PHIL 470: *Seminar: Metaphysics & Epistemology*
Truth and Reality

Handout (21)
W. V. Quine: Natural Kinds

Professor JeeLoo Liu

§ Hempel's Puzzle

1. **Each black raven tends to confirm the law that all ravens are black.**
2. **If all ravens are black, then all non-black things are non-ravens.**
3. **Each green leaf, being a non-black non-raven, should tend to confirm the law that all non-black things are non-ravens.**
4. **Therefore, the existence of a green leaf helps to confirm the law that all ravens are black.**
5. **But green leaves have nothing to do with black ravens. ⇒ paradox**

§ Goodman's Puzzle

1. **Up to now all emeralds are found to be green.**
2. **'x is grue' = either x is found to be green up to today, or x is blue but is not examined before tomorrow.**
3. **Therefore, all emeralds are also grue.**
4. **But how do we decide that emeralds are green and not grue?**

[Note]:
'grue': A color-predicate used by Goodman to illustrate a significant problem with inductive predictions. With respect to a designated future time, an object is grue if it is seen to be green when first observed before that time or if it is seen to be blue when first observed after that time. The problem is that our present observations of green grass seem to provide equal support for hypotheses that grass is green and that grass is grue. There is no simple and apparent way of forestalling this gruesome difficulty.

§ Projectible Predicates and Kinds

[projectible]:
___ Projectible predicates are predicates A and B, whose shared instances in the statement 'All As are Bs', all do count toward confirmation of 'All As are Bs.'
___ A projectible predicate is one that is true of all and only the things of a kind.
e.g. ' blue', 'green' are projectible; 'non-blue', 'non-green' are not.

Questions:
___ What makes a "kind"?

___ Is a kind simply formed by our observation of similarities among samples?
___ Are there "natural kinds" such that the boundaries between kinds exist in
nature itself? [Examples of natural kinds: tiger, lemon, human, etc. Examples of
artificial kinds: chair, sofa, contract, etc. Does such a distinction really exist?]

JeeLoo's question: Is 'virgin' a kind? Is it a natural or artificial kind?
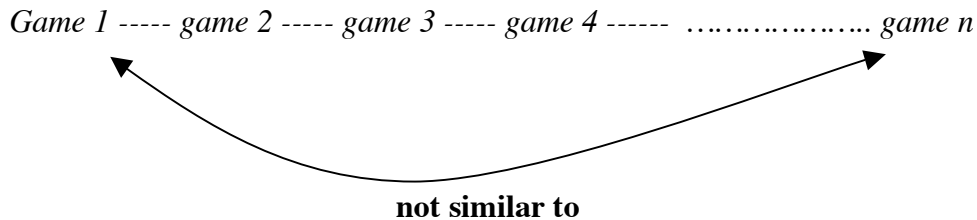
[Proposal #1]:
___ A kind is formed on the basis of some similarity or resemblance among the
things referred to.

The notion of kind and the notion of similarity seemed to be substantially one
notion.

*Q***:** Why aren't jaguars and leopards of the same kind?

*Q***:** What about the family resemblance that Wittgenstein talks about, e.g. the notion of a
"game"?

Game 1 ----- game 2 ----- game 3 ----- game 4 ------ ………………. game n

not similar to

[Proposal #2]:
___ A kind is formed on the basis of a paradigm model (or, the central norm) and
things that differ less than so-and-so from it.

We can assume that there are one or more actual things (*paradigm cases*) that nicely
exemplify the desired norm, and one ore more actual things (*foils*) that deviate just barely
too much to be counted into the desired kind at all. Then we can have our definition: *the
kind with paradigm a and foil b is the set of all the things to which a is more similar than
a is to b*.

Problem: A paradigm case of redness also comes in different shapes, weights, sizes,
and smells. An orange may be more similar to a red apple than a red T-shirt is to a
red apple.

[Proposal #3]: [Carnap]
___ A kind is a set, all members of which are more similar to one another than they
all are to any one thing outside the set.
___ Each non-member differs more from some member than that member differs
from any member.

The Problem of Imperfect Community: [Goodman]
___ e.g. {all red round things, all red wooden things, all round wooden things}
This set meets the definition of a 'kind', and yet surely it is not what any one means
by a kind.

e.g. tangerine; orange; mandarin orange; lemon; lime; grapefruit; …
___ Which ones are more similar to one another?

[Quine's conclusion]:
___ The relation between similarity and kind is less clear and neat than could be wished.
Definition of similarity in terms of kind is halting, and definition of kind in terms of
similarity is unknown.

It is a mark of maturity of a branch of science that the notion of similarity or kind
finally dissolves, so far as it is relevant to that branch of science.

§ Our Learning to Use Natural Kind Terms

Q: Do we have an innate standard of similarity?

Quine:
___ Similarity being a matter of degree, one has to learn by trial and error how reddish or
brownish or greenish a thing can be can still be counted yellow. When he finds he has
applied the word too far out, he can use the false cases as samples to the contrary; and
then he can proceed to guess whether further cases are yellow or not by considering
whether they are more similar to the in-group or the out-group.

Mostly the process is unconscious. It is the same property by which an animal learns to
respond in distinct ways to his master's commands or other discriminated stimulations.

A standard of similarity is in some sense innate. This point is not against empiricism; it
is a commonplace of behavioral psychology. It is part of our animal birthright.

Ostensive learning

      ⇓ (induction)

A general law of English verbal behavior

Not only is ostensive learning a case of induction; it is a game of chance with loaded

dice. At any rate it is so if, as seems plausible, each man's **spacing of qualities** is

enough like his neighbor's.

Levels of difficulty in ostension:
'yellow'; 'water' (mass terms)

'apple'; 'square' (divided reference)
abstract nouns; adverbs; recondite terms of scientific theory…

Always, induction expresses our hope that similar causes will have similar effects; but when thee induction is the ostensive learning of a word, that pious hope blossoms into a foregone conclusion. The uniformity of people's quality spaces virtually assures that similar presentations will elicit similar verdicts.

Q: Why should we assume that we and our neighbors have similar or even uniform quality spaces?

It makes one wonder the more about other inductions, where what is sought is a generalization not about our neighbor's verbal behavior but about the harsh impersonal world.

To trust induction as a way of access to the truths of nature, is to suppose, more nearly, that our quality space matches that of the cosmos.

§ The Problem of Induction – why should we trust induction?

Q: Why should we trust that our sense of similarity is in tune with the world – a world, unlike language, we never made?

Q: Why does our innate subjective spacing of qualities accord so well with the functionally relevant groupings in nature as to make our inductions tend to come out right?

Q: How we, as we now are, in a world we never made, should stand better than random or coin-tossing chances of coming out right when we predict by inductions which are based on our innate , scientifically unjustified similarity standard?

Possible Answer:

(1) Darwinism: If people's innate spacing of qualities is a gene-linked trait, then the spacing that has made for the most successful inductions will have tended to predominate through natural selection.

* One obvious example: color
___ Distinctions that matter for basic physical theory are mostly independent of color contrasts. Color impresses man, but color is cosmically secondary. Color is king in our innate quality space, but undistinguished in cosmic circles. Cosmically, colors would not qualify as kinds.

___ However, color is helpful at the food-gathering level. Here it behaves well under induction, and here has been the survival value of our color-slanted quality space. **[Here we see a reason for not accepting reductionism to the basic physics.]**

(2) Scientific/Theoretical groupings: By the trial-and-error process of theorizing man has regrouped things into new kinds which prove to be better for the purpose of inductions.

* Examples:
___ We group fish by excluding whales and porpoises.
___ We group kangaroos, opossums, and marsupial mice in a single kind, *marsupials*, while excluding ordinary mice.

New groupings, hypothetically adopted at the suggestion of a growing theory, prove favorable to inductions and so become "entrenched." We newly establish the projectibility of some predicate, to our satisfaction, by successfully trying to project it.

In induction nothing succeeds like success.   **-☺**

(3) From groupings based on a sense of similarity to sophisticated theoretical regroupings, we see human progress. One's sense of similarity or one's system of kinds develops and changes and even turns multiple as one matures, making perhaps for increasingly dependable prediction. And at length standards of similarity set in which are geared to theoretical science.
___ This development is a development away from the immediate, subjective, animal sense of similarity to the remoter objectivity of a similarity determined by scientific hypotheses and posits and constructs.

* [Quine's Conclusion on Science]

1. **Science differs from commonsense only in degree of methodological sophistication. (Between an innate similarity notion or spacing of qualities and a scientifically sophisticated one, there are all gradations.)**

2. **We retain different similarity standards, different systems of kinds, for use in different contexts.**

3. **Different similarity measures, or relative similarity notions, best suit different branches of science.**

4. **But a branch of science would only qualify for recognition and classification under such a plan when it had matured to the point of clearing up its similarity notion. Such branches of science would qualify further as unified, or integrated**

into our inclusive systematization of nature, only insofar as their several similarity concepts were *compatible*; capable of meshing, and differing only in the fineness of their discriminations.

5. **In general we can take it as a very special mark of the maturity of a branch of science that it no longer needs an irreducible notion of similarity and kind.**

6. **In this career of the similarity notion, starting in its innate phase, developing over the years in the light of accumulated experience, passing then from the intuitive into theoretical similarity, and finally disappearing altogether, we have <u>a paradigm of the evolution of unreason into science</u>.**

[Note]:
___ The whole point of science seems to be to enable us to make useful predictions. We need to know the kinds so that our general laws can apply to them.

Q: What is Quine's final verdict on the success of science? Does science "capture" the true nature of the world? Or are we constructing a world out of our reason?