



Psychology

# Special Interest Group

Ralph Levine & David Lounsbury, Co-Chairs

Roundtable and Business Meeting  
27<sup>th</sup> International Conference of the  
System Dynamics Society

Albuquerque, New Mexico      28 Jul 2009

# Use of Soft Variables in System Dynamics Models

## Examples:

- Trust
- Attitude
- Depression
- Anxiety
- Anger
- Satisfaction

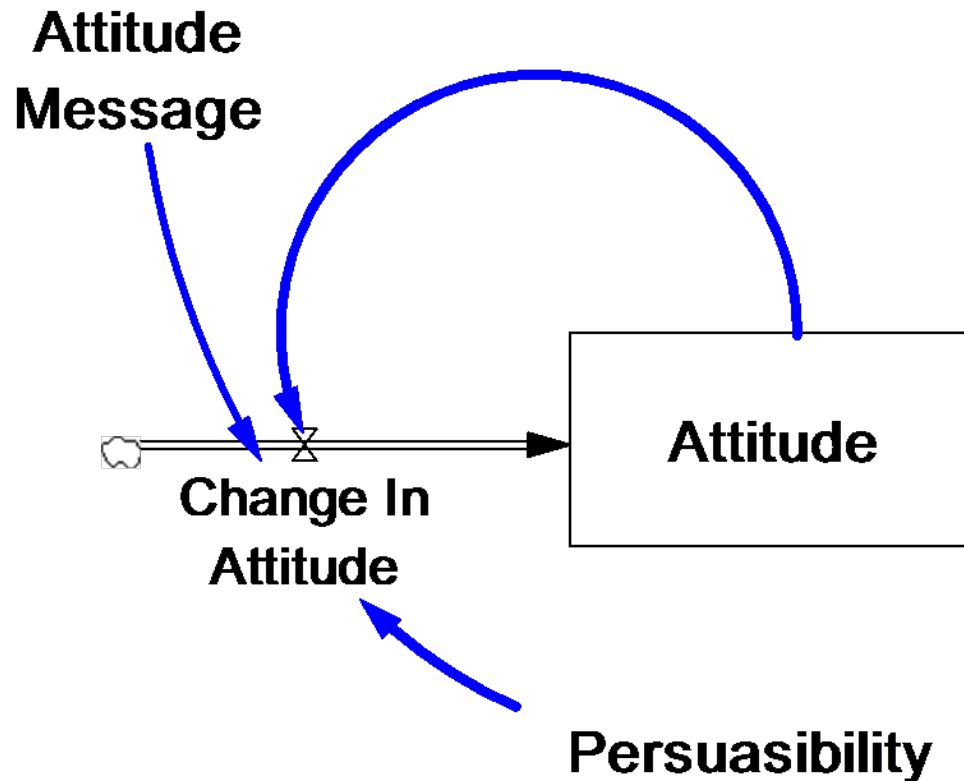
# Two Kinds of Models

1. Using social and psychological processes to embellish traditional system dynamics models
2. Focus on using system dynamics to test or develop psychological theories

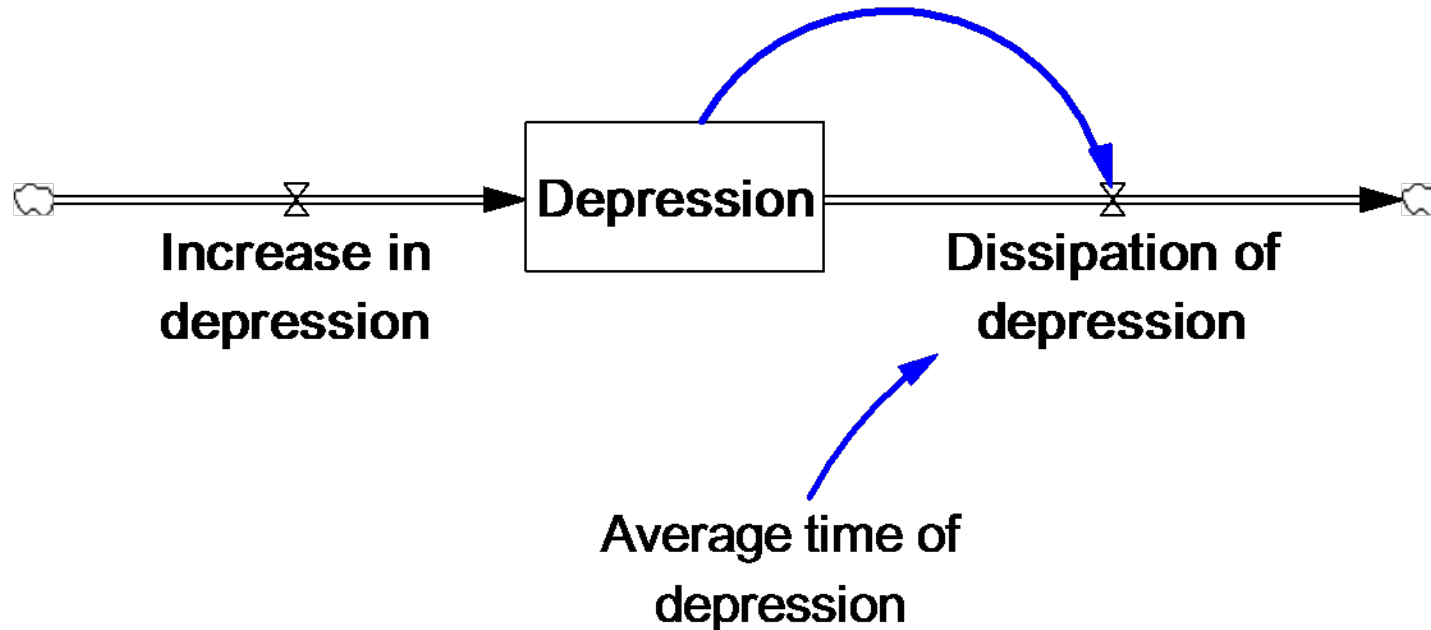
# Approaches to Modeling Social & Psych Processes

1. Smooth: First order information delay
2. Treat as conserved process: Bathtub metaphor; First order material delay
3. Co-flow: Dynamic characteristic of a material process

# Smooth: First Order Information Delay

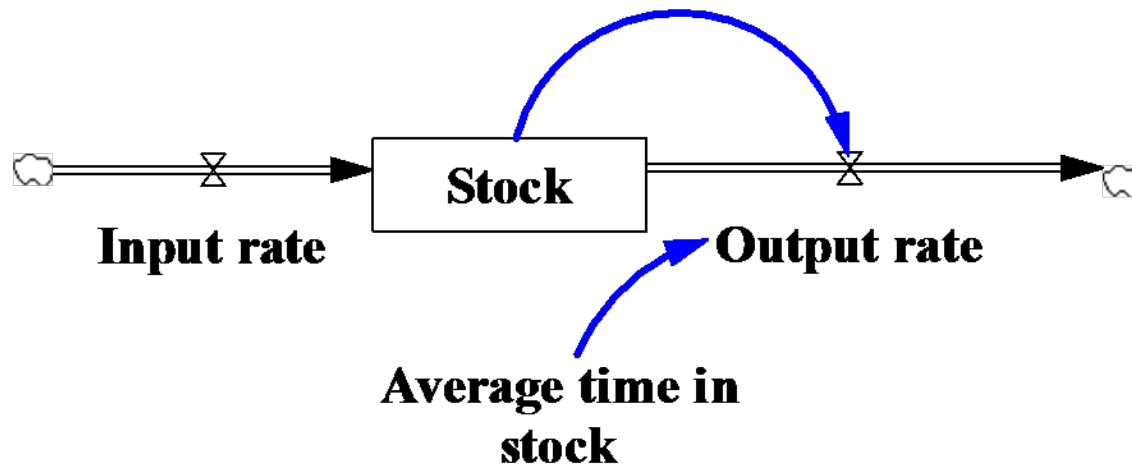


# First Order Material Delay

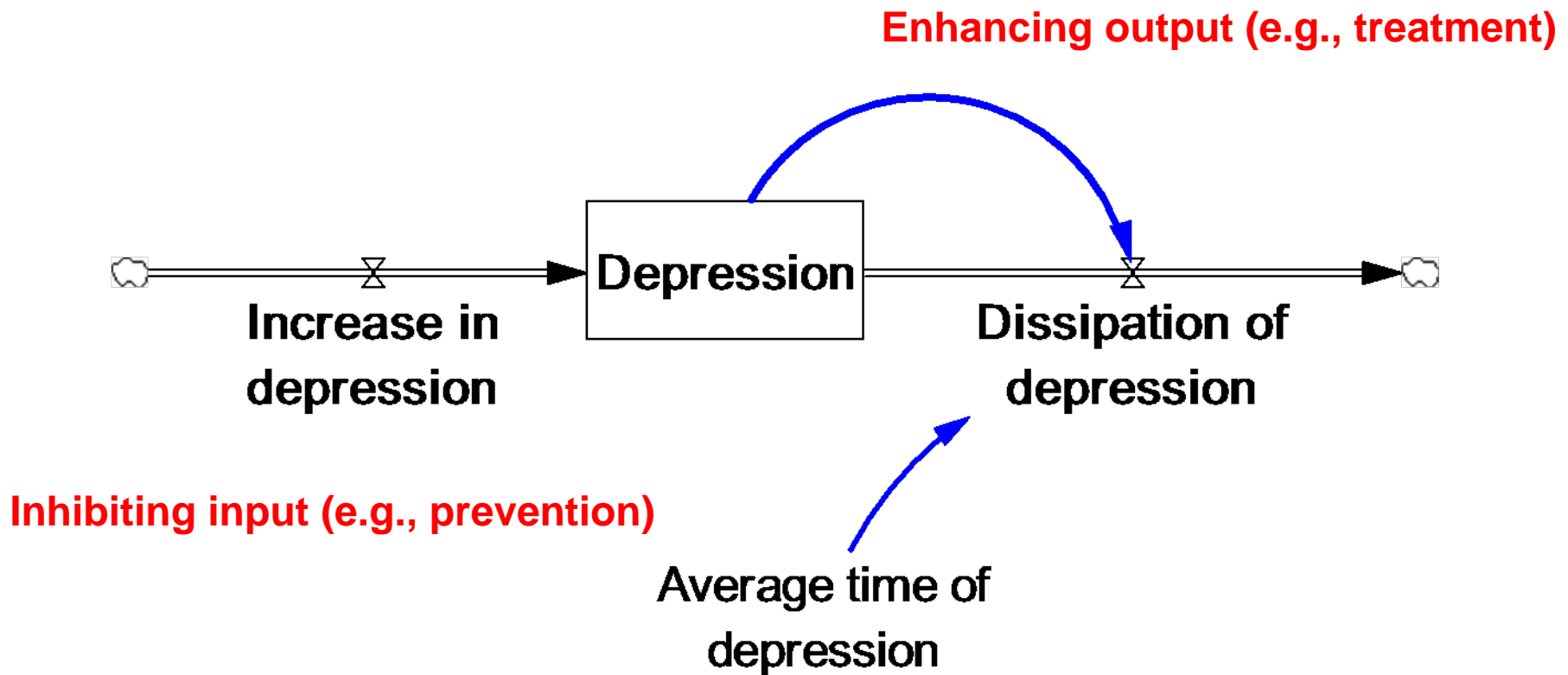


# Operations on the Rate of Change

	Input Rate	Output Rate
Enhancing		
Inhibiting		



# First Order Material Delay Operations

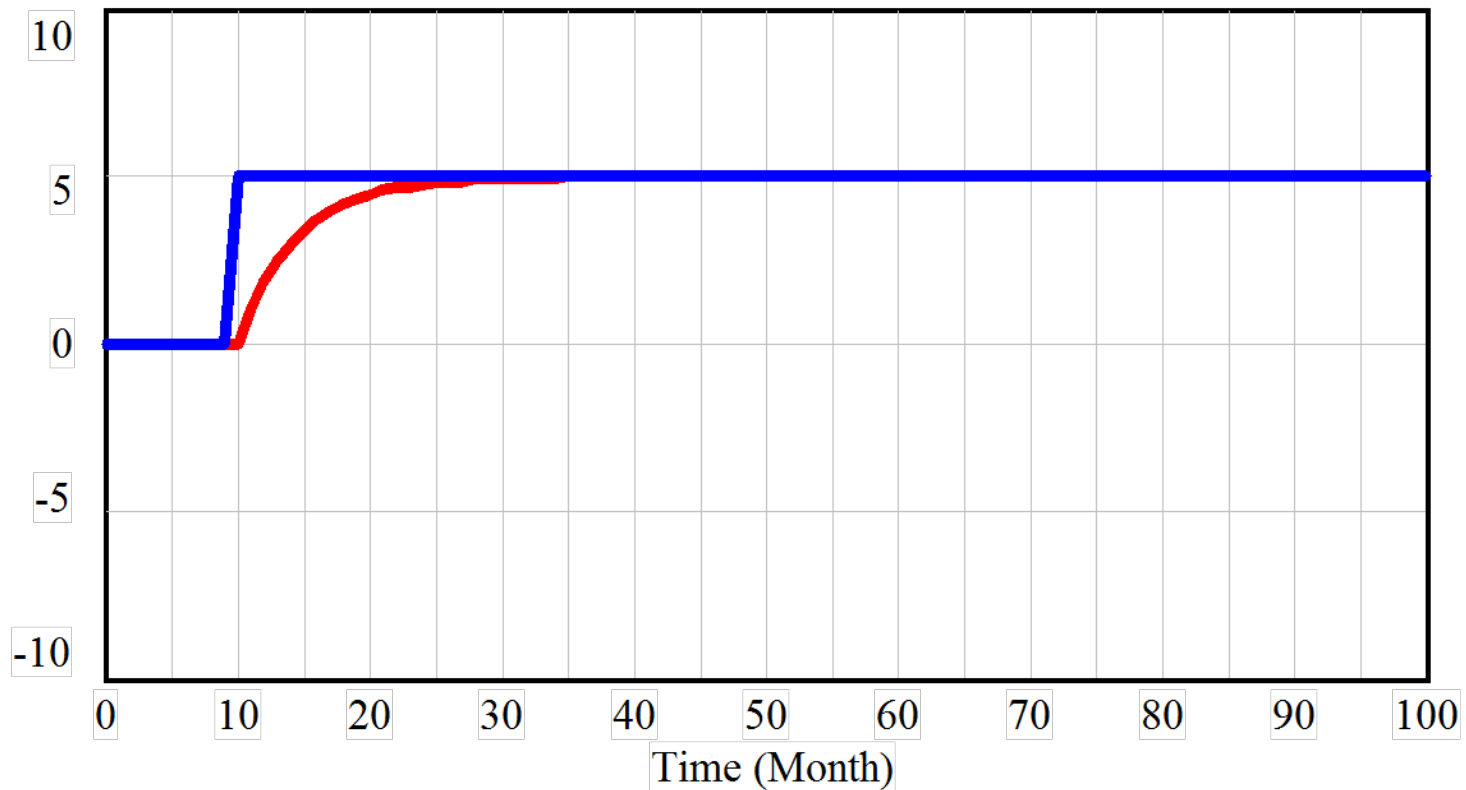




# iWarning!

There are differences between the behavior of the smooth and the first order material delay!

# Response to Step Change in the Input (Attitude Message)



Attitude Message : Base steo

Attitude : Base steo

# Smooth Equation

Change = (Goal – State) / Time

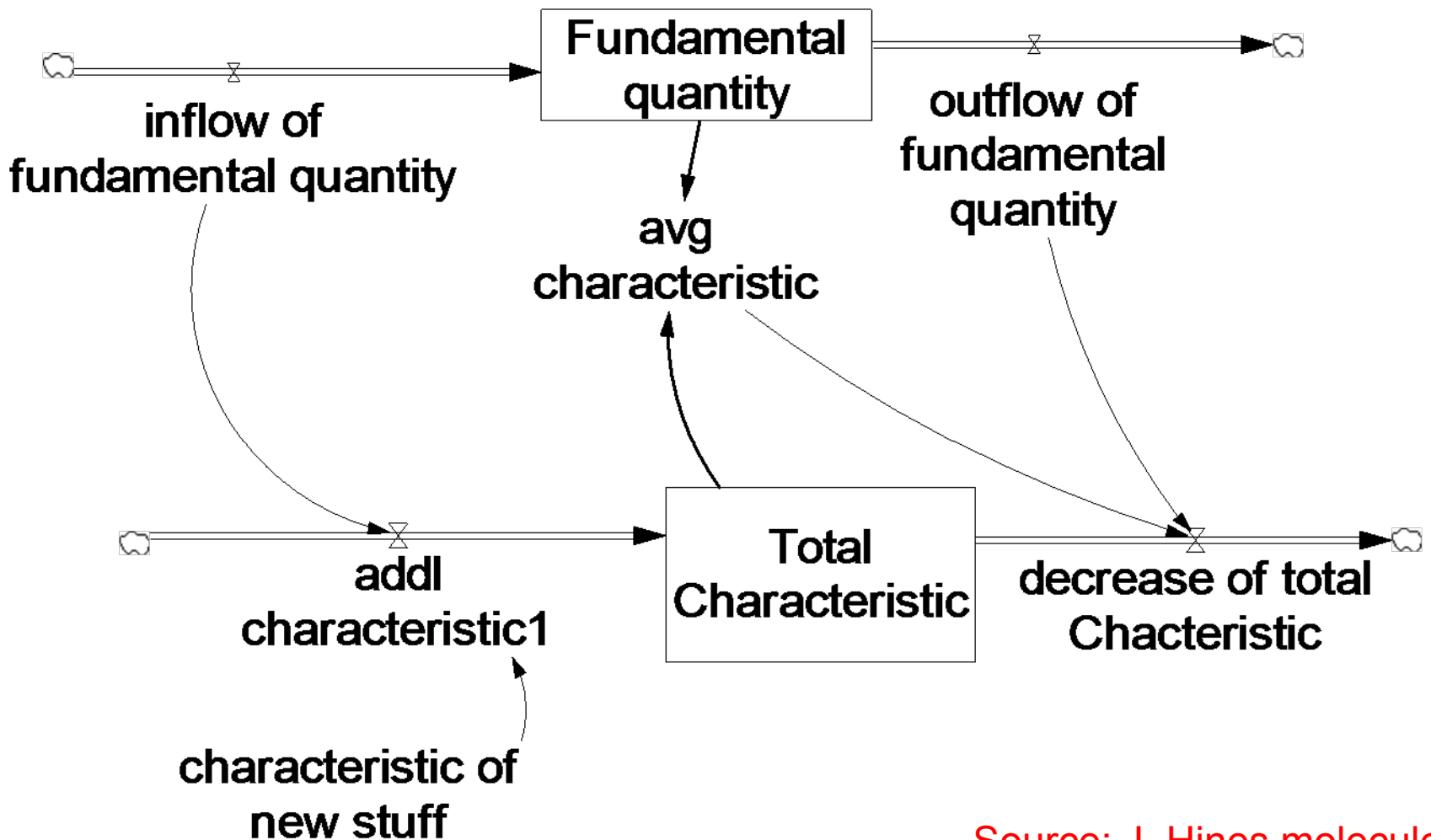
In equilibrium, Change = 0/Time = 0

# Material Delay Equation

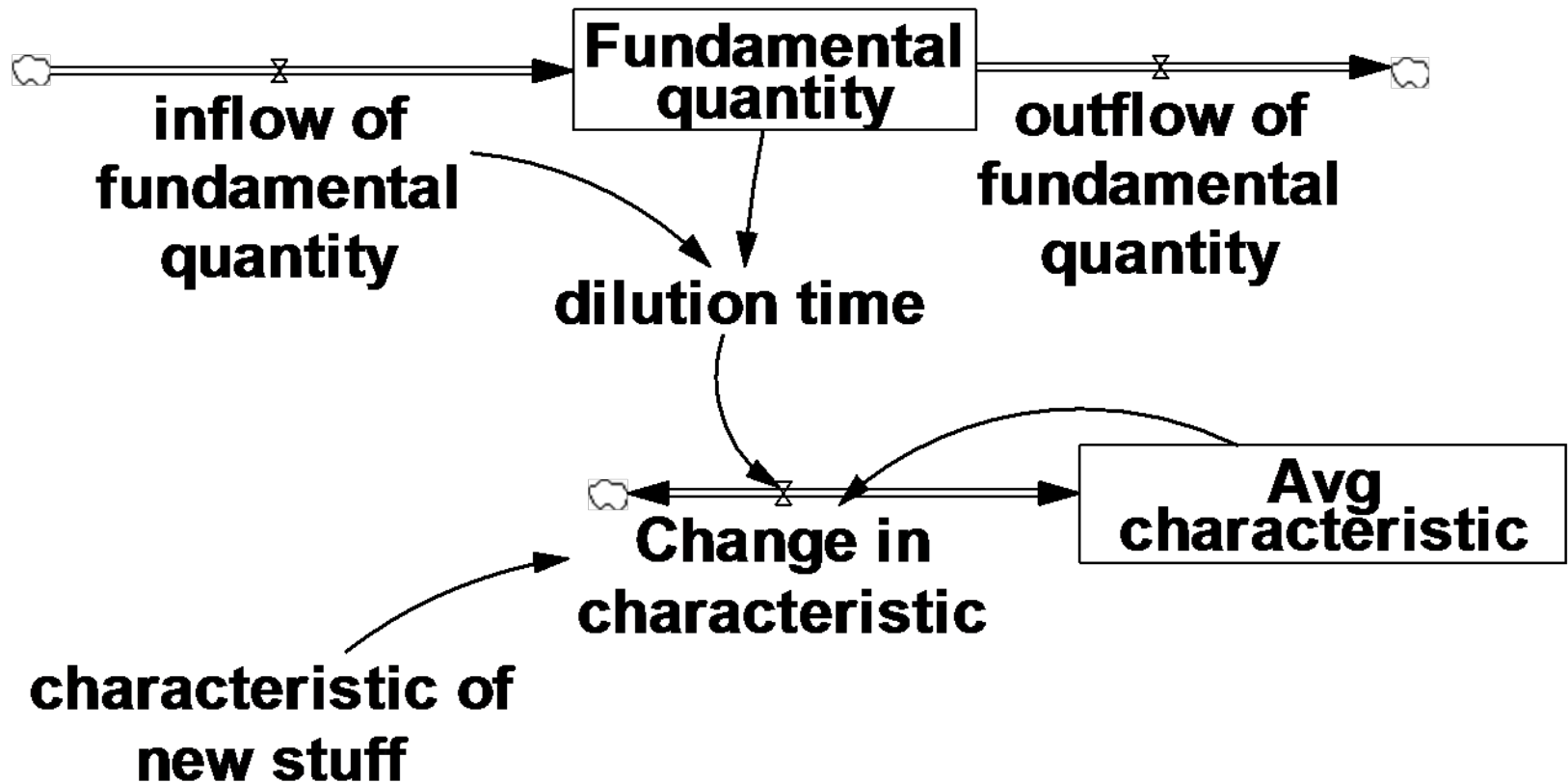
Input rate = Output rate = State / Time

State = Input rate x Time

# Co-Flow



# Hines Co-Flow



# Plenary Recap: Zimbardo's Prison Experiment

Launch Zimbardo SPE model

# NIH Program Announcements

(Patty Mabry, OBSSR)

- **PAR-08-224** *Using Systems Science Methodologies to Protect and Improve Population Health (R21)*
- **PAR-08-212, -213, -214** *Methodology and Measurement in the Behavioral and Social Sciences (R01, R21, R03)*
- **RFA-07-079, -080** *Behavioral and Social Science Research on Understanding and Reducing Health Disparities (R01, R21)*
- **PAR-08-023** *Predictive Multiscale Models of the Physiome in Health and Disease (R01)*
- **RFA-NR-09-005** *Incorporating Cost-Effectiveness Analysis Into Factors Affecting Quality-of-Life Health Related Research (R01)*
- **PA-07-427 (R01) ; PA-07-428 (R21) ; PA-07-429 (R03)** *Research on Alcohol-Related Public Policies such as Those Detailed in the Alcohol Policy Information System*

# SIG Business

1. Transition from Chapter to SIG and membership update
2. Proposed SIG project(s)
  - Developing a 'Call for Papers' for special issue on psychology and system dynamics modeling for SDR
  - WikiSD:Psychology (<http://systemdynamics.org/wiki/index.php/WikiSD:Psychology>)
3. Nomination of new Co-Chairs