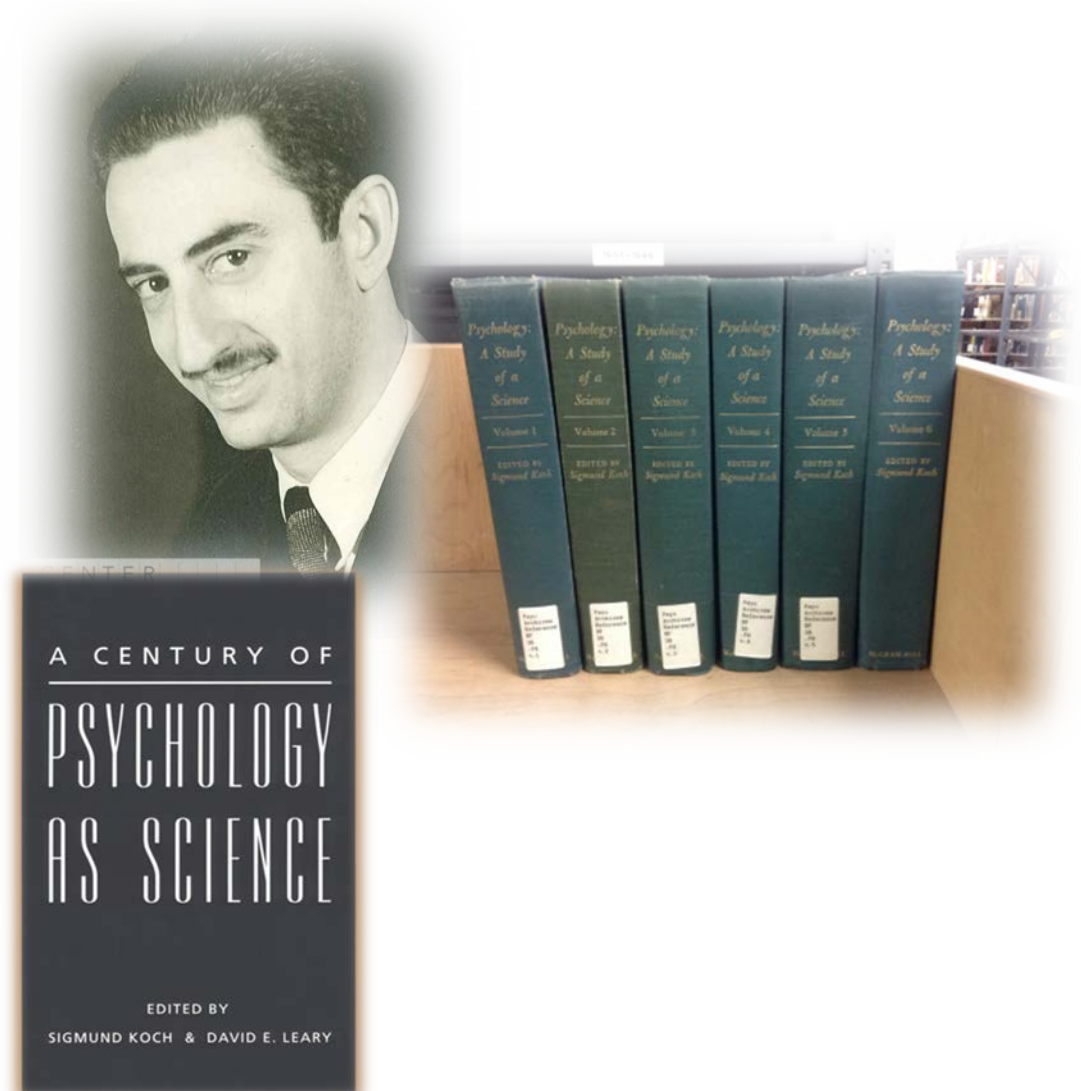# Spectacles of Inquiry: Perspective-Taking and Interdisciplinary Values

Lisa M. Osbeck, PhD

University of West Georgia

"We can hope, too, for more flexibility in the capacity of inquirers to enrich their vision by trying on the spectacles of their neighbors."
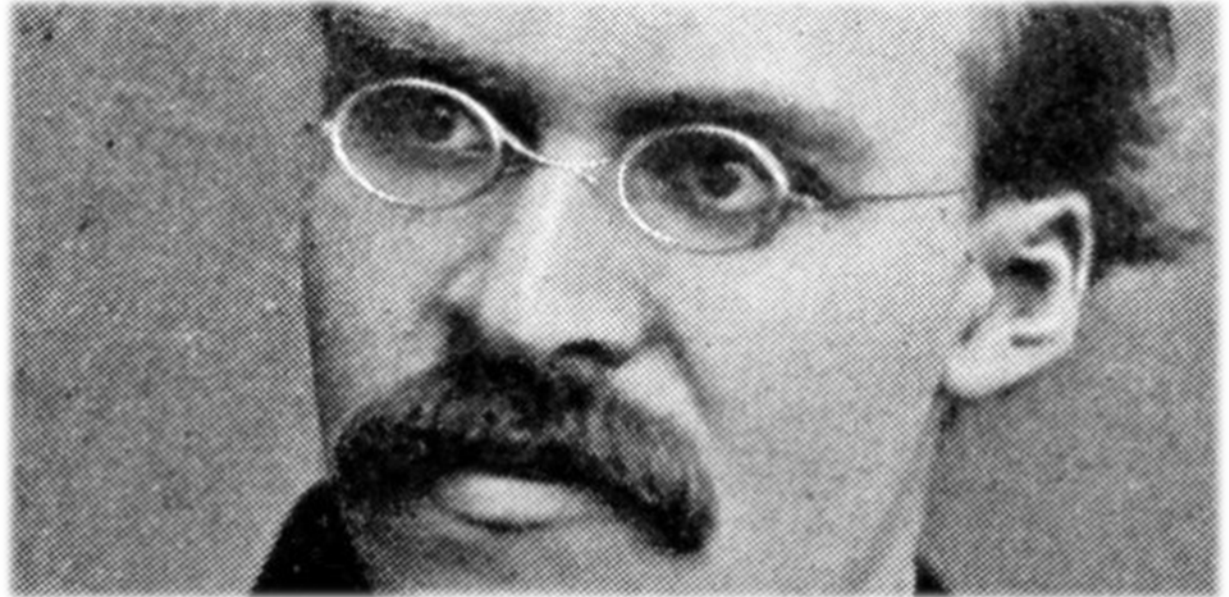
(Sigmund Koch, 1993, p. 902)

Ambiguities, Controversies, Concerns

An "optics" of knowledge

"There is only a perspectival seeing, only a perspectival 'knowing'" (*Genealogy of Morals, 1887, III,12*)

"There are many kinds of eyes. Even the sphinx has eyes—and consequently there are many kinds of 'truths,' and consequently there is no truth" (The Will to Power, 1901,540)

Nietzsche

Controversies arise due to:

1. Conflation of different senses of perspective/perspectivism

(e.g., supra-individual perspective and personal perspective)

2. Equating of perspectivism with naïve or "silly relativism" (Giere, 2010)

3. Assumption that one is always "trapped" or bounded by perspective and unable to transcend it

[e.g., differing "worldviews"].

Many relevant distinctions:

"There are at least seven different kinds of perspectivisms at work in Nietzsche's views"
(Hales & Welshon, 2000)

Contemporary References:
1. Disciplinary standpoint: (e.g., psychological perspective, sociological perspective)
2. Intra-disciplinary theoretical framework (e.g., psychoanalysis and behaviorism)
3. Methodology: (quantitative and qualitative)
4. Sexual/Cultural/Political identity
5. Corporeal subjectivity, consciousness (personal/perceptual)

Science as Perspectival

In a word, every science takes up a <u>certain attitude</u> towards the world of human experience, or regards it from a <u>definite point of view</u>, and it is the business of the science to describe the world as it appears after the attitude has been taken up or the point of view adopted. What differentiates the sciences is just this difference of human interest; and <u>what holds a science together</u>, and brings its observations into relation, is just the fact that all the work has been done under the guidance of the same principles and from the <u>same point of view</u>.

(Titchener, 1909, p. 4)

Non-controversial sense

- Implies a limited, bounded or partial view of the world (broad) or some phenomenon (specific)
- Scientific practices (e.g. observation) are always constrained in particular ways
- Different sciences assume different attitudes and "points of view" in keeping with the relevant constraints.

Constraints on inquiry are always imposed by:

The <u>instrument</u> used for making observations

The <u>conceptual model</u> within which reasoning occurs

Norms/rules/assumptions shared within a scientific community

(Giere, 2010; Osbeck & Nersessian, 2017; Kuhn, 1962)

Basic claim:

The problem-solving potential of interdisciplinary science enhanced by ability to understand other "points of view" and importantly, to deliberately shift between them

[perspective taking as an epistemic activity]

"stretching across" requires ability "to understand and appreciate their [other disciplines'] norms, theories, approaches and breakthroughs"

(Brown, Delectic, & Wong, 2015).

3. Nersessian's Multi-year Ethnographic Investigation of Bioengineering Science

CLID

Cognition and Learning
in Interdisciplinary Cultures

- Tasked to understand Innovative practices in ID frontier science

- Studied what facilitates learning and innovation in emerging ID fields, made application to classroom design

Multiyear Study of Bioengineering Labs*

Phase I: Biomedical Engineering

Merges: Resources, concepts, methods from biology and engineering (creates *hybrid* researchers)

Lab A: **Tissue Engineering**

Lab D: **Neuroengineering**

Phase II: Systems Biology

Imports Generates *inter*dependent relationships between experimentalists (biologists) and mathematical modelers (engineers)

Lab G: **Modeling Lab**

Lab C: **Modeling and Wet Lab**

Methods

Data collection

1. Interviews with researchers at all levels (undergraduate students, graduate students, PIs, lab manager)

2. Field observations of formal and informal interactions, journal club meetings, lab tours

Analysis

1. Grounded coding *across* interviews for thematic content.

2. Focused analysis *within* cases: selected researchers at regular intervals over time (case study)

Cross-Interview Analysis: "Epistemic Identity"

"I guess being a biologist for me, the whole thing is finding out how things work."

"It's an experimentalist mindset. It's still what I have."

Cause we aren't, we aren't theoretical modelers. We don't just come up with ideas and then just shoot them out there and wait for people to do them. (C9)

"When you were an engineer and you used to work with exact stuff and formulas, especially like in my area, it's like a very neat little problem… That's what you think in the beginning" (G-16).

"Epistemic Identity" close in meaning to "attitude" and "point of view."

- Implicates epistemic values: ideas about what it means to do good science.

- Values can conflict in interdisciplinary collaboration: Frequently associated with negative, even disparaging views of the collaborators' point of view ("positioning").

e.g, Experimenters as Recipe Followers, Vs. Modelers as Naïve, unconcerned with accuracy

Case study analysis: Forms of "Intervention"

1. Modeler enrolls in focused "experimental summer camp"

"Like in a month you just like **change inside.** *It's not about the exact things you learn cause it really does matter that you know what to learn…it's just knowing how to learn stuff." "*

Now I feel more self-confident in talking to biologists,"

[I know] "…which experiments are more expensive to do or which… are a lot more labor"

2. Biologist (experimenter) takes a biosystems modeling course designed to give a "feel" for modeling systems

"I wasn't sure how he converted what I gave him into code… I am now going 'Oh, that's what he wanted; that's what he needed.'"

I guess I'm mixing it up a little bit more internally now… I'm actually, yeah, I'm internalizing it more.

So two weeks ago I'm at my daughter's school and one of the parents comes up to me and he sees me studying, and I go "yeah, it's computational modeling of biological systems." And he goes "computer models? So they're not real?"

That's when I realized that I was a changed woman. *Cause I was disagreeing with him… explaining what you could do with them and why they're wonderful.* **It feels like talking to myself two years ago.**

"Transformed Persons"

"I wish I had taken this class 2 years ago. I wish [modeler] and I had…taken it together… We would have looked at each other and said *'Oh, I get it – I know what you are doing now.'*

"It's like my whole training was 'Don't make assumptions.' If you are modeling you have to start by making an assumption…assume this system is going to behave similar to this."

It would have been very helpful for me to understand what kind of data he needed; to understand what kinds of questions he should have been asking of me."

"Now…most of my brain is going 'what? why are you getting rid of data points?' and the other part's going 'look a smooth curve!"

Benefits:

In both cases, researchers demonstrate an <u>acquired ability</u> to adopt different "points of view" (perspective-taking)

*(Shift between them)

Personal level: More flexible problem solving skills

Community level: Potential to facilitate collaboration, more complex perspective on phenomenon of interest.

Back to Nietzsche…

"to want to see differently, is no small discipline and preparation of the intellect for its future 'objectivity' – the latter understood not as 'contemplation without interest' (which is a nonsensical absurdity), but as the ability to control one's Pro and Con and to dispose of them, so that one knows how to employ a variety of perspectives and affective interpretations in the service of knowledge"

And the more affects we allow to speak about one thing, the more eyes, different eyes, we can use to observe one thing, the more complete will our 'concept' of this thing, our 'objectivity' be

(Genealogy of Morals, III:12)

Goal: To facilitate perspective-taking as epistemic activity in interdisciplinary science

- Communication to aid understanding of perspectives

- Create learning opportunities that put scientists in "point of view" of collaborators, encourages enlargement of (epistemic) value systems.

*For scholarly community interested in facilitating team science, to recognize the **value** of enhancing perspective-taking as epistemic activity.