

Preserving Ideographic Quality in Mixed Methodological Analysis

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Mixed Methods vs. Mixed Models

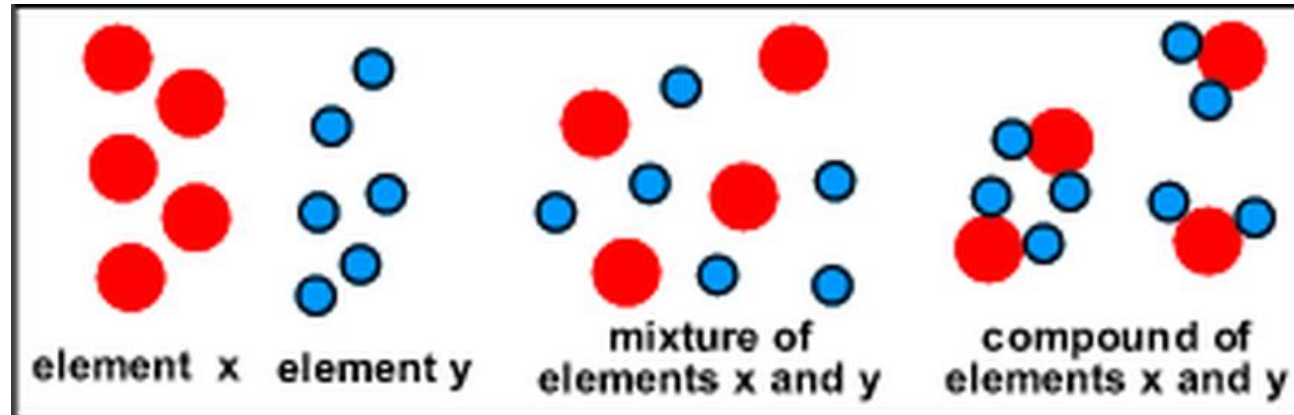
(Johnson & Onwuegbuzie, 2004)

Mixed methods

- Entails independent quan and qual facets that may be integrated in discussion

Mixed models

- Entails mixing at the level of data and analysis



Premise: Mixed models require broader frameworks that permit treatment of quan and qual data as “like kinds” (compounds, not mixtures)

Framing Data

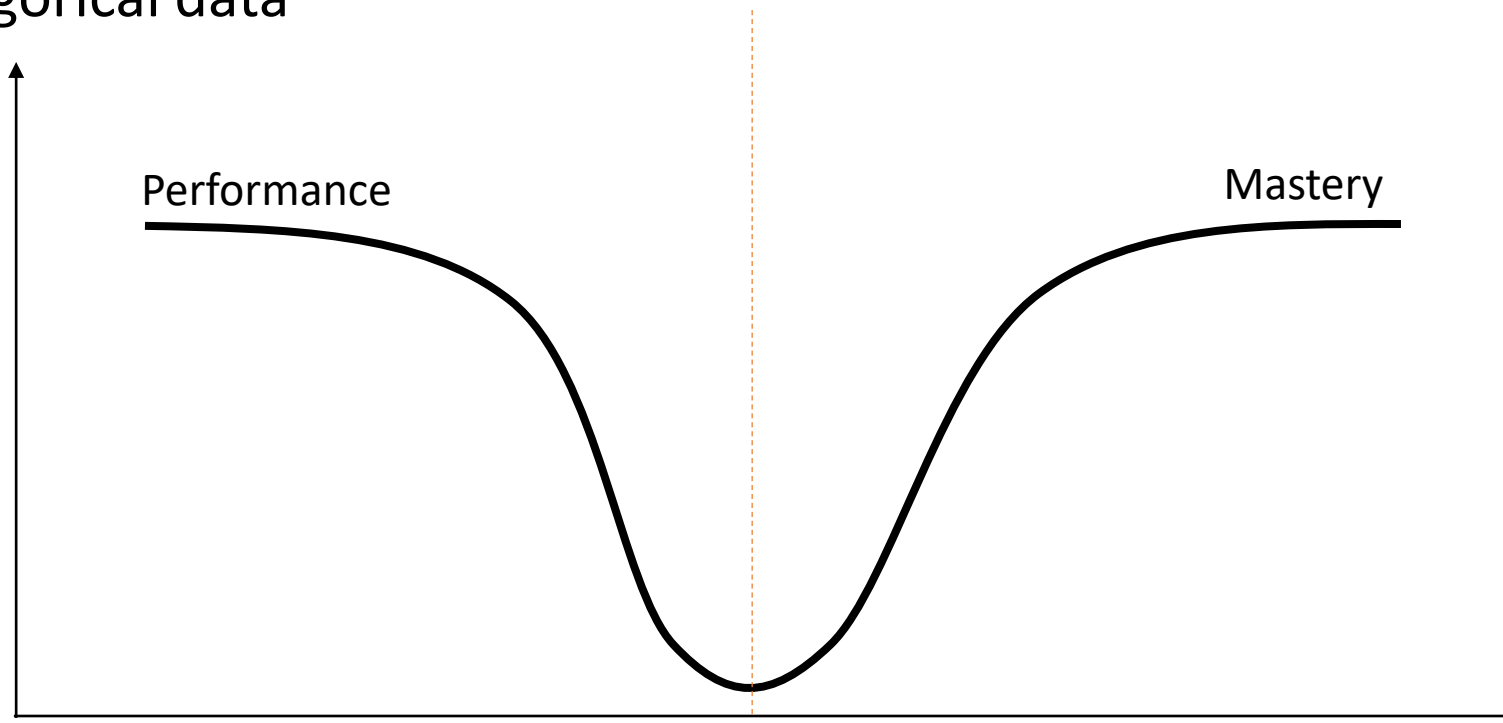
- Nomothetic vs. ideographic perspectives
 - Beyond “quan” and “qual” data types
 - Premise: Stripping ideographic data of its perspectival nature reduces the potential value of methodological mixing.
- Corollary: Avoid doing violence to data.

A Nomothetic Illustration

- What is the nature of the phenomenon of interest?
 - Categories (natural kinds)
 - Continuous (interval)
 - Multidimensional (categorical and continuous)
- What are the mechanisms specified by the theory?
- What are the variables to measure and manipulate?
- What are the appropriate statistical tools?

Goal Orientation as an Example

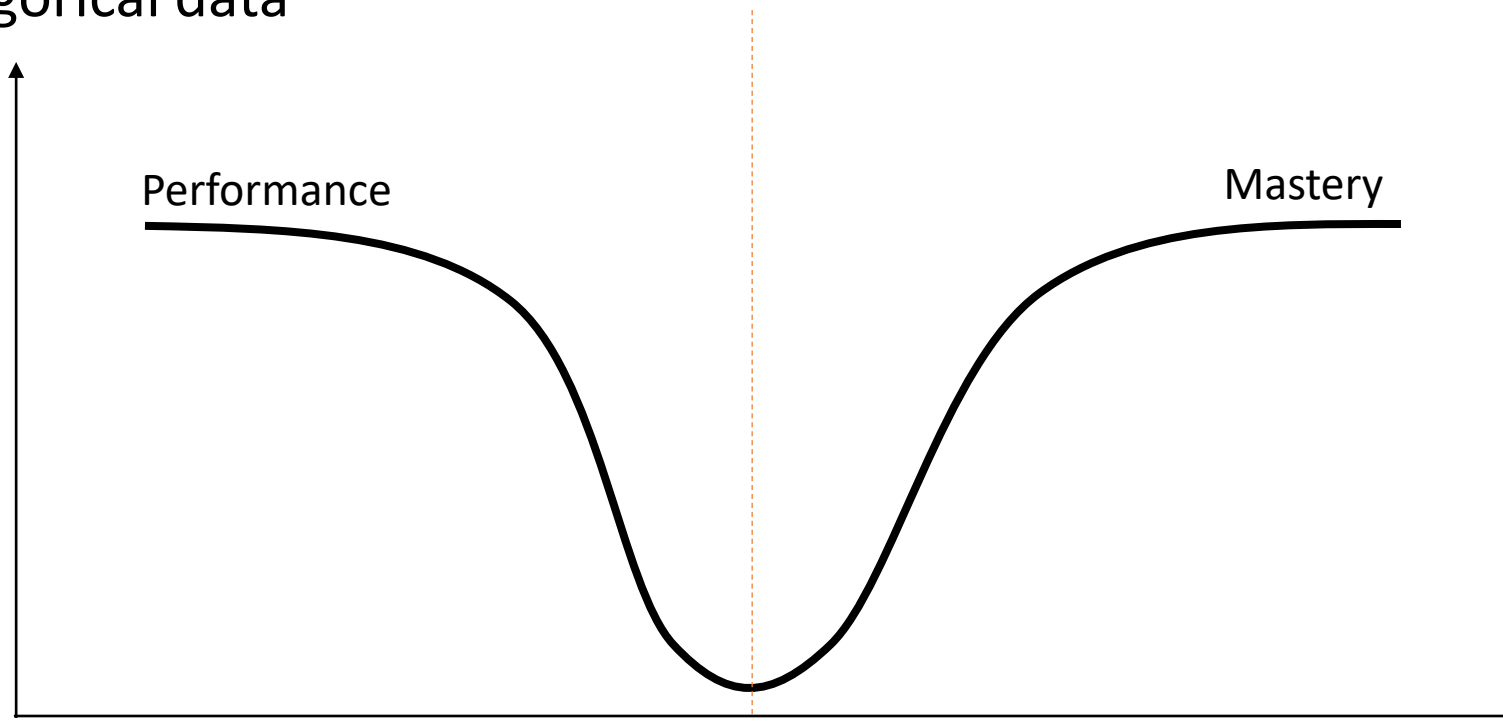
- Performance goal orientation vs. Mastery goal orientation
 - Categorical data



- How should we analyze change?

Goal Orientation as an Example

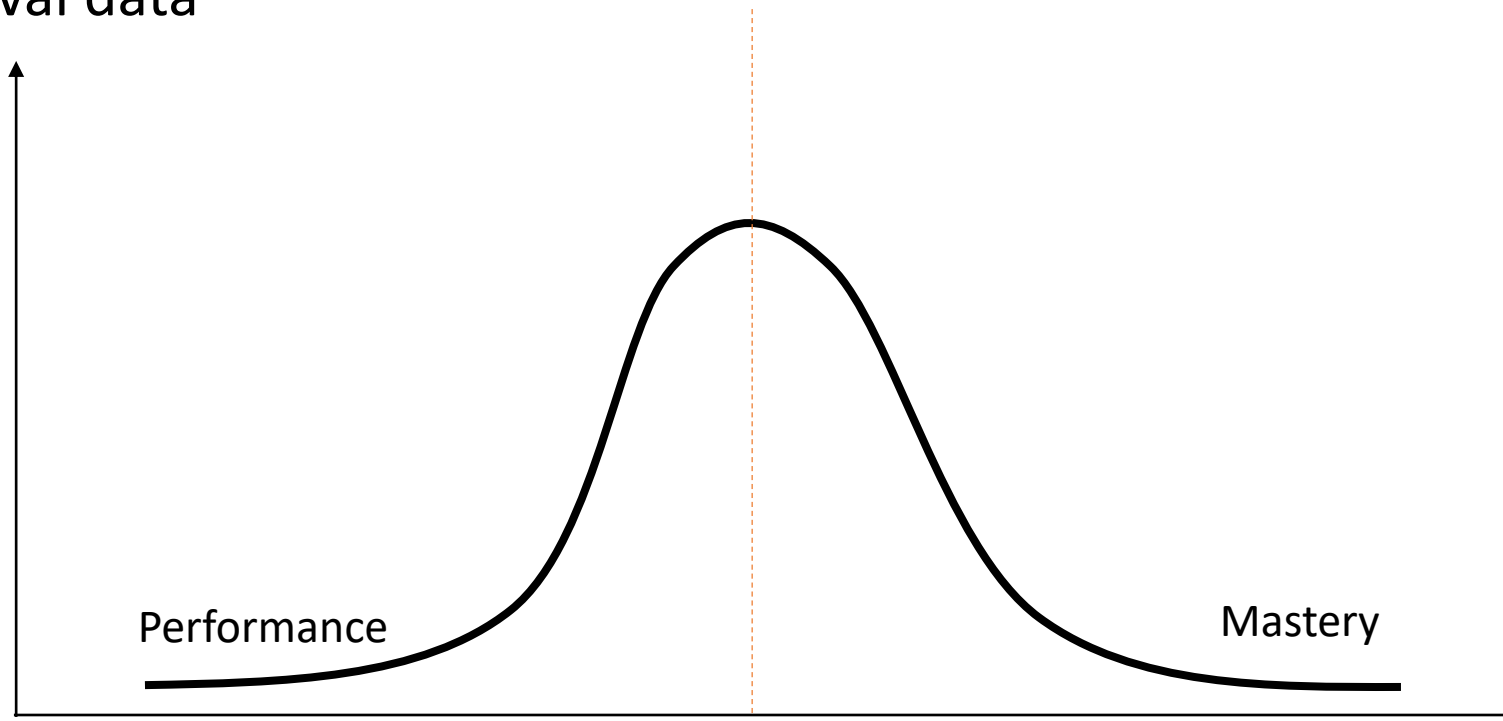
- Performance goal orientation vs. Mastery goal orientation
 - Categorical data



- How should we analyze change? χ^2 or 1-sided Z-test

Goal Orientation as an Example

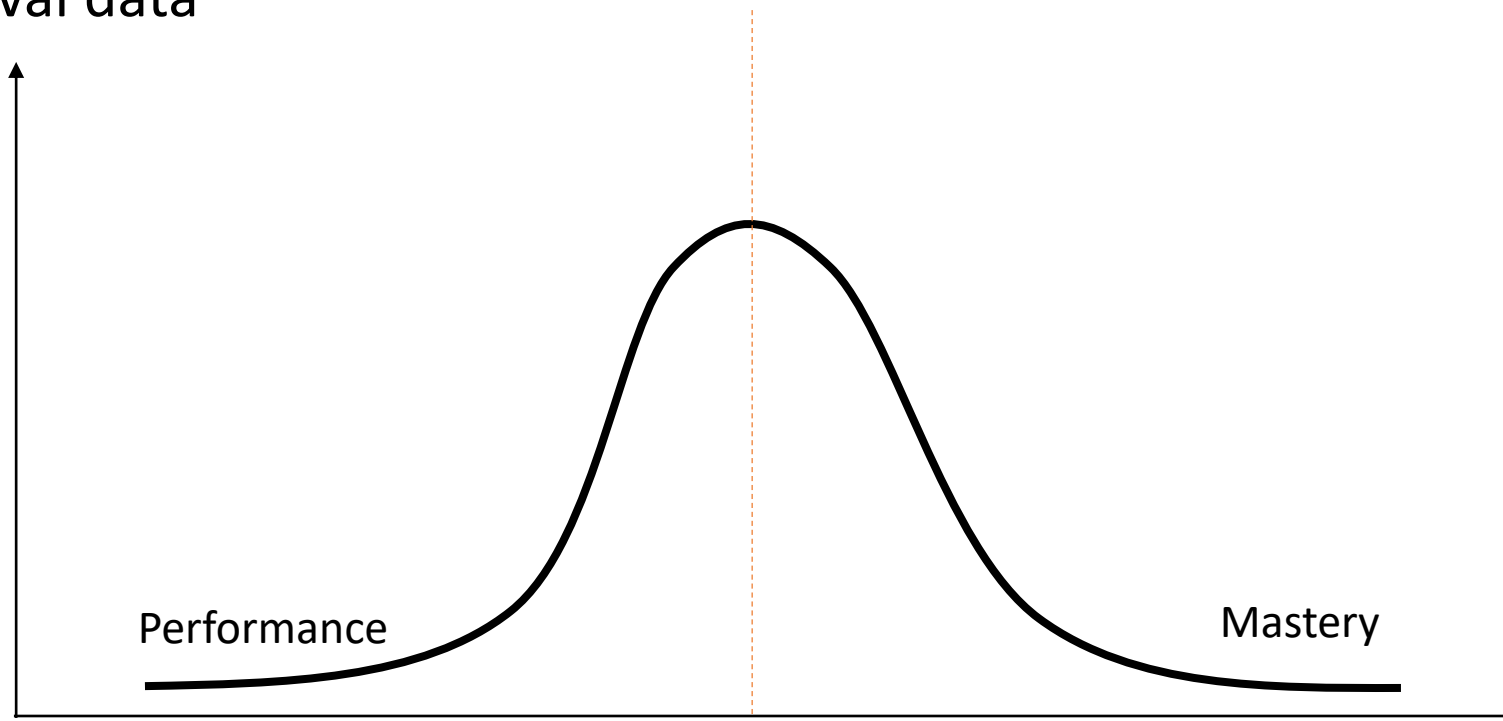
- Performance goal orientation vs. Mastery goal orientation
 - Interval data



- How should we analyze change?

Goal Orientation as an Example

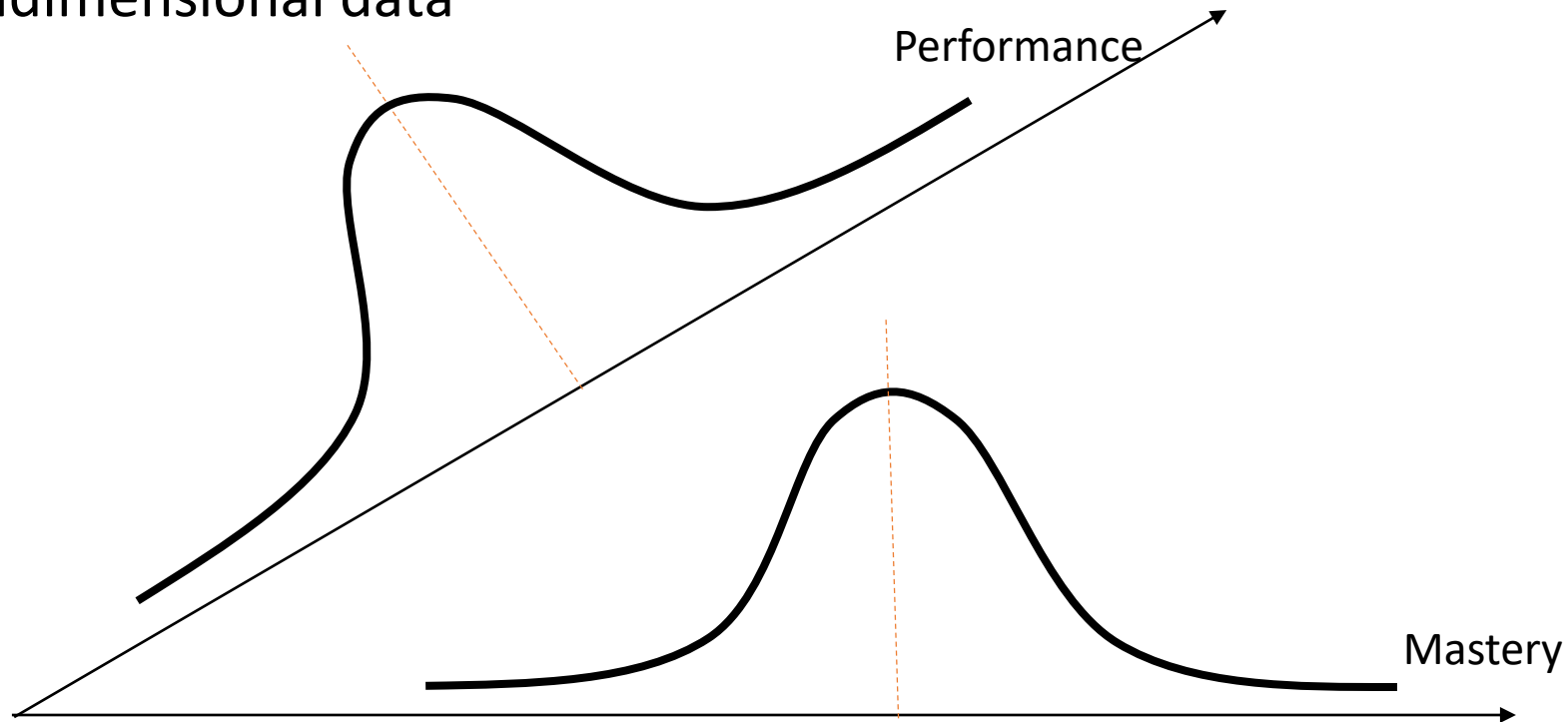
- Performance goal orientation vs. Mastery goal orientation
 - Interval data



- How should we analyze change? T-test or ANOVA or regression

Goal Orientation as an Example

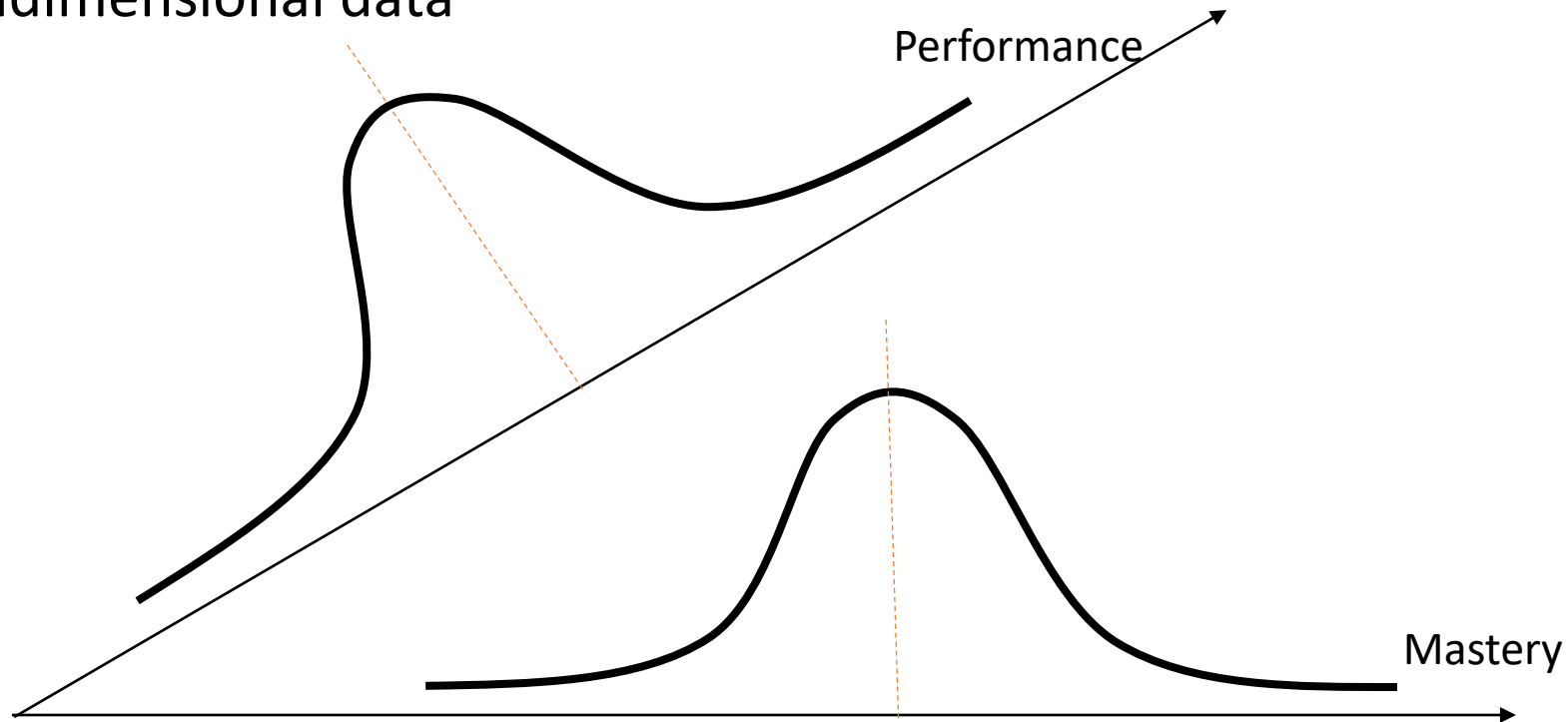
- Performance goal orientation vs. Mastery goal orientation
 - Multidimensional data



- How should we analyze change?

Goal Orientation as an Example

- Performance goal orientation vs. Mastery goal orientation
 - Multidimensional data



- How should we analyze change? It depends...

An Ideographic Illustration

Sonnet 24

- Mine eye hath play'd the painter and hath stell'd
Thy beauty's form in table of my heart;
My body is the frame wherein 'tis held,
And perspective it is the painter's art.
For through the painter must you see his skill,
To find where your true image pictured lies;
Which in my bosom's shop is hanging still,
That hath his windows glazed with thine eyes.
Now see what good turns eyes for eyes have done:
Mine eyes have drawn thy shape, and thine for me
Are windows to my breast, where-through the sun
Delights to peep, to gaze therein on thee;
Yet eyes this cunning want to grace their art;
They draw but what they see, know not the heart.

--William Shakespeare



An Ideographic Illustration



- 5 eyes
- 3 hath
- 3 see
- 2 windows
- 2 painter
- 2 heart
- 2 thine
- 2 Mine
- 2 art
- 1 where-through
- 1 perspective
- 1 painter's
- 1 Delights

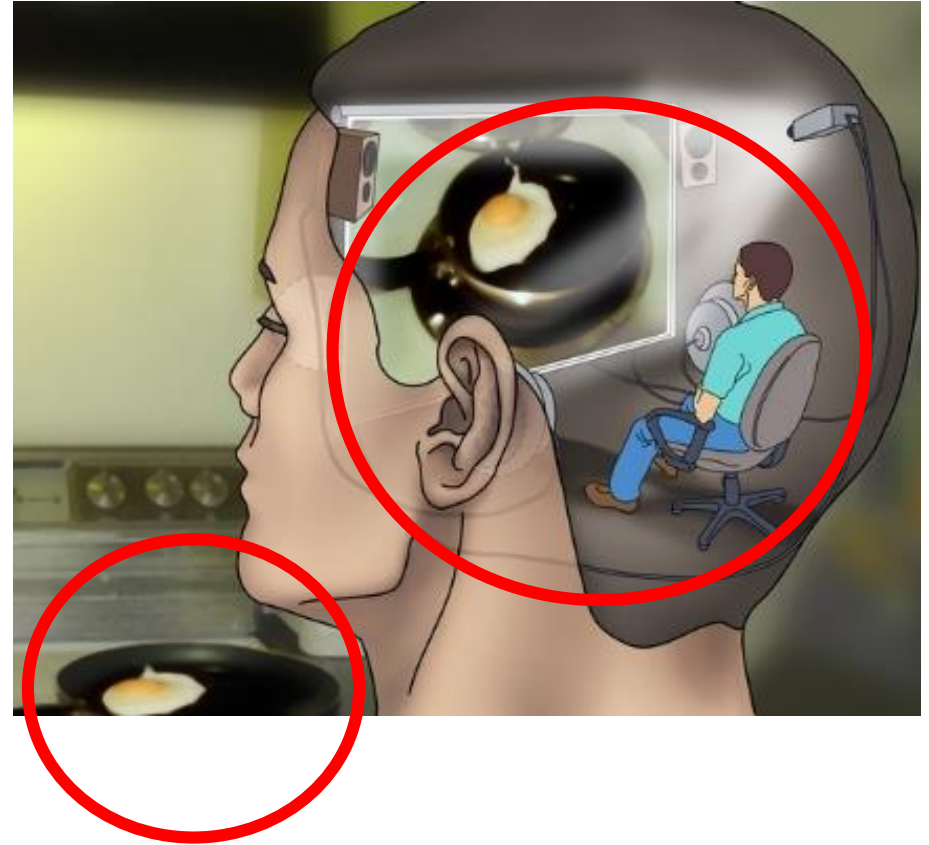
Phenomenography as an MMR Framework

- Engages both questions of reality and questions of individuals' conceptions of reality as complementary targets of inquiry (Marton, 1981)
 - Both nomothetic and ideographic research convey insight about reality



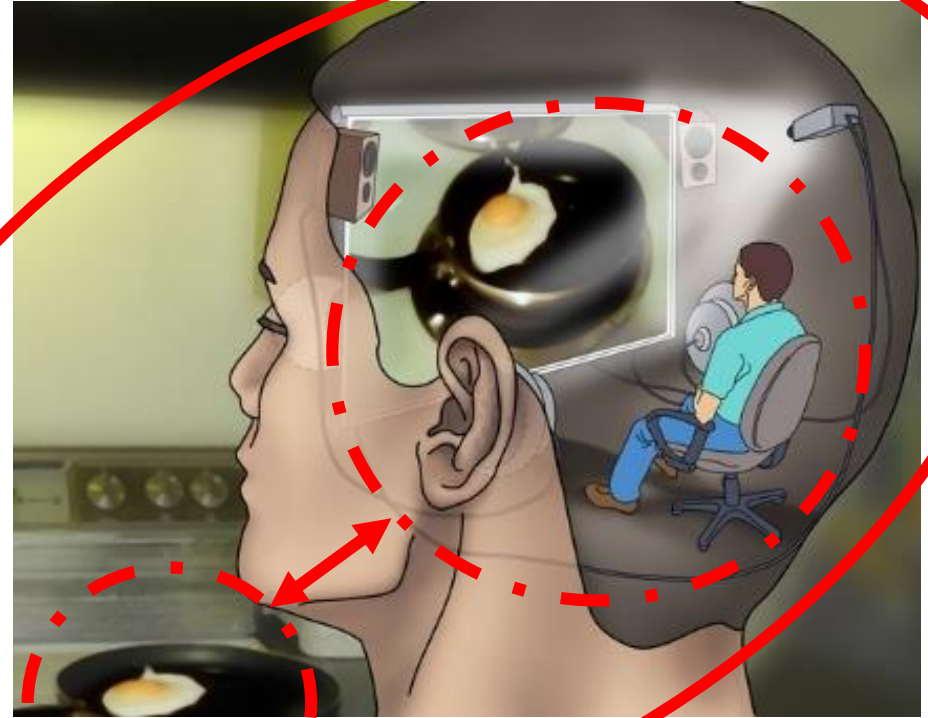
Phenomenography as an MMR Framework

- Consistent with critical realist perspective (Maxwell & Mittapalli, 2010)
 - A single reality that exists, independent of any individual's perception of it
 - Individuals' interpretive perspectives on that reality hold equivalent ontological status



Phenomenography as an MMR Framework

- Incorporates some aspects of philosophical pragmatism (Alexander, 2007)
 - Non-dualist stance that “the world is not constructed by the learner, nor is it imposed upon her; it is constituted as an internal relation between them” (Marton & Booth, 1997, p. 13)



Conceptions

- Mechanism for understanding personal framing of knowledge/events
- Diverges from phenomenology: thought or personal experiences of phenomena are not identical to phenomena themselves (Svensson, 1997)



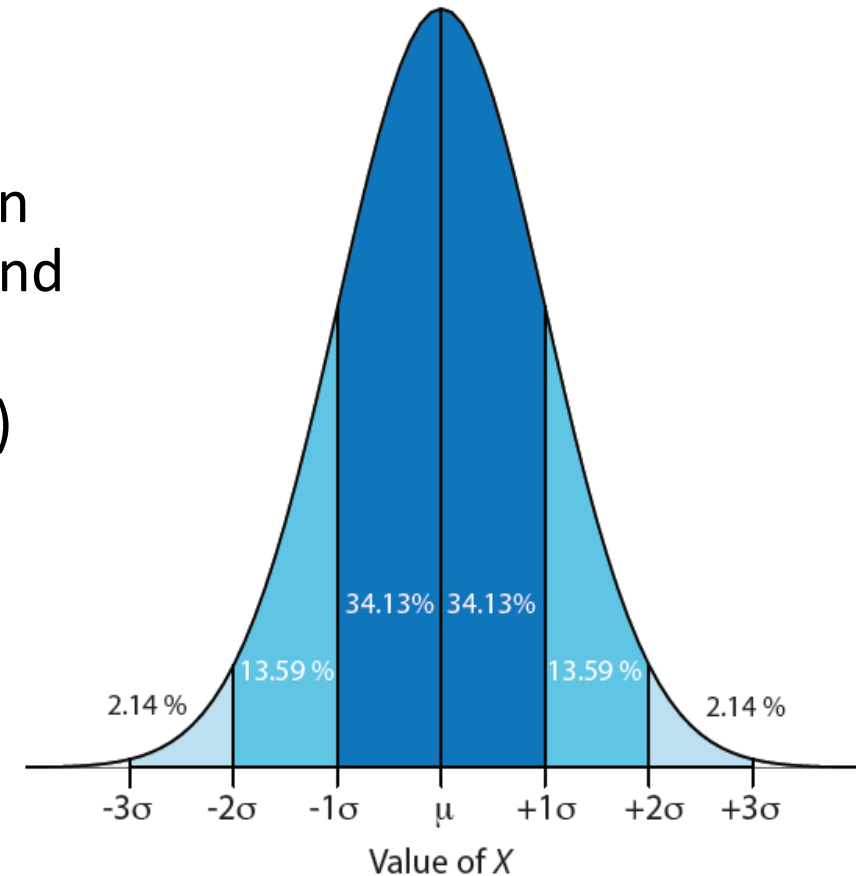
Conceptions

- Individuals' conceptions occupy structural relationships to each other and to both external physical and social factors (Åkerlind, 2008; Entwistle, 1997)
 - Multiple conceptions at a single point in time
 - Evolution of conceptions over time (feature salience and/or differentiation)
- Assumption of potentially large, but finite, range of conceptions



Mixing Models through Phenomenography

- Finite number of conceptions for a given phenomenon (Marton, 1994)
 - Corollary 1: Drawing random samples from a population permits meaningful arguments of representativeness and generalizability
 - Corollary 2: A population (and a representative sample) will reflect a natural distribution of conceptions
- Therefore:
 - New research can build from an a priori framework of conception types within a reasonably similar context
 - Directly test ideographic hypotheses



Mixing Models through Phenomenography

- Research questions can explore
 - Characterization of the conceptions held
 - Relative distribution of different conceptions as categories of description
 - Features of the environment that may systematically influence each



Mixing Models through Phenomenography

- Validity of nomothetic inferences drawn from a study are inherently weighed against the diversity of ideographic perspectives that could offer alternative interpretations
 - If consideration of such diversity is lacking, the resulting inferences are weak.
 - If conceptions from two individuals or instruments are in conflict, neither perspective can be characterized as having greater validity than the other.



Example 1: Trigwell & Prosser (1996)

Higher Education 32: 77–87, 1996.

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Congruence between intention and strategy in university science teachers' approaches to teaching

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Abstract. This paper describes the results, and some implications, of an empirical study of the congruence between intention and strategy of university science teachers' approaches to teaching in their first year science courses. The study drew upon the results of a previous phenomenographic study which identified qualitatively different approaches to teaching. An approaches to teaching inventory was subsequently developed which included scales representing the intentions and strategies identified in the first study. This inventory was distributed to a sample of university teachers of first year science courses in Australia. The results confirmed the proposed relationship between intention and strategy, and showed that a Student-focused Strategy was associated with a Conceptual Change Intention, while a Teacher-focused Strategy was associated with an Information Transfer Intention. It is concluded that the traditional form of academic development focussing on teaching strategies (for example, activity based strategies) is unlikely to be successful without an ongoing focus on the intentions which are associated with the strategy.

Trigwell & Prosser (1996)

- Sequential exploratory study (mixed method)
- Interviews with 24 first-year science faculty
 - Elicited intentions and strategies for student learning
- Analysis linked 3 strategies to 2 conceptions
 - Strategies: teacher-focused, student-focused, student-teacher interaction
 - Conceptions: information transmission, conceptual change
- Development of survey with closed-ended items based on conceptions
 - 104 statements → 49 retained → 5 subscale groupings based on 3 strategies + 2 conceptions

Trigwell & Prosser (1996)

- Feedback on items from 11 faculty → 39 final items
- Administered to 58 instructors in physics and chemistry across institutions
- PCA and correlational analyses to assess relations within and amongst conceptions
 - PCA confirmed 5 subscales
 - Correlations indicated reclassification of student-teacher interaction focus to student-focused, contrary to initial qualitative analysis
- Convergence on structure of conceptions through qual and quan

Example 2: Feldon et al. (2015)

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Faculty Mentors', Graduate Students', and Performance-Based Assessments of Students' Research Skill Development

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Faculty mentorship is thought to be a linchpin of graduate education in STEM disciplines. This mixed-method study investigates agreement between student mentees' and their faculty mentors' perceptions of the students' developing research knowledge and skills in STEM. We also compare both assessments against independent ratings of the students' written research proposals. In most cases, students and their mentors identified divergent

Feldon et al. (2015)

- Concurrent triangulation design
- Interviews with 81 STEM graduate students, plus their advisors
 - Targeted research skill strengths and weaknesses of individual student
 - 16 of 69 (23.2%; $p < .001$) intact mentor-mentee pairs identified the same type of research skill independent of agreement
 - 8 of 18 pair-instances (44.4%) reflected disagreement in strength vs. weakness
- Rubric-based scoring of sole-authored research proposals
 - 71 evaluative comments linked to rubric criteria; failed to predict rubric performance better than chance in any category, with one sig. worse than chance ($p < .001$)

Feldon et al. (2015)

- Student interview data, mentor interview data, and rubric scores all treated as conceptions
 - Patterns linked to structural positionality
 - Avoids ontologically privileging any one of the three data sources
- Conclusions:
 - Not that students, faculty, or both were “wrong” in their conceptions based on an “objective” measure of performance
 - 3 perspectives held independent structural relationships to the phenomenon and needed to be understood in that context in practice (e.g., trustworthiness of letters of recommendation from faculty)

Conclusions

- Pragmatism permits “a discussion no longer crippled by unhelpful epistemological dichotomies”
 - BUT it “is unable to provide *the* (emphasis in original) philosophical foundation for mixed methods research” (Biesta, 2010, p. 114).
- Phenomenography serves as a viable, unified framework to engage discursive, hermeneutic, and experimental research methods productively (Hasselgren & Beach, 1997)
- Flexibility and epistemological assumptions can facilitate nuanced and complex methodological mixing (mixed models) beyond joint consideration of quan and qual evidence analyzed independently (mixed methods)

References & Further Discussion

<https://www.dropbox.com/s/w4td7bzfms2p5jy/FeldonTofel-Grehl2018.pdf?dl=0>