

# Preface

This book is about describing community-based system dynamics (CBSD), an approach to doing system dynamics in community settings that has evolved over the last several years from the work we are doing in the Brown School Social System Design Lab at Washington University in St. Louis. As interest in these methods has grown around the world, there has been an increasing demand for resources that people interested in CBSD can draw on as they move forward in their own initiatives in communities.

Among the organizations and communities I have worked over the last 4 years in developing CBSD, three organizations deserve special mention, for they and the people they work with have taken risks and informed the methods: the Foundation for Ecology and Security (FES) in India led by Jagdeesh Rao, West End Mount Carmel Full Gospel Baptist Church in the West End neighborhood in St. Louis led by Bishop George White Jr., and the work in Ritenour High School in St. Louis led by principal Tony Robinson and assistant superintendent Mary Scheetz.

FES works with more than 4,200 villages spread across 7 states of India and is involved in restoring over half a million acres of common land and in advocating for better policy and programmatic action for the restoration and conservation of the commons in the country. For their work, FES was the first recipient of the Elinor Ostrom International Award on Collective Governance of the Commons for the year 2013. My colleague, collaborator, and dear friend Gautam Yadama introduced me to Jagdeesh Rao in 2008 as he passed through St. Louis on a visit. Peter Senge's book, *The Fifth Discipline*, had made a deep impression and impacted how FES operates in seeing people and natural resources as a system, and Jagdeesh was keen to see how FES could use the methods of system dynamics.

Our first pilot of this approach was in August 2009 and based in a small village of about 60 households in Boyapalle, Andhra Pradesh, a 3-h drive east from Bangalore. Gautam and I had already conducted a workshop in the prior year introducing system dynamics to FES staff and a group of local farmers they were already working with. Now, the goal was to see if FES could use the tools to engage a new community that they did not have a preexisting relationship with.

Since then, Gautam and I have conducted many workshops in India in collaborations with colleagues from FES, the Tata Institute of Social Sciences, Indian Institute for Technology in Bombay, and PRAYAS based in Pune. The ongoing work with the Andhra Pradesh cell led by Venkat Dyda is now the home of our annual System Dynamics Institute in India where students from the Brown School, staff from FES, and students and faculty from Indian institutions work in transdisciplinary teams to build system dynamics models with communities on watershed development. These institutes have been a major driver of innovation for the Social System Design Lab, our community-based work, and teaching of graduate courses in St. Louis at the Brown School. Jagdeesh Rao has through many evening conversations never failed to challenge me to push the approach and description further and was the first to really call out that what we were trying to do was more than just system dynamics given the emphasis in our work on advancing social justice.

The West End Mount Carmel Full Gospel Baptist Church FGB serves an urban neighborhood in St. Louis of about 9,500 residents and larger community and is located just northeast of Washington University in St. Louis where the Social System Design Lab is now located. The work in the West End has been a three-way collaboration between the Bishop George White, the Social System Design Lab, and Laura Brennan and her team at Transtria, LLC, also based in St. Louis. The Special Community Workgroup (SCW), the name of the core modeling team that has been meeting regularly since September 2010, leads this work.

I first met George White through an introduction by Terry Weiss. George and Terry tell a story about how they had been eating dinner in a local restaurant and noticing the prevalence of obesity. Terry had heard a talk that Laura had given in St. Louis on social determinants and health and approached her afterwards to see what could be done.

Laura and I are part of the original National Collaborative on Childhood Obesity Research (NCCOR) Envision Comparative Modeling (CompMod) network in a project that is sponsored by the National Institutes of Health (NIH) Office of Behavioral Social Science Research (HHSN276201200027C). Patty Mabry, a champion for advancing systems science to advance population health, is the Senior Advisor and Acting Deputy Director of OBSSR and codirector of Envision (with Regina Bures, *Eunice Kennedy Shriver* National Institute on Child Health and Human Development, NICHD). Patty has also been the codirector of the Institutes on Systems Science and Health with Bobby Milstein. Patty introduced Laura and me and encouraged us to submit a bid for a project to develop a system dynamics model on childhood obesity. Along the way, Patty meeting with colleagues in the Envision network provided a way to understand the value of what we were doing, where the gaps were, and in what directions to push the social innovations further and connected this work globally in collaboration with Steve Allender and Boyd Swinburn at the World Health Organization Collaborating Centre for Obesity Prevention at Deakin University in Victoria, Australia.

While the SCW that has guided this work over the last several years ebbed and flowed in membership, several members deserve special mention for the role they have played over the years. Jenny Manuel has been with the group from the beginning

and attended nearly every meeting. She likes to ask questions and is a champion of the community and developing principles for collaboration. Marie Coleman, who passed away last year, did not let us hide behind the equations and pushed us to improve the model in ways we would have otherwise missed. Artis Porter participated in a session, joined the SCW and several weeks later stood in front of the room as a community facilitator opening up the session. Sylvester Idleburg brought his knowledge of the community and gangs into the model along with an enthusiasm and outlook on life that inspires us all. Leonard Scruggs, retired from Boeing, knows about using models, design, and getting on with things. And of course, George White, who has not only opened up his church and community but also quickly picked up the idea of models, feedback, and system dynamics and brought them into the community through his Sunday sermons, writing, and presentations including a session at the 2011 Institute on Systems Science and Health in Pittsburgh.

Ritenour High School is a large urban high school in St. Louis with approximately 2,000 students in a school district that has over the last 5 years been committed to the vision of spreading systems thinking throughout the entire school district, from kindergarten through high school. Paul Newton, a system dynamics colleague at Boeing in Seattle, introduced me to Mary Scheetz in the fall of 2008. Mary Scheetz is well known within the field of systems thinking in schools having been introduced to system dynamics through Gordon Brown—Jay Forrester's teacher and mentor at MIT—in the mid-1980s. Mary has been a passionate leader and promoter of systems thinking in schools through her work in Tucson, the Waters Foundation, and eventually Ritenour School District (RSD) as an assistant superintendent.

When the Social System Design Lab was founded in 2009, one of the underlying principles was a commitment to education in system dynamics/systems thinking across the lifespan including K-12 education and an explicit relationship with RSD. This principle was inherently practical for the Social System Design Lab. With scarce resources, we could invest 4 years in training a doctoral student and then see them graduate, or we could invest 4 years in training high school students and see them go to college, some of whom might stay in the St. Louis area and become part of our resource pool for doing system dynamics research.

I first met Tony Robinson, principal of Ritenour High School, in the spring of 2010 during the first year of the Social System Design Lab, when Mary and Tony brought 15 students from the Safe School Ambassador's program to visit the lab and participate in a 3-h demonstration of group model building. Timothy Hower, Krista Chalise, and I led the students through a sequence of group model building scripts. The causal loop diagram contained variables about getting in fights, boyfriend-girlfriend drama, teen pregnancy, tension, and school participation.

Mary tells the story of a student being in awe of the causal loop diagram of the situation they just described, the power of that student coming up to the whiteboard to take the marker and edit the diagram, and the impact that had on the students and their learning of system dynamics. That was a pivotal moment when we realized we could unobtrusively teach system dynamics using group model building. Several weeks later in a second session at Ritenour High School, Krista asked them what kinds of conversations they had been having about the model.

Cassandra explained how she had intervened with a friend, retelling us how she has had laid out a long casual sequence of what would happen if her friend did what she was contemplating. It did not matter whether or not the model was “right” in an objective sense; all that mattered was that she was able to use the diagram to reason longer than her friend to stop the behavior. At the Systems Thinking in Schools Institute in St. Louis several months later, Ayden, one of Tony’s students, led a group of adults through the exercises we had used in the first workshop. We joked that if we had known they would be doing that, we would have given them the scripts, a practice that we have since adopted.

Over the years, we did more workshops including a one-day group model building workshop led by Ayden and Lorena, another of Tony’s students. Some of the students have now graduated and gone to college in the St. Louis area, while some of our very best students in the Social System Design Lab have decided to go into K-12 education. Innovations that students from RHS have codeveloped are spreading to other parts of St. Louis, the USA, and Canada, and the rest of the world including India, China, Mesoamerica, and Australia.

I have learned and changed much in the course of this work and developing CBSD and see the communities and their members as my teachers. They have taken risks and invested in a process that did not have a name when we started. In an effort to help sustain the work in these communities, my portion of the proceeds from this book will be divided between FES, the West End Mount Carmel Full Gospel Baptist Church, and Ritenour School District. Even small changes embedded in feedback loops that accumulate can have powerful effects.

This book is for anyone interested in helping to make communities a better place and advance social justice using system dynamics and group model building. My hope is that the social innovation continues to improve the methods and the lives of the people in communities around the world, giving people a new way to view situations, empower them to use the methods in their own way, and draw on the rigor that system dynamics has to offer in thinking about feedback systems from an endogenous perspective.

St. Louis, MO, USA

Peter S. Hovmand

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Hovmand, P.

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