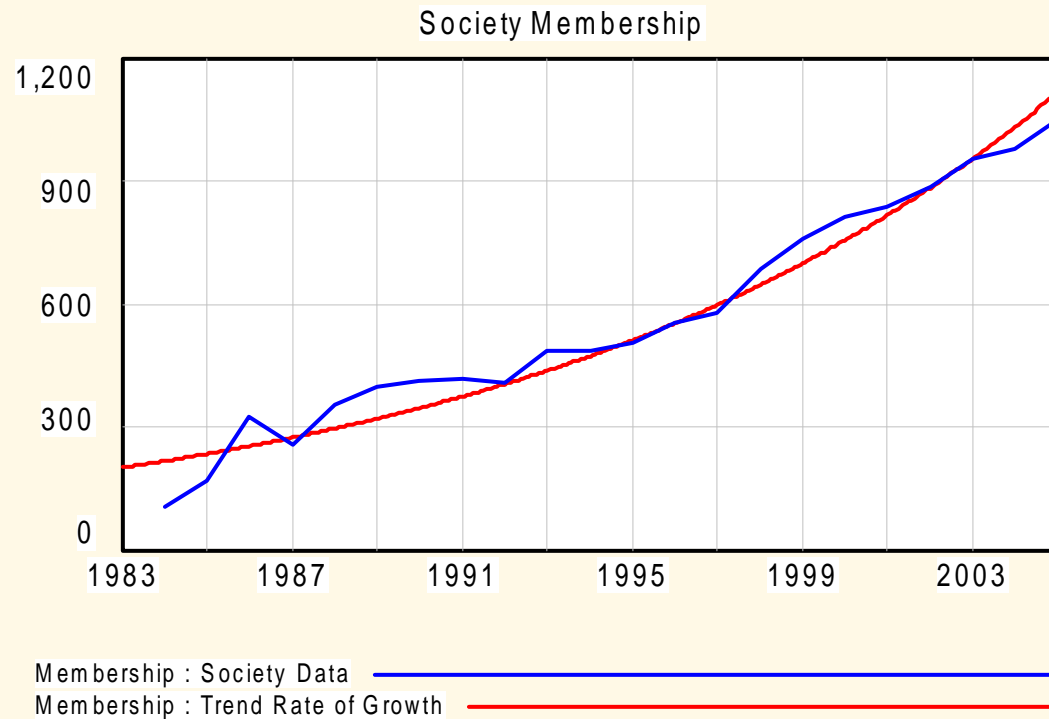
- Even though there were some disagreements and a lot of strongly held views, it was clear that the senior SDers felt that system dynamics was different, important, and that it was crucial to go forward with the formation of the Society.

# The Present

# A Snapshot

- Members in 77 Countries (40% of the world's countries)
- 16 Chapters
- 6 SIGs
- 21 Corporate Sponsors
- 6 University Sponsors
- 2 Individual Sponsors

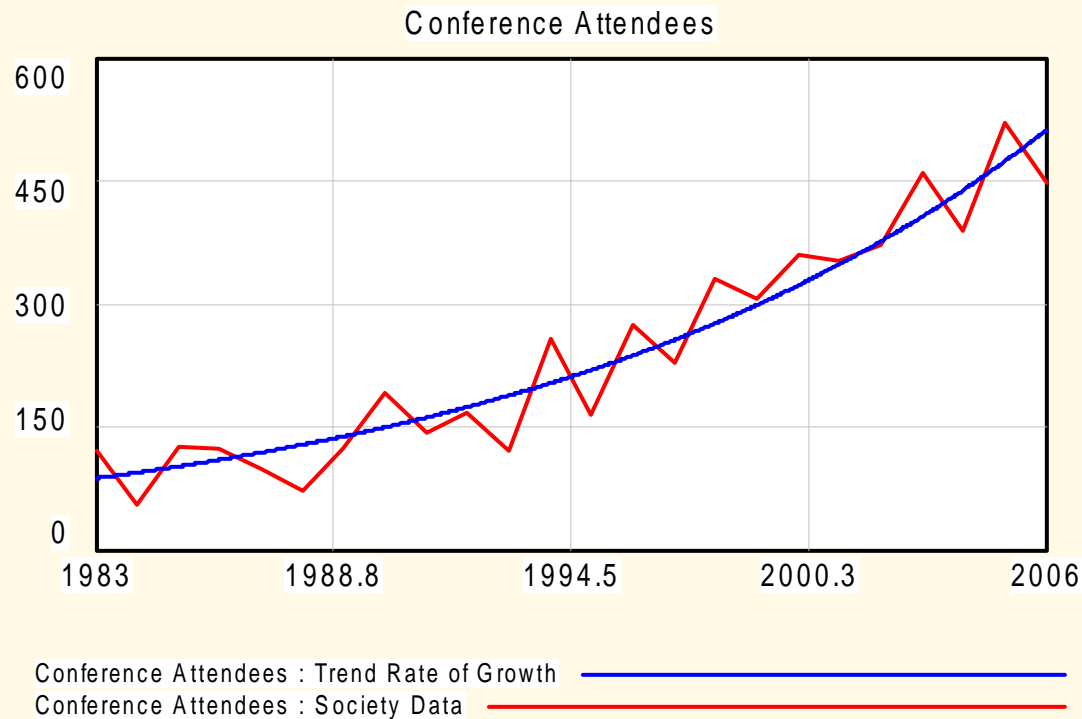
# Society Membership 1984-2005



Trend Rate of Growth = .078 %/Year

Doubling Time = 8.97 Years

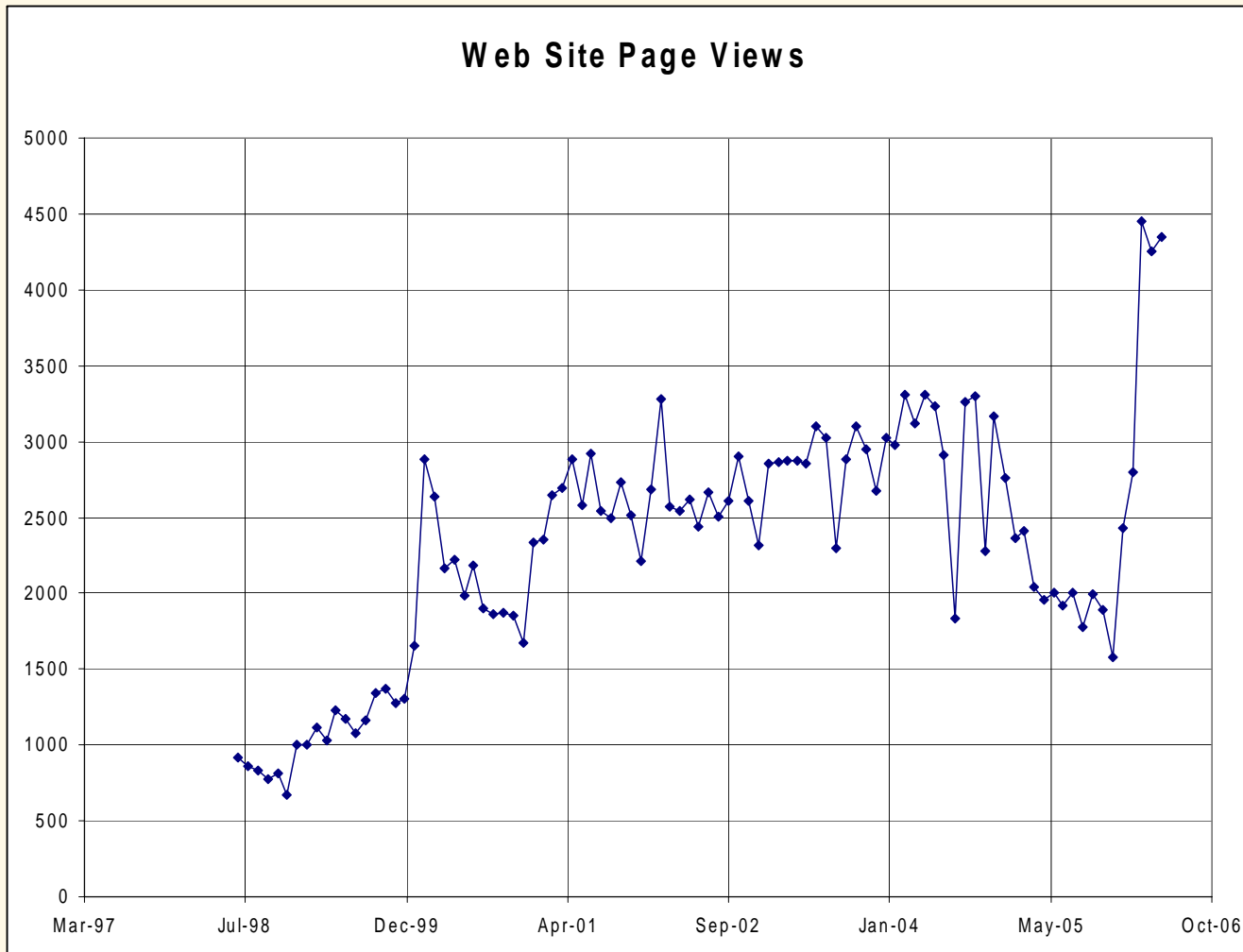
# Conference Attendance 1983-2006



Trend Rate of Growth = .077 %/Year

Doubling Time = 9.09 Years

# Web Site Page Views 1998-2006



# The Future

What can you do as an individual  
to help grow the field of system  
dynamics?



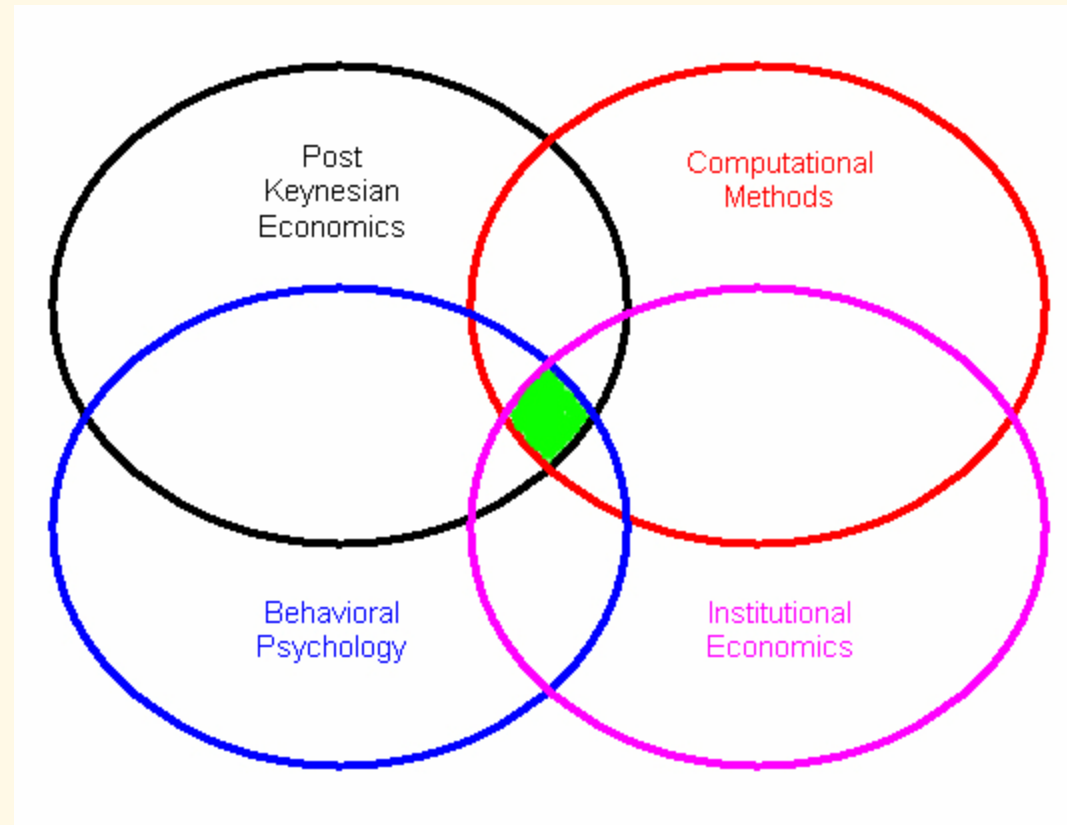
# Growth of the Field: Individual Level

- Develop both an area(s) of expertise and a tool(s)
  - "Hire me to build you a model" does not work
  - Policy makers & managers want solutions to problems, not models

# Growth of the Field: Individual Level

- Pick an important problem and do good work
  - Work with a colleague
  - Publish your good work
    - Even if you're not an academic
    - Tailor it to the stream of thought & nomenclature of the journal to which you are sending the article
  - Cite your colleagues' good work

# Example



# Example

- Chartalism
  - Why do fiat currencies have value?
- Endogenous Money
  - What do central banks actually do?
- Functional Finance
  - Abba Lerner's logical extension of Keynes' General Theory
- ELR
  - Essentially a buffer stock policy that ensures stability of the price level

# Example

- Policies based on a combination of these ideas have enormous implications for:
  - Eradicating involuntary unemployment, poverty, and economic hopelessness
  - The future of the U.S. social security system
  - The future of the Euro
  - The future of developing nations

## Quote from Randy Wray

"Stephanie Bell and I have been trying to explain [functional finance] in a series of articles, but have been making little progress because no one can follow balance sheets any more."

L. Randall Wray

## Quote from Malcolm Sawyer

"The [employer of last resort] schemes are underdeveloped and a range of the difficulties which I have raised might be addressed if the ELR schemes were developed beyond the sketch outline stage."

Malcolm Sawyer

# Growth of the Field: Individual Level

- Train students to do good work on important problems
  - Increase the field's capacity to do good work
  - Teach your students to think like system dynamicists



# Growth of the Field: Individual Level

- Help to make an actual system better
  - How many professors of economics would receive tenure if a prerequisite was helping to make an actual economic system better?
  - Op-ed pieces
  - Participate in local politics
- "Burn the math"

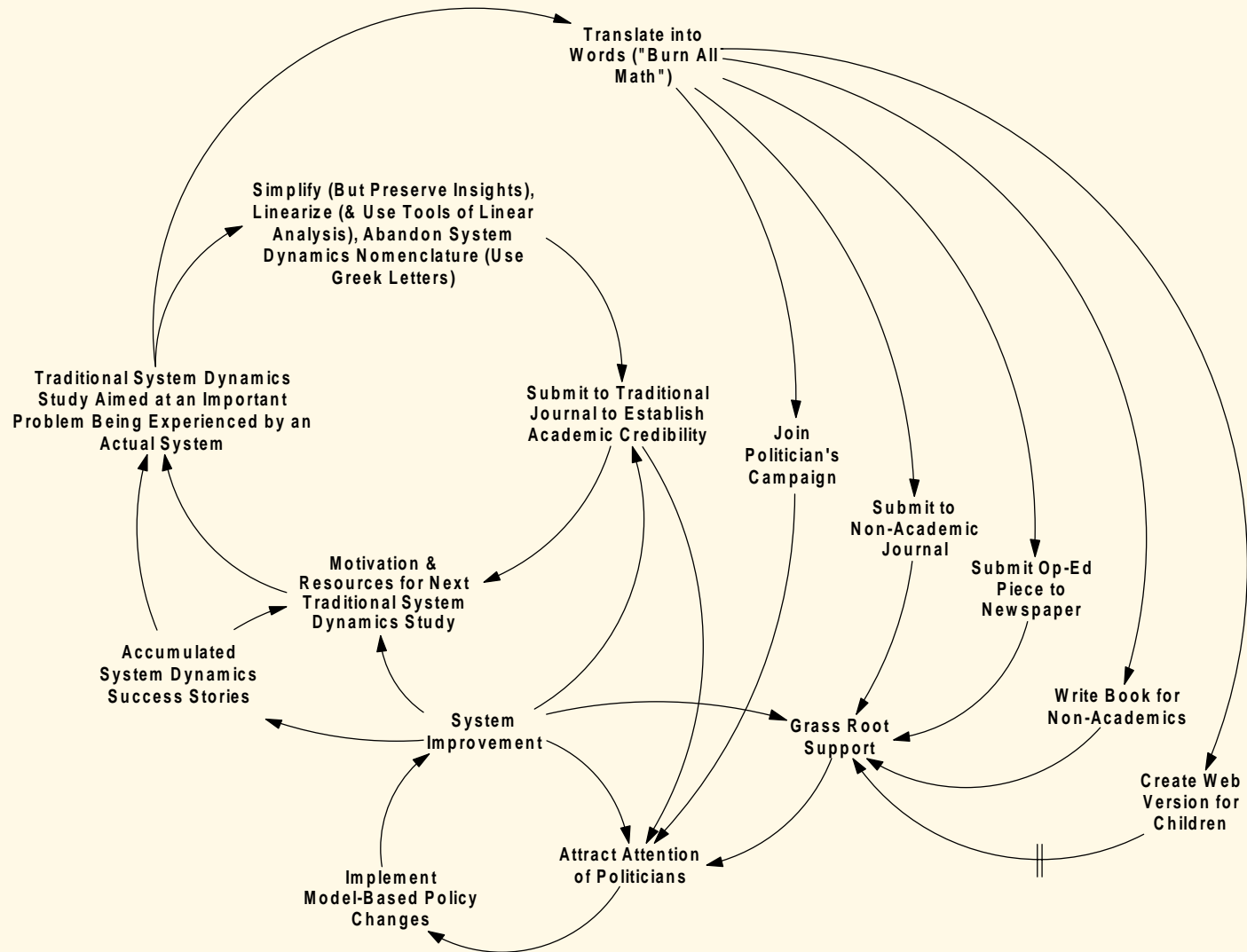
# Quote from Alfred Marshall

I had a growing feeling in the later years of my work at the subject that a good mathematical theorem dealing with economic hypotheses was very unlikely to be good economics: and I went more and more on the rules -

- (1) Use mathematics as a shorthand language, rather than an engine of inquiry.
- (2) Keep to them until you have done.
- (3) Translate into English.
- (4) Then illustrate by examples that are important in real life.
- (5) Burn the mathematics.
- (6) If you can't succeed in (4), burn (3).

This last I did often.

# How We Win



What can you do as part of a group to help grow the field of system dynamics?

# Growth of the Field: Collective Level

- Join/start a chapter and/or a SIG
  - They are the future of the field!
- Chapters & SIGs should have a presence at non-system dynamics conferences
  - Much easier than trying to convince non-SDers to attend the system dynamics conference

# Challenges to the Field

Postponing Saturation

Avoiding Overshoot & Collapse

# Challenges to the Field

- Improving the implementation of model-based results
  - Improving user interfaces
    - Many policy makers have used sophisticated simulators
      - Showing them bathtubs & faucets (or equations!) inadequate
    - Video game generation will soon be in charge
      - When you're used to X-Box and Play Station...

# Challenges to the Field

- Understanding model behavior (GPR)
  - In plain & convincing words, why did that happen?
  - How much will that option cost?
- Confidence & validation (GPR)
  - Why should I believe your results?



# Challenges to the Field

## - Consensus building

- Experts often disagree about what to do to solve important problems
- This is perhaps the most important thing system dynamicists can offer to policy makers
  - The modeling process, not the model

# Challenges to the Field

- Accumulating Wise Practice (GPR)
  - Importance of excellent system dynamics practice
    - No system dynamics is better than poor system dynamics
  - Professional accreditation?

## But, this Raises the Following Question:

- What should the properly trained system dynamicist know?
  - "Simulation scientist" instead of "system dynamicist"
    - Many simulation software packages can now be used to create SD, discrete event, agent-based, & hybrid models
  - Keeping students who studied system dynamics in K-12 interested and learning new things.
    - DynamiQUEST

# Challenges to the Field

- Improved Electronic Presence:
  - Richer content on the Society's web site
    - Should be "wiz-bang"
    - Model repository
    - Accumulated success stories

# Challenges to the Field

- Chapter and SIG web sites
- Distance learning
  - High quality system dynamics classes
    - Beginner through advanced level
  - Improved collaboration and group model building
- Open source materials

# Challenges to the Field

- Diversity
  - Gender
    - Do women feel welcome in the Society?
  - Age
    - Is the Society getting "old"?

# Challenges to the Field

## - Professional

- Do K-12 teachers & non-academics have a comfortable place in the Society?

## - Geographically

- Is the Society too USA-Euro-Centric?

But...

# Challenges to the Field

- Society Finances

- It's difficult to hold the annual conference (at least regularly) at venues that will not return a significant surplus to the Society
- Beer game sales help to keep the central office afloat



# Challenges to the Field

- We should survey our peer institutions to see what they do.
- Novel idea!
  - Can we use, say, system dynamics to help the central office think about policy design for sustainable operation?

# A Celebration of the Field

# Silver & Gold

- In 2007 we will celebrate the 50<sup>th</sup> anniversary of the founding of the field
- And, the 2007 conference will be the 25<sup>th</sup> annual conference
- We may not be perfect, but we have accomplished a lot and have much to celebrate

# Celebrate

See you all in Boston in '07!