



NIGHT SCIENCE

Outline of the Night Science Workshop

Workshop Overview

Our 1-day workshop explores the interplay between creativity and rigor in science, introducing the concepts of Night Science and Day Science. Through a blend of philosophy, practical exercises, and case studies, participants are encouraged to reflect on their own scientific thinking and collaboration styles. The workshop is highly interactive, with opportunities for discussion, improvisation, and application to participants' own work.

1. Introduction & Framing

The workshop opens by introducing the foundational concepts. Participants share their backgrounds and motivations. The central question posed is: How does science actually work, and how can we navigate both the creative and confirmatory sides of research?

2. The Two Modes of Science: Day and Night

Drawing on the work of François Jacob and others, the workshop distinguishes between “Day Science” (structured, logical, and falsification-driven) and “Night Science” (creative, associative, and intuitive). Participants learn that scientific progress requires movement between these modes, and that both are essential for discovery.

3. Communication and Language in Science

This section explores how scientists use different languages for different purposes: precise, metaphor-free language for formal communication (Day Science), and metaphorical, anthropomorphic language for ideation and exploration (Night Science). The importance of code-switching—translating between these modes—is highlighted, with examples from scientific literature.

4. Collaboration and Improvisation

Participants engage in exercises designed to foster improvisational thinking and collaborative creativity. The workshop emphasizes the value of one-on-one discussions, the “Yes, and...” rule from improv, and creating a supportive environment that encourages risk-taking and vulnerability. Group dynamics, ideal group sizes, and the pitfalls of brainstorming are discussed.

5. Question Finding and Reframing

A core theme is the art of generating and refining research questions. The workshop demonstrates how reframing broad questions into more specific, provocative ones can lead to breakthroughs. Historical case studies illustrate this process. Participants practice this skill in pairs.

6. Data Exploration and Hypothesis Generation

This section focuses on the interplay between data exploration (Night Science) and hypothesis testing (Day Science). Through examples and exercises, participants examine the risks and rewards of “fishing expeditions” and the importance of pattern recognition, while remaining vigilant about confirmation bias and over-interpretation.

7. Types of Scientific Puzzles

Scientific problems are categorized into different “puzzle classes,” such as jigsaw (assembling known pieces), logical (requiring insight), connection riddles (requiring external knowledge), and out-of-the-box puzzles (requiring mental leaps). Participants reflect on their own projects and consider how reframing the class of puzzle can spark new approaches.

8. Interdisciplinarity and Meta-Reflection

The workshop concludes by encouraging participants to think beyond disciplinary boundaries and embrace interdisciplinary approaches. The value of “puzzle switching” and meta-cognition—thinking about the kind of problem one is solving—is stressed as a driver for scientific innovation.

Takeaway:

The Night Science Workshop provides a framework and set of practices for integrating creativity, collaboration, and rigorous testing in scientific research. It offers tools for both individual reflection and collaborative ideation, and is designed to complement workshops focused on related themes such as scientific creativity, research design, or interdisciplinary problem-solving.

You can see testimonials and past venues of the Workshop at: <https://night-science.org/home/learn/>

Anonymous Testimonials from attendees of the Night Science Workshops

- "I wish the course was longer! I'm going to miss attending these sessions & found every session so valuable."
- "I found this topic super interesting and enjoyed the material"
- "Loved taking it :-)"
- "This course should be offered to all trainees when they start their research at NIH."
- "I thought the class was useful to get the creative juices flowing."
- "It was a great course! It definitely will help me in my future science!"
- "The course was valuable for me at this stage of my career (3rd year post-doc)"
- "Great experience - will definitely recommend to incoming fellows in my division."

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