Rethinking the System of Survival for Sudden Cardiac Arrest

April 29, 2011
But, first, 3 self-serving promotional slides

Organizational Dynamics
Graduate Studies

- 34th year
- 50 faculty, 17 disciplines
- 420+ adult, mid-career working professionals
- Part-time and full-time graduate studies
- Individually designed curricula

Integrated Applied Scholarship
Navigate And Lead in Today's Complex World

Learn about how Organizational Dynamics can help you excel in today's environment.

Dynamics. Applied.

Sudden Cardiac Arrest is a Wicked Problem. It's a Mess.

Why despite the best efforts by everyone from lay person to professional responder do 93% of those who experience Sudden Cardiac Arrest (SCA) in Philadelphia not survive? Read More

What's New

MAY GRADUATION IS APPROACHING!
Click here for more information.

DYNAMICS STUDENT HONORED AS DEAN'S SCHOLAR
From the 2290 students in the Graduate Division nominated, 1 Professional Masters student – Imran Ullah-Rahman, MDCM candidate - won the award. Read More

CALENDAR OF IMPORTANT EVENTS, 2011
For a list of important events see the new Bulletin Page.

REGISTER FOR A SUMMER CLASS NOW!
Open registration for the summer 2011 semester has begun. It runs from March 21st to April 23rd. Choose your courses and register here.

Featured Community Success Stories
See all stories.
Integrated Applied Scholarship

Organizational Dynamics concerns multi-disciplinary and integrated organizational education to navigate, lead and sustain in the continuously changing, increasingly complex and diverse global environment.
17 Domains of Organizational Dynamics
Faculty and Scholars

Anthropology, Economics, Education, Engineering, English, Design and Planning, Health Care, Humanities and Languages, Human Resources, Law, Management, Philosophy, Political Science, Politics, Psychology, Organizational Science, and Sociology
Rethinking the System of Survival for Sudden Cardiac Arrest

April 29, 2011 Meeting
Innovation in SCA Survival: Design and Research

AM: “Systems and Design Thinking” about a system (such as a Health System): Organizational Dynamics

PM: “Analytic Evidence-Based Research Thinking” about a system (such as a Health System): Center for Resuscitation Science
Ways to Think and Know about our World

- **Narrative** – present stories, personal experiences and anecdotes in conversation, training, via film, literature.

- **Research/Analytic** – conduct controlled studies where knowledge is reality/use evidence-based criteria.

- **Design/Systemic** – produce what does not yet exist/create something new based on what is desired.
“Analyze” means to break into parts so this type of thinking seeks to deconstruct a problem and to search for and determine (root) causes, states and effects. Appropriate in complicated problems.
Research/Analytic Evidence-Based Thinking

AHA Science Advisory

Hands-Only (Compression-Only) Cardiopulmonary Resuscitation: A Call to Action for Bystander Response to Adults Who Experience Out-of-Hospital Sudden Cardiac Arrest

A Science Advisory for the Public From the American Heart Association Emergency Cardiovascular Care Committee

Michael R. Sayre, MD; Robert A. Berg, MD, FAHA; Diana M. Cave, RN, MSN; Richard L. Page, MD, FAHA; Jerald Potts, PhD, FAHA; Roger D. White, MD
Research/Analytic Evidence-Based Thinking
Research/Analytic Evidence-Based Thinking
Current Way We Think about SCA Survival

Survival rate = 67% − 2.3% per minute to CPR − 1.1% per minute to defibrillation − 2.1% per minute to ACLS,

Predicting survival from out-of-hospital cardiac arrest: A graphic model
Larsen, Eisenberg, Cummins, & Hallstrom (1993)
Current Way We Think

With a linear chain model, the links are additive so each can be improved and strengthened. If each link is independently made stronger then the whole chain and survival will be improved.

In a linear chain model we can benchmark – use the best practices of other cities, of science and medical research – and apply these locally expecting the results will be positive.
However, after 40 years, the Problem Remains

Less than 1/3 of out-of-hospital sudden cardiac arrest victims receive bystander CPR.

If a person has a cardiac arrest at home or on the streets of Philadelphia, the survival rate is 7%.

Overall average survival rate in the US is under 8%.

Some cities, such as Seattle, have a remarkably higher rate – nearly 40% - but only if the victim experiences ventricular fibrillation, and replication has been difficult.
However, the Problem Remains

If what we are doing is acceptable then we should continue.

If not then we should think about another way.

We cannot solve our problems with the same thinking we used when we created them.

Albert Einstein
Why is Survival so Low?

Hypothesis 1:

The problem is a very difficult and complicated medical problem.

We need to continue as in the past but work harder, smarter. We need more resources, more improvement, more research, more science so that the experts in health care can use analytic/research methods to solve this problem.
Hypothesis 2:

This is NOT a complicated medical problem. It is a medical problem, a resource problem, a regulatory and policy problem, a technology problem, a communication problem, an education problem, a culture problem, a leadership problem, a multi-stakeholder organizational problem, and more.

This is a “mess” also referred to as a wicked or a complex problem. This type of problem requires a different mindset and different methodology tools.
Another Way to Think

Systems and Design Thinking
Systems and Design Thinking

"I'm sure glad the hole isn't in our end..."
Systems and Design Thinking

- Systems thinking does not break down or deconstruct a topic or problem into parts either to understand it or to intervene.

- Systems thinking focuses on forces in the environment and on relationships, interests and purposes among the parts rather than on the parts themselves.
Systems and Design Thinking

Complex organizational systems – in which there are many people, groups, organizations each with their own interests and purposes - are best understood and managed with complex organizational thinking, models, and methodologies.
SCA Survival as Linear but Complicated
Single Organization Complexity

The complexity an organization needs to deal with.

Organization Complexity

- Strategy
- Stakeholders
- Value Chains
- Opportunities
- Mission
- Goals
- Objectives
- Constraints
- Weaknesses
- Vision
- Strengths
- Requirements
- Organizations
- Processes
- Products
- Events
- Services
- Methodsologies
- Triggers
- Skills
- Procedures
- Workflow
- Responsibilities
- Roles
- Business Rules
- Risks
- Financial Assets
- Objects
- Business
- Jobs
- People
- Projects
- Time
- Facilities
- Data
- Information
- Tax
- Information
- Knowledge
- Cost
- Legal
- Applications
- Systems
- Models
- Locations
- Middleware
- Use Cases
- Hardware
- Networks
Consider 3 increasingly complex organizational problems

1. **International House of Philadelphia** - a multicultural residential center that welcomes scholars from around the world and offers international arts and humanities programs.

2. **Foreign Policy Research Institute** - a “think-tank” devoted to bringing the insights of scholarship to bear on the development of policies that advance U.S. national interests.

3. **Penn Neurosciences** - a community of hundreds of people, groups, programs, centers, institutes, departments, crossing 12 schools.
Consider 3 increasingly complex organizational problems

1. What did the client describe as the presenting problem and solution?
2. How was the presenting problem understood by system and design thinkers?
3. What system diagnosis was conducted? How was it accomplished and by whom?
4. What design methodology is being applied and by whom?
BREAK

Take a break.

Return in 10 minutes for the Bill and Melinda Gates Design Challenge.
Bill and Melinda Gates Challenge

Suppose the Gates Foundation offered unlimited resources to the best design for the ideal system that would enable survival from out-of-hospital sudden cardiac arrest in a community of 1 million people.

▪ What elements or characteristics would be needed?

▪ What would you like – your wishes – to be in place for this to occur today?
Bill and Melinda Gates
Challenge Design Rules

- You are designing from “nothing”
- There is nothing in place at present and so nothing to improve
- Focus on what you want – your ideal
- Do not focus on what is not needed
- If you disagree offer an alternative
- One conversation at a time
- Stay focused on the task
- Encourage wild ideas
- Go for quantity
- Be visual
- Defer judgment
- Build on the ideas of others
- Do not worry about resources
- Do not worry about implementation