

Statistics and Applied Improvisation

Strange but Necessary Bedfellows

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Disclaimer

The author fully appreciates the irony and absurdity of using a prepared talk to discuss improvisation.

But here we are.

Outline

Where are we going today?

- About me
- A brief history of improvisation
- Define applied improvisation
- My personal journey with improvisation
- Statistics and applied improvisation
- Improvisation concepts
- Looking towards the future

About me

- **Education**

- BS in Mathematics
- MS and PhD in Biostatistics

- **Work**

- Internship at National Institute on Aging at National Institutes of Health (Government)
- Student research assistant and consultant at UNC (Research and Consulting)
- Bristol-Myers Squibb (Large Pharmaceutical Company)
- Inspire Pharmaceuticals (Small Pharmaceutical Company)
- JMP Statistical Discovery LLC (Software Company)
- Target RWE (Data Company)
- Lexitas Pharma Services (Contract Research Organization)
- JMP Statistical Discovery LLC (Software Company)*

- **Other**

- Adjunct at University of North Carolina at Chapel Hill
- Fellow of the American Statistical Association
- Active volunteer on several ASA committees
- **Teach workshops in applied improvisation to scientists, most notably statisticians and data scientists**

Improvise

Definition

- im·pro·vise (*verb*): create and perform (music, drama, or verse) spontaneously or without preparation
- Often think of improvisation being applied in
 - Music
 - Cooking
 - Dancing
 - Theater
 - Comedy
 - MacGyver (or his comedic doppelganger MacGruber)
- People rarely think about improvisation in the context of our communication, but people improvise everyday!

A Brief History of Improvisation

How did this all start?

- Neva Boyd
 - Sociologist at Northwestern University
 - Early theorist of the educational and social benefits of play
 - “Play involves social values, as does no other behavior. The spirit of play develops social adaptability, ethics, mental and emotional control, and imagination.” – *The Theory of Play*
- Viola Spolin
 - Theatre academic, educator, and acting coach
 - Developed games to teach theater concepts to children and recent immigrants in low-income neighborhoods with limited English skills
 - Goal is to overcome the approval-disapproval syndrome that blocks creativity and authentic relationships in an effort to please others
 - Seminal book: *Improvisation for the Theatre*



Neva Boyd

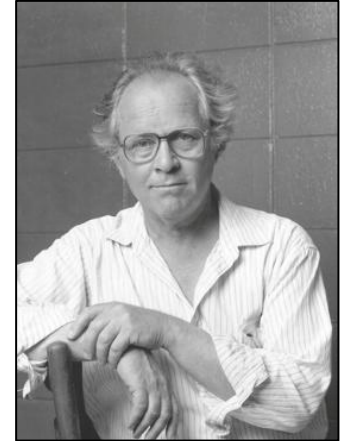


Viola Spolin

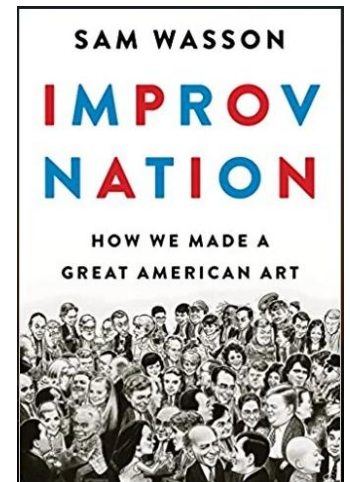
A Brief History of Improvisation

How did this all start?

- Paul Sills
 - Cofounded the Compass Players, first improvisational theater in the US
 - Cofounded Second City
 - Son of Viola Spolin
- Some additional highlights
 - Nichols and May
 - Groundlings, UCB, IO Theatre, The Annoyance
 - Saturday Night Live
 - SCTV
 - Countless Movies



Paul Sills



Applied Improvisation

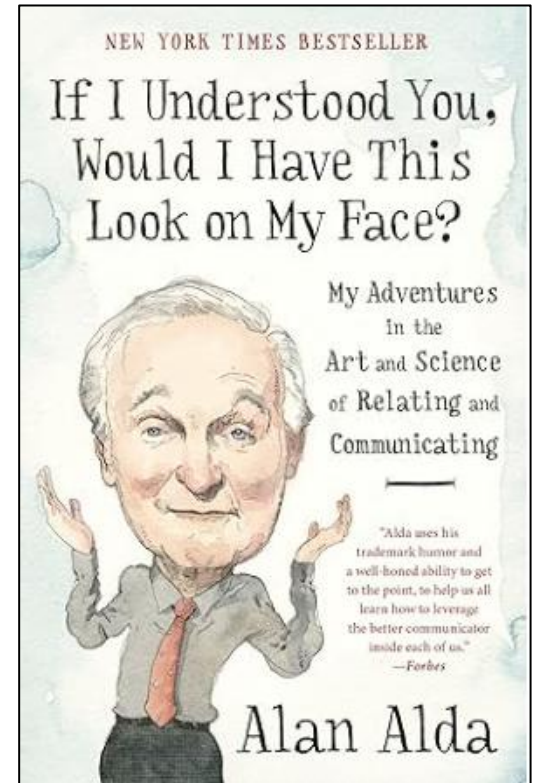


- Applied improvisation is the application of theatre games and exercises to help individuals develop and expand quick thinking, confidence, communication, and collaboration
- Applications
 - Business to assist with client interaction
 - Medicine for physicians and nurses to engage their patients
 - Science to engage collaborators and non-technical colleagues
 - Leadership and coaching

Science and Applied Improvisation

Alan Alda planted the seed

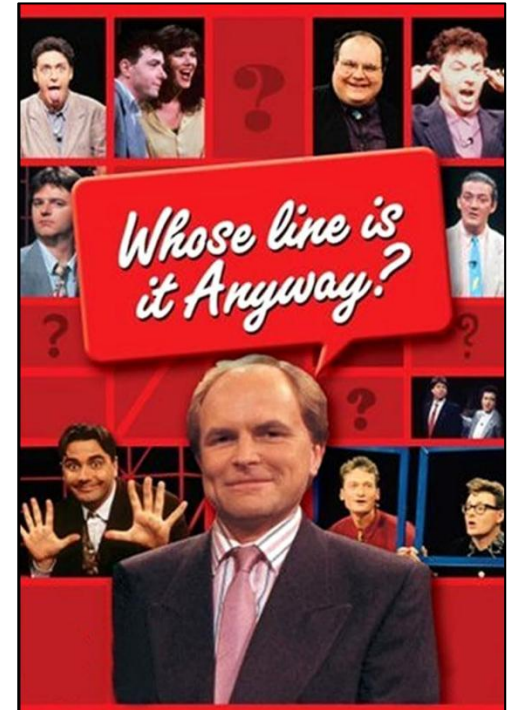
- Member of the Compass Players, 1950s
- Scientific American Frontiers, 1990-2005
 - 15 seasons, 96 episodes
- [Alan Alda Center for Communicating Science](#) at Stonybrook University, 2009
- [Episode 735](#) of the **WTF Podcast with Marc Maron**, August 2016
- Book: *If I Understood You...*, June 2017



My Personal Journey with Improv

To become a better scientist

- Whose Line is it Anyway?
 - British version, 136 episode
 - 1988-1999, Channel 4
 - American version, 431 episodes
 - 1998-2004, ABC
 - 2005-2007, ABC Family
 - 2013-2024, The CW
- The WTF podcast with Alda gave me the permission I thought I needed to start my journey



Statistics and Applied Improvisation

It all starts with a single step

- Fundamentals of Improv Comedy for Scientists, 2017
- Took an entire 5-level improv series and other electives
- Wanted to expose other statisticians and data scientists
 - Logistics of organizing improvisation instructors for workshops
 - Challenge of getting improvisation instructors to conferences
 - **Most important:** Many cannot speak to my experience as a statistical scientist and the challenges I face in my day-to-day work
 - As I planned a workshop in Raleigh, NC, I took coursework for developing my own content as an instructor of applied improvisation (2024)
- [Leadership-in-Practice Committee Pilots Improvisation Workshop](#)

COVID-19 and the Rise of the Machines

Further fuel for the fire

- COVID-19
 - Working from home showed me the importance of face-to-face interactions with my colleagues
 - Virtualization of work has many benefits, but it creates greater disconnect in communication, relationships, collaboration, ...
 - Difficult to communicate in a virtual environment
- Artificial Intelligence
 - The increasing desire to hand over tasks to algorithms furthers this disconnect between people

Disclaimer

The author fully appreciates the irony and absurdity of complaining about virtualization during a webinar to individuals spread across the country.

But here we are.

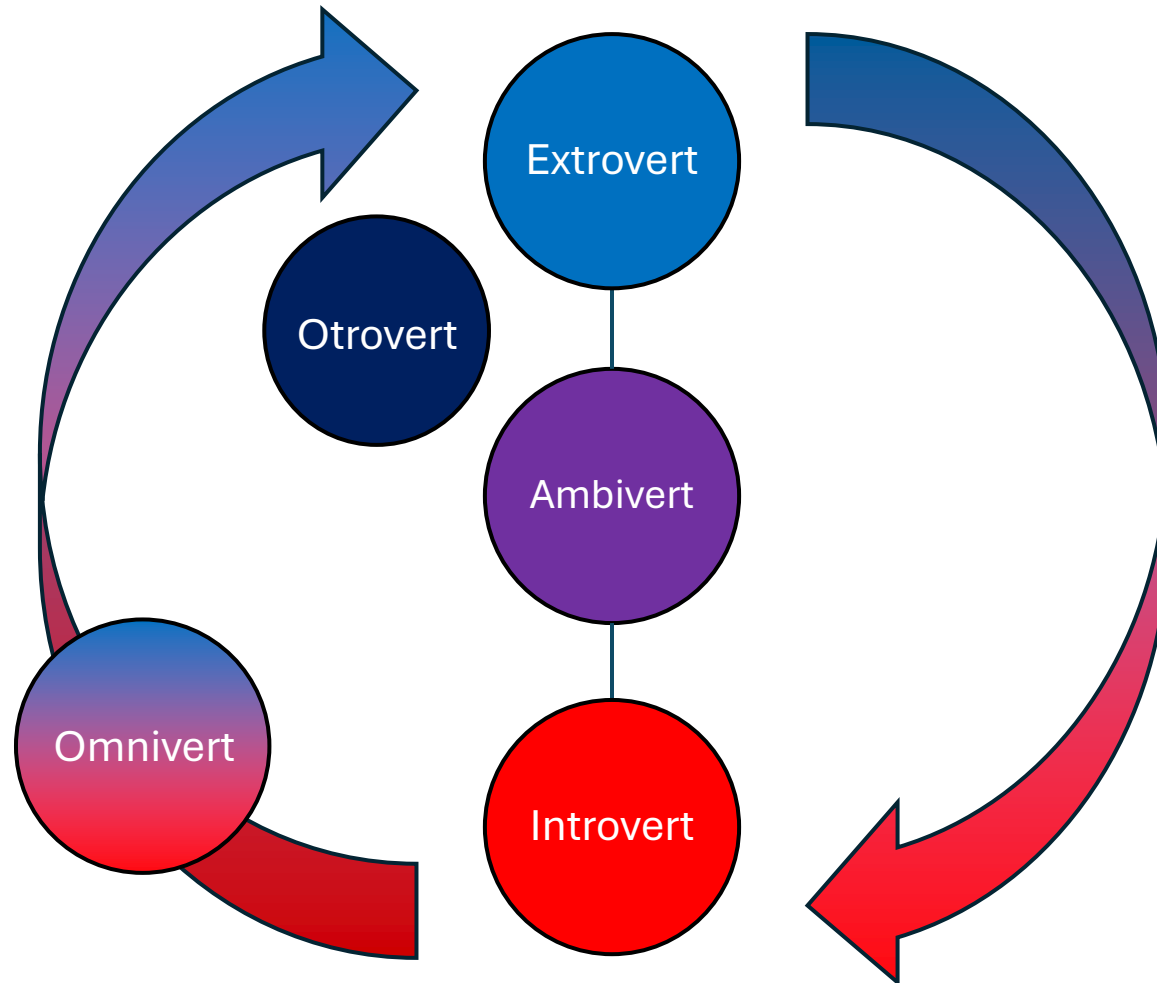
Statistics and Applied Improvisation

Why is applied improvisation necessary?

- Statisticians are often introverted
- Statisticians focus on technical skills. Less time on interpersonal skills.
 - Presentations, public speaking, scientific writing
 - Relationships, communication
- Trained to reduce risk
- Non-statisticians have a fear/dislike/deep-hatred of statistics
- **It is Never too Early to Think About Statistical Leadership**
 - All the knowledge in the world and the greatest technical expertise imaginable is not particularly useful if you cannot communicate your ideas to others and convince them to consider and implement your ideas
- Becoming more comfortable with the uncomfortable
- Turn down the volume of imposter syndrome

Aside: More than Two Verts!

Who knew?



Statistics and Applied Improvisation

Strange but Necessary Bedfellows

- Quick-thinking, Confident, Communicative, and Collaborative: Fundamentals of Applied Improvisation for (Bio)statisticians and Data Scientists
 - Joint Statistical Meetings
 - Duke Industry Statistics Symposium
 - Statisticians in the Pharmaceutical Annual Meeting
 - ASA Council of Chapters Traveling Courses
- PUBH 765: Fundamentals of Applied Improvisation for Public Health Professionals
 - Two-credit course at UNC-Chapel Hill
- Applied Improvisation for Scientists!
 - Seven-week course offered locally



Statistics and Applied Improvisation

Strange but Necessary Bedfellows

- Collated 75 games and exercises (to date) that address 21 different skills, including
 - Collaboration
 - Expertise
 - Justification
 - Listening
 - Understanding motivation
 - Persuasion
 - Relationships
 - Simplification
 - Specificity
 - Spontaneity
 - Storytelling
- All about developing *muscle memory*



Improvisation Concepts

Yes, And

- What many believe is the most important rule of improv
- Accepting what someone else has offered and expanding their suggestion with new information
- A way to foster collaboration and building upon an idea
- Tina Fey, *Bossypants*
 - *Obligation* to accept a partner's premise ("Yes") and add new information to it ("And") to build a scene or **conversation**

Improvisation Concepts

Got Your Back

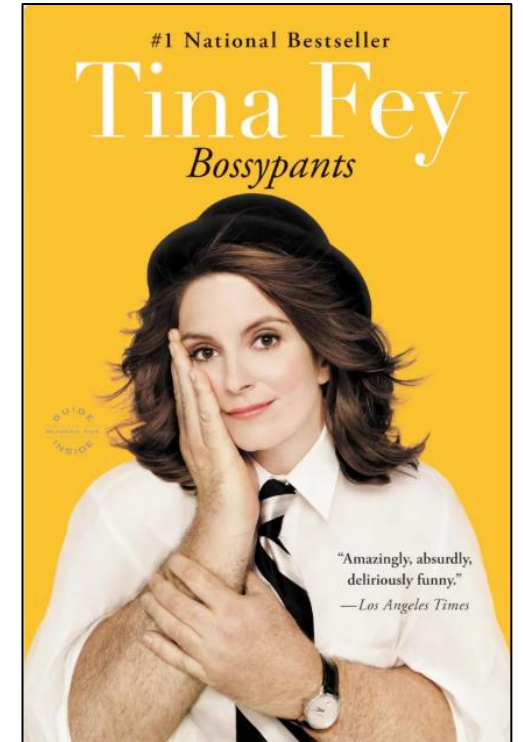


- My favorite rule of improvisation
- Before performances, each member of an improv team pats every other member on the back while repeating “got your back”
- No idea what is going to happen or where a performance will lead
- **Got Your Back** is a commitment to each other that no matter what happens, the team will be there for one another and do their best to make sure people have what they need when they need it

Improvisation Concepts

Mistakes as Opportunities

- Tina Fey, *Bossypants*
 - *There are no mistakes, only opportunities*
 - You can end up someplace new and innovative
- We often let our fear of making mistakes paralyze us from taking any action whatsoever
- Separate “what could have been better” from true mistakes
- Recognize that we are rarely solely responsible for an outcome
 - Personal: relationships
 - Work: validation, reviewers, quality control



Improvisation Concepts

Living in the moment

- “Living in the moment is a gift, that’s why it’s called the present” - *Ted Lasso*
- Ted Lasso is riddled with improvisation concepts
- Active listening versus waiting for your chance to talk
- Listening is the most important part of effective communication



Disclaimer

The author fully appreciates the irony and absurdity of celebrating listening skills in this one-sided conversation.

But here we are.

Conclusions

Looking towards the future

- Improvisation as a regular offering at major statistics conferences
 - Joint Statistical Meetings
 - A reimagined Conference on Statistical Practice
- Council of Chapters traveling courses
- Partner with the ASA Leadership Institute
- Develop a Book and Train-the-Trainer Course
 - Regular course offering at academic departments
- Online content? *Perhaps...*
- Change the paradigm
 - Less technical training and greater interpersonal skill development
 - Emphasize communication to promote what has already been built

Conclusions

The Human Side of Statistical Consulting

- Nearly 45 years ago, James R. Boen and Douglas A Zahn authored this important book(1982)
- Important to find new and innovative ways to improve communication and strengthen connections
- And practice, practice, practice...



Conclusions

Future opportunities

- Joint Statistical Meetings (2026)
- [Statisticians in the Pharmaceutical Industry Conference \(2026\)](#)
- [ASA Council of Chapters Traveling Courses \(2026-2027\)](#)
 - Cleveland
 - Hawaii
 - Middle Tennessee
 - New York Metro
 - [2nd AI \(the other one\) Workshop New York City](#) in July 2026
- Excited to discuss other options for workshops

Thanks!

Any questions?

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