improv science • DIVERSITY

Deep Dive for Women in Cyber Security

Team for Research in Ubiquitous Secure Technology

BOSTON UNIVERSITY

HPC LDC

XSEDE
Extreme Science and Engineering Discovery Environment

improvscience · Raquell M. Holmes, Ph.D. · Cornell University, Ithaca, NY · raquell@improvscience.org

What we are going to do

Brief introduction

Get to know one another (Exercises)

Create exploratory conversations on:

-networking

-communication

-advancement

-challenges, successes

Wednesday Part II: How are we doing?

Creating change is always active

Not all efforts to create social change have a large audiences.

They do involve doing something that is new, not previously seen or done in that context (culture, environment, department).

How do we advance?

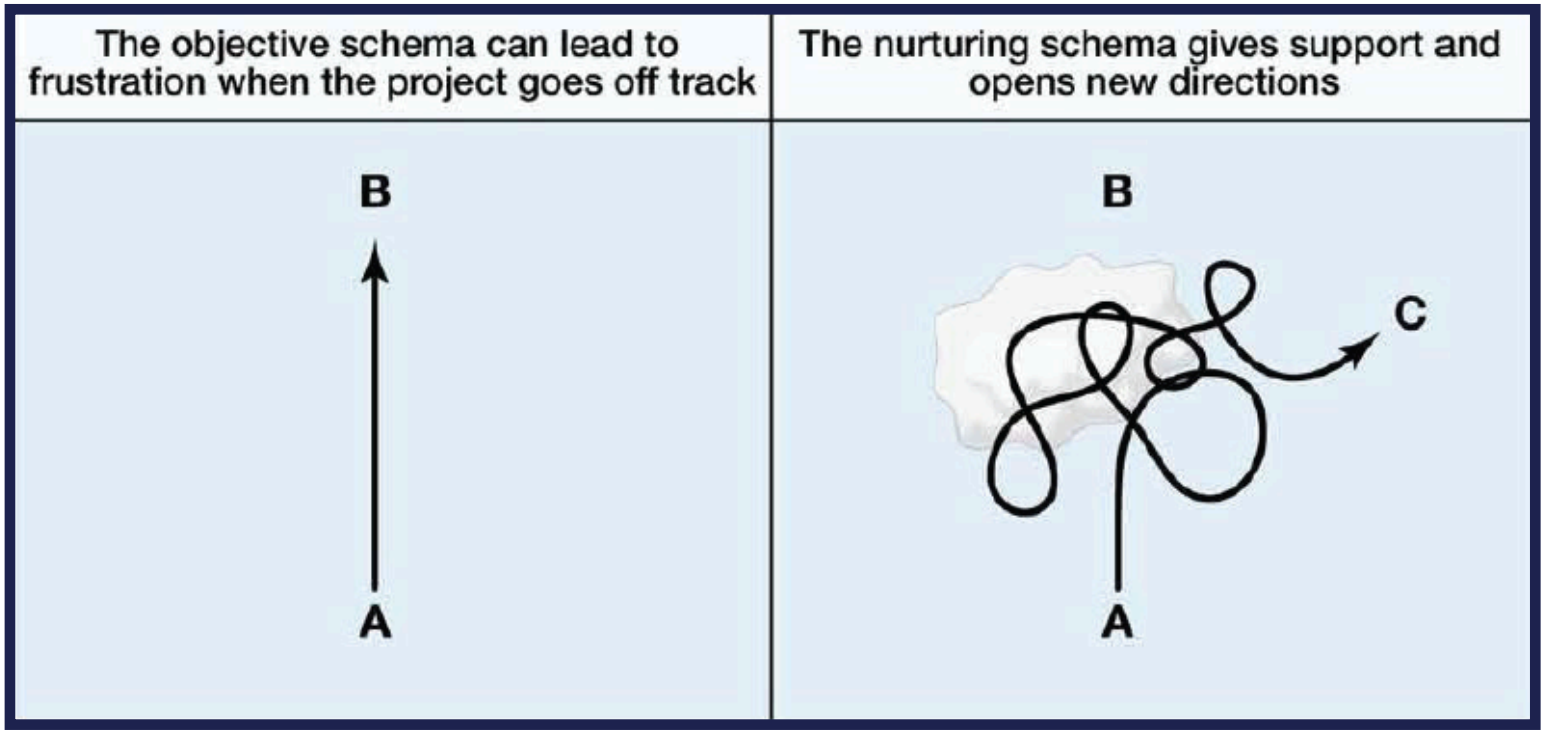
From the abolitionists to the Vietnam peace movement, to the struggle for an Equal Rights Amendment, women have played an organic role in social and political change.

Who are we?

What does it mean to advance our career?

What does it have to advancing women in cyber security?

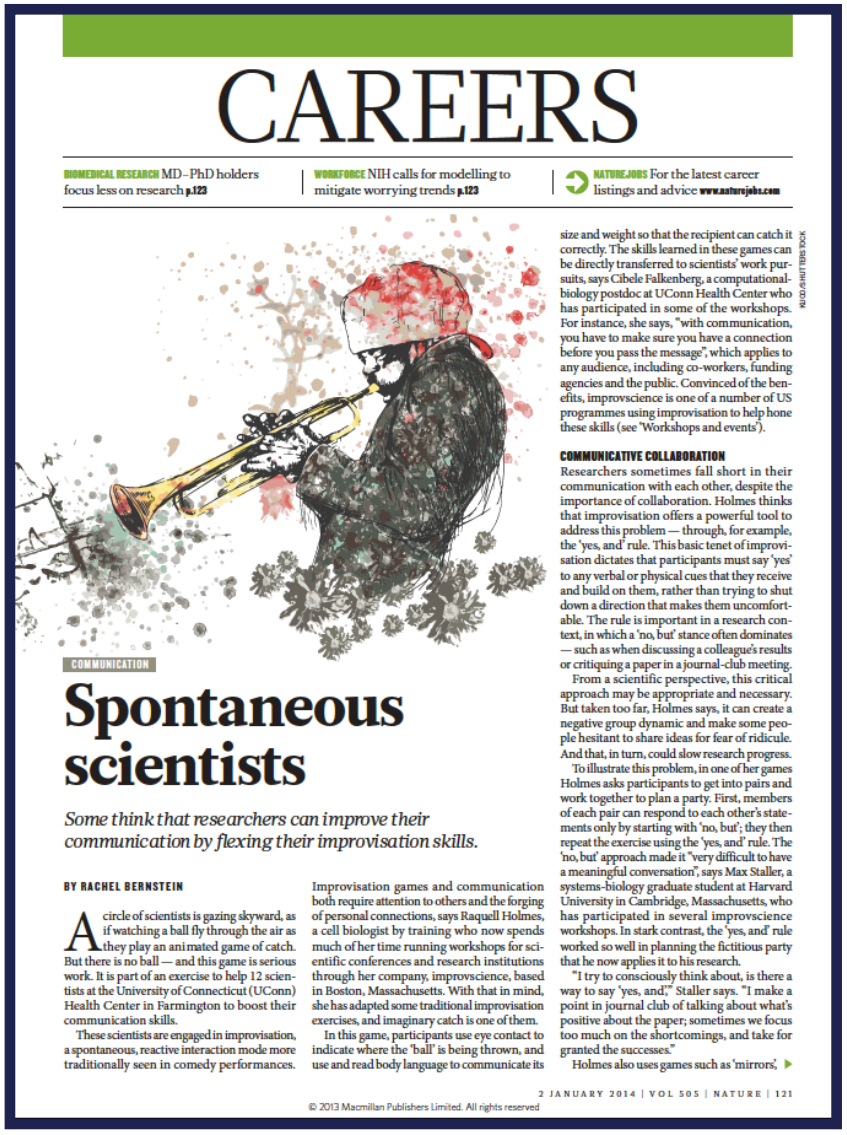
Career and research journey



...The researcher has entered a phase linked with emotions that may be called 'the cloud.'...Sailing into the unknown again and again takes courage; **seeing there something different from expectations, and usually more rich and strange, requires uncommon openness.**

—**Alon** 2009 "Choosing a Good Scientific Research Problem"

Communicating Science



CAREERS

BIOMEDICAL RESEARCH MD–PhD holders focus less on research p.123 | WORKFORCE NIH calls for modelling to mitigate worrying trends p.123 | NATUREJOBS For the latest career listings and advice www.naturejobs.com

COMMUNICATION

Spontaneous scientists

Some think that researchers can improve their communication by flexing their improvisation skills.

BY RACHEL BERNSTEIN

A circle of scientists is gazing skyward, as if watching a ball fly through the air as they play an animated game of catch. But there is no ball — and this game is serious work. It is part of an exercise to help 12 scientists at the University of Connecticut (UConn) Health Center in Farmington to boost their communication skills.

These scientists are engaged in improvisation, a spontaneous, reactive interaction mode more traditionally seen in comedy performances. Improvisation games and communication both require attention to others and the forging of personal connections, says Raquell Holmes, a cell biologist by training who now spends much of her time running workshops for scientific conferences and research institutions through her company, improvscience, based in Boston, Massachusetts. With that in mind, she has adapted some traditional improvisation exercises, and imaginary catch is one of them.

In this game, participants use eye contact to indicate where the 'ball' is being thrown, and use and read body language to communicate its size and weight so that the recipient can catch it correctly. The skills learned in these games can be directly transferred to scientists' work pursuits, says Cibele Falkenberg, a computational-biology postdoc at UConn Health Center who has participated in some of the workshops. For instance, she says, "with communication, you have to make sure you have a connection before you pass the message", which applies to any audience, including co-workers, funding agencies and the public. Convinced of the benefits, improvscience is one of a number of US programmes using improvisation to help hone these skills (see 'Workshops and events').

COMMUNICATIVE COLLABORATION

Researchers sometimes fall short in their communication with each other, despite the importance of collaboration. Holmes thinks that improvisation offers a powerful tool to address this problem — through, for example, the 'yes, and' rule. This basic tenet of improvisation dictates that participants must say 'yes' to any verbal or physical cues that they receive and build on them, rather than trying to shut down a direction that makes them uncomfortable. The rule is important in a research context, in which a 'no, but' stance often dominates — such as when discussing a colleague's results or critiquing a paper in a journal-club meeting.

From a scientific perspective, this critical approach may be appropriate and necessary. But taken too far, Holmes says, it can create a negative group dynamic and make some people hesitant to share ideas for fear of ridicule. And that, in turn, could slow research progress.

To illustrate this problem, in one of her games Holmes asks participants to get into pairs and work together to plan a party. First, members of each pair can respond to each other's statements only by starting with 'no, but'; they then repeat the exercise using the 'yes, and' rule. The 'no, but' approach made it "very difficult to have a meaningful conversation", says Max Staller, a systems-biology graduate student at Harvard University in Cambridge, Massachusetts, who has participated in several improvscience workshops. In stark contrast, the 'yes, and' rule worked so well in planning the fictitious party that he now applies it to his research.

"I try to consciously think about, is there a way to say 'yes, and,'" Staller says. "I make a point in journal club of talking about what's positive about the paper; sometimes we focus too much on the shortcomings, and take for granted the successes."

Holmes also uses games such as 'mirrors,' ▶

Improvisational skills are central to communication, creativity and building your career.

—**Bernstein,** 2014, Communication: Spontaneous Scientists. NatureJobs

Improvisation: Creating unscripted scenes together

improvisational theater games and exercises created in which people collectively solve problems. This includes the problem of creating the inclusive group that can solve problems.

-Spolin,1999. Lobman & Lundquist. 2007

improvisation in science is colleagues listening to one another, building with each others ideas, and responding flexibly together to new challenges. These skills allow scientists to transform work environments into scientific playgrounds of exploration and innovation.

improvisational workshops for scientists

Improvisation: Creating unscripted scenes together

Tenets of Improvisation

Make your partners look good

Focus is on the "ensemble" • Not about being funny

Yes, and

Radically accept what's already happened • Build with it

Make and receive offers

EVERYTHING is an offer

Do not pre-determine a scene

It's okay not to know • The collective creation is the focus

Improvisation: Creating unscripted scenes together

Games we played

Synchronized clap

Zip, Zap, Zop

variations: referee • switch • multiplies

Name, gestures

How have women advanced?

For many people the word "radical" brings up images of agitation, angry crowds, and stirring public speeches. It also evokes dedication, commitment, and a struggle against overwhelming odds. The word "women" calls forth mental pictures of the home—privacy, nurture of children, charity, and church work. The two words do not sit together easily: "radical women" is an unfamiliar combination.

Who are we?

What does it mean to advance our career?

What does it have to advancing women in cyber security?

Creating new conversations

- What do you love about your work?
- What do you aspire to?
- What challenges do you have where you are? What is in the way of reaching aspirations
- What are the challenges at your institution?

How have women advanced?

Like most women of my generation, I had learned little women's history. Our history books mentioned women only in the temperance and suffrage movements, always in the passive voice. We learned that women "were given" the vote in 1920 because of their contributions to the war effort in World War I. No mention of the specific details that composed the historic reality: ninety years of activism by successive generations of women who raised millions of dollars in pennies and nickels to finance and organize 56 different campaigns for state referenda, 480 campaigns to urge legislatures to put woman's suffrage on the ballot, 47 campaigns for state constitutional conventions, 30 campaigns to urge presidential party platforms to include woman's suffrage as a plank, 19 lobbying efforts with nineteen successive Congresses before the Nineteenth Amendment was ratified. On August 26, 1920, American women gained political citizenship and with it the tools to open doors to education and economic independence.

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