

# Studying Japan-US collaborations

Sharon Traweek, UCLA

[traweek@history.ucla.edu](mailto:traweek@history.ucla.edu)

<http://www.history.ucla.edu/traweek>

# Thank you!

- To the current and previous directors of the NSF Tokyo Office, the audience, and
- to my long term hosts in Japan, including Prof. Kasuke Takahashi, former vice director, KEK the national accelerator research organization in Tsukuba, founding director of the JSPS office in Washington, DC, and founder of the KEK Archives Office.

# 10 questions about collaborations

- How do they shape innovative knowledge-making?
- How do they shape pedagogy and careers?
- How do they share knowledge?
- How do people from many fields, sectors, and countries work together?
- How do distributed collaborations work?

# 10 questions about collaboration

- What are the best and worst practices?
- Who collaborates and why?
- How do collaborations learn and forget?
- Why does inter-disciplinarity matter?
- How have they changed in the last 65 years during the global shift from a knowledge-based to an information-based political economy?

# My research sites & methods

- Specifically, I study collaborations among high energy physicists [HEP] & astronomers/astrophysicists [AP]?
- I am an historian and anthropologist using archives, oral history interviews, and participant-observation methods.
- I have conducted about 8 years of fieldwork at many laboratories and universities in Europe, Japan, & the US.

# WHY study HEP and AP?

- For at least 65 years HEP & AP have developed strategic knowledge-making practices subsequently adopted by many other groups in universities, industry, government, and civil society.
- HEP & AP are excellent case studies for understanding long-term effective knowledge making communities.

# What are their strategic practices for innovation and discovery?

- Nested collaborations of many sizes
- Distributed, circulating collaborations
- Inter/multi/trans-disciplinary collaborations
- Collaboration across sectors: universities, industries, and governments
- Open, frequent communication
- Rapid circulation of findings

# What are their strategic practices for innovation and discovery?

- Apprenticeship learning/teaching
- Continuously building multi-lateral partnerships
- Continuously developing a trans-local, trans-disciplinary, trans-sector workforce
- Their former graduate and postdoctoral students work in all sectors of the global political economy, building networks for the next generation of researchers.

# Where are they?

## Science cities and global villages

- \* Japan: KEK, JAXA; NAOJ, J-PARC
- \* US: SLAC, Fermilab, Brookhaven
- \* Europe: CERN
- \* Future sites: ALMA in Chile  
& International Linear Collider

# There are 5 big science fields:

- High energy physics [eg KEK, SLAC]
- Astronomy/astrophysics [eg Subaru, Keck]
- Physical oceanography [eg JAMESTEC, Scripps]
- Space sciences [eg JAXA, NASA]
- Fusion physics [eg NIFS, PPPL]

# What is distinctive about those 5 big sciences?

- A very small number of extremely expensive facilities with limited access
- A trans-local , trans-disciplinary, trans-sector workforce
- Gaining the resources to build these facilities means the research community must reach a working consensus on their priorities, fundamental queries, & methods for the next 10-20 years.

# HEP & AP collaborations

- Long-lived, they cycle through a limited set of research facilities worldwide.
- Built from nested clusters of 5-10 people.
- Collaboration is taught through apprenticeship learning/teaching.
- Collaborative relationships are transmitted across generations.
- Strategies for rapid reformulation of problem definition, question identification, method innovation, & research design.

# Why study Japan-US collaborations?

Within the collaborations:

- What do they learn from each other?
- What are their differences and similarities?
- What is difficult and what is easy?
- What are the differences between US-based and Japan-based collaborations?
- How have the collaborations changed?

## Some answers from studying Japan-US collaborations:

- They learn each others' strategic practices and
- they all develop new skills for selecting appropriate strategies in changing contexts regarding:
  - \* leadership and research styles;
  - \* gathering & distributing resources;
  - \* consensus formation, conflict resolution, and boundary maintenance;
  - \* apprenticeship learning & teaching

## As yet unresolved problems in Japan-US collaborations:

- Complexities of large scaled digital databases;
- Sharing knowledge;
- Global laboratory administration strategies with national funding;
- Trans-local laboratory leadership;
- Glocal villages for the collaboration members;
- Gendered folk beliefs about leadership, innovation, and rationality

# Current questions in my research:

- How does sharing knowledge shape knowledge-making?
- How do large scale databases change research design and research communities?
- What is the best local environment for long-term research collaborations?
- How must national science policies adapt to trans-local research collaborations?