

# Four kinds of incommensurability

Reason, Relativism, and Reality

Spring 2005

# Paradigm shift

- Kuhn is interested in debates between pre- and post-revolutionaries -- between the two sides of a paradigm shift.
- These debates are characterized by "incompleteness of logical contact" (110)
- "Schools guided by different paradigms are always slightly at cross purposes" (112)

The word for this lack of contact  
is "incommensurability"

Incommensurability seems to have at least  
four aspects:

- NO SHARED REASONS
- NO SHARED MEANINGS
- NO SHARED EXPERIENCE
- NO SHARED WORLD

# No shared reasons

- "the proponents of competing paradigms will often disagree about the list of problems that any candidate for paradigm must resolve. Their standards ... are not the same" (148) -- e.g. diffraction vs. light pressure
- This suggests there are no objectively cogent considerations -- no considerations *recognizable by both sides* -- to guide our choice of paradigm
- Examples from outside of science?
- Try to think of two groups at cross purposes because different things count as reasons for them

# No shared meanings

- "[W]ithin the new paradigm, old terms, concepts, and experiments fall into new relationships one with the other" (149).
- "[T]he physical referents of [the Einsteinian concepts of space, time, and mass] are by no means identical to the Newtonian concepts that bear the same name" (102).
- Hence "[c]ommunication across the revolutionary divide is inevitably partial" (149).
- Try to think of two groups talking past each other because a shared word has different meanings in their respective languages

# No shared experiences

- "What were ducks in the scientist's world before the revolution are rabbits afterwards" (111)
- "To the Aristotelians, ... the swinging body was simply falling with difficulty...Galileo saw a pendulum, a body that almost succeeded in repeating the same motion over and over again ad infinitum" (119)
- "Lavoisier...saw oxygen when Priestley had seen dephlogisticated air..." (118)
- "Berthollet saw a compound that could vary in proportion, Proust saw only a physical mixture" (132)
- Theory-ladenness of observation
- Are there other cases where people see different things looking at (what is in some sense) the same scene?

# No shared world

- " [rather than positing a] fixed nature that he 'saw differently', the principle of economy will urge us to say that after discovering oxygen Lavoisier worked in a different world" (118)
- "chemists came to live in a world wher reactons behaved quite differently than they had before" (134)
- "The proponents of competing paradigms practice their trades in different worlds" (150)
- Analogies from elsewhere?

# The question

- To what extent is all this at odds with conventional notions of scientific progress?
- Kuhn is maddeningly unclear about this
- Here is a passage where he *seems* to be addressing the issue for you to ponder until next time

# Kuhn on progress

" I am a convinced believer in scientific progress. Compared with the notion of progress most prevalent among both philosophers of science and laymen, however, [my] position lacks an essential element. A [newly adopted] scientific theory is usually felt to be better ... not only in the sense that it is a better instrument for discovering and solving puzzles but also because it is somehow a better representation of what nature is really like...There is, I think, no theory-independent way to reconstruct phrases like 'really there': the notion of a match between the ontology of a theory [the things a theory says exist] and its "real" counterpart in nature now seems to me illusive in principle. .. I do not doubt, for example, that Newton's mechanics improves on Aristotle's and that Einstein's improves on Newton's as instruments for puzzle solving. But I can see in their succession no coherent direction of ontological development" (206).