

## Career Stages and their shifting Challenges

### Objectives

The participants learn about different career stages in physics and the different implicit norms the members of the community are supposed to conform to in order to be accepted as belonging to the physics community. This will be described and analyzed for the field of high energy physics. The participants learn that these norms are highly gendered in a way that women are implicitly excluded.

### Introductory Notes

Sharon Traweek (1988) offered with the groundbreaking ethnography of the high energy physics community in the U.S. “Beamtimes and Lifetimes” detailed insights on the different stages of a career in high energy physics, their implicit norms that have to be fulfilled so as on their specific anxieties and fear for failure in each career phase. It is shown inasmuch these anxieties and norms are gendered in a way that women are not supposed to build careers in high energy physics. Since the ethnography has been published end of the 80ies participants might be interested in the question if these specifics might have changed to the present. So it might be useful to combine the work on the text of Traweek with excerpts from a talk of Jocelyn Bell Burnell at CERN in 2013.

### In-Class-Time

150 minutes, including 30 minutes break.

The session can be combined with contents of Lesson Plan 6 on Interaction patterns in the Lab. In this case begin with the film screening and its group work and let follow the group work on the text of Traweek.

### Schedule and Teaching Instructions

**Homework** for the participants in preparation for the session:

- Read the article of Traweek (1988)

**Group Work:**

*60 minutes*

Building 4 groups. Exercise on Work Sheet in Groups

**Participants' Break:**

*30 minutes*

**Plenary Discussion:**

*60 minutes*

Let each group present one career stage and then discuss.

In case that you combine this lesson with lesson number 6, include question number 2 for the plenary discussion.

## Work Sheet: Career Stages and their shifting Challenges



Rethink the text of Traweek (1988) you have read for today.

Think about the worries, insecurities and anxieties that Sharon Traweek describes for the different career stages of high-energy physicists.

Construct a table with the following fields and think it over inasmuch gender is relevant here:

| <i><b>Career Stage</b></i>                    | <i><b>Anxieties</b></i> | <i><b>Implicit Norms</b></i> |
|---|-------------------------|------------------------------|
| Undergraduate students                        |                         |                              |
| Graduate students                             |                         |                              |
| PostDocs, research associates                 |                         |                              |
| Group Leader,<br>fully-fledged physicists     |                         |                              |
| Senior physicists , “statesmen<br>of physics” |                         |                              |

Discuss and prepare for the plenary discussion:

1. What is your opinion? Are these worries unavoidable or can you imagine a science system where these anxieties are not so inevitable? How, then, would science be like?

**[in case of combination with lesson 6]:**

Rethink the film screening of “Naturally obsessed”

2. Are there connections between the thoughts and worries of Rob, Gabe and Kil in the film and those of the doctoral students and PostDocs of physics as Traweek describes them?

### Obligatory Reading

Traweek, Sharon (1988): *Beamtimes and Lifetimes. The World of High Energy Physicist*. Harvard University Press: Cambridge MA. Chapter 3, p. 74-105.

### Further Reading

Gaspani, Fabio (2014): Gendered Organizations. The Case of Italian Astrophysics. In: *Multidisciplinary Journal of Gender Studies* 3(3): 483-504.

Keller, Evelyn Fox (1977): The Anomaly of a Women in Physics In: *Working it out: 23 Women Writers, Artists, Scientists and Scholars talk about their Lives and Work*. Sara Ruddick, Pamela Danlies (eds.). Pantheon Books, New York: 77-91.

Traweek, Sharon (1992): Border Crossings: Narrative Structures in Science Studies and among Physicists in Tsukuba Science City, Japan. In: *Science as Practise and Culture*. Andrew Pickering (ed.). University of Chicago Press, Chicago: 429-465.

### Additional Resources and Materials

About SLAC to date: <https://www6.slac.stanford.edu/>

About KEK, a high energy physics facility in Japan: <https://www.kek.jp/en/index.html>

About CERN: <https://home.cern/>

Lecture by Jocelyn Bell Burnell: <https://www.youtube.com/watch?v=jp7amRdr30Y>

Interview with Evelyn Fox Keller: <http://www.cbc.ca/radio/ideas/how-to-think-about-science-part-14-1.464990>

Lecture of Jocelyn Bell Burnell at CERN: <http://cds.cern.ch/record/1625808>