Phil 420: *Metaphysics*
Spring 2008

[Handout 12]

J. L. Mackie: *Causes and Conditions*

Professor JeeLoo Liu

§ Mackie's Objectives

1. **Causal knowledge is an indispensable element in science. Causal assertions are embedded in both the results and the procedures of scientific investigation.**
2. **It is therefore worthwhile to investigate the meaning of causal statements and the ways in which we can arrive at causal knowledge.**

*** The main tasks of this paper:**
1. **to give an analysis of the notion of causation**
2. **to give an analysis of the nature of causal explanation**

*** Supplementary Terminology:**

1. [Minimal Sufficient Conditions]:
___ A set of sufficient conditions that contain no redundant factors.

⇒ Provided that there is some necessary and sufficient condition, the disjunction of all the minimal sufficient conditions for this result constitutes a necessary and sufficient condition.

2. [necessary *post factum*]:
___ α_1 is a necessary condition *post factum* for x if the disjunction "α_1 or α_2 …or α_n" represents a necessary condition for x, and of these disjuncts only α_1 was present on the particular occasion when x occurred.
E.g. driving at 76 mph led to the accident that killed him. If he had been driving at 75 mph or 77 mph or …, he could have been killed as well. But driving at 76 mph is the one that was present at this particular accident. So it is a necessary condition *post factum*.)
___ JeeLoo's explanation: In other words, the "necessary and sufficient conditions" include *all* possible scenarios; however, in the given case that has actually happened, the other possibilities are ruled out. Hence, the actual cause is identified *post factum*.

3. [causal field]: (F)
___ In all causal statements, we need to specify the causal field. The cause is required to differentiate, within a wider region in which the effect sometimes

occurs and sometimes does not, the sub-region in which it occurs: this wider region is the causal field.

e.g. 'What causes influenza *in human beings in general*?'

§ Singular Causal Statements

Mackie's theory:

___ A singular causal statements is meant to pick out, as the cause, something that is claimed to be <u>at least</u> an INUS condition.

[necessary conditions for S]: without which, S would not have happened
[sufficient conditions for S]: when present, S would definitely happen

[INUS]: an *insufficient but necessary* (indispensable) part of a condition which is itself *unnecessary but sufficient* for the result

___ A is an INUS condition of a result P if and only if
for some X and for some Y,
(AX or Y) is a necessary and sufficient condition of P,
but neither A nor X on its own is a sufficient condition of P.

___ OR: A is an INUS condition of P when (A…or …) is a necessary and sufficient condition of P.

e.g. the short circuit caused the fire
(The short circuit itself is not sufficient to start the fire. There is a set of conditions when combined with the short circuit constituted the sufficient conditions for the fire. These conditions are sufficient but not necessary since the fire could have started in other ways. Under these sufficient conditions, however, the short circuit becomes a necessary condition.)

[Note]:
___ The whole approach of identifying necessary and sufficient conditions as causes is incompatible with indeterminism.

§ General Causal Statements

[A causes P] = A is an INUS condition of a result P if and only if
___ For some X and for some Y, (AX or Y) is necessary and sufficient for P *in F*.

e.g. the eating of sweets causes tooth decay in human beings with some of their own teeth

[Note]:
___ sweet-eating causes tooth decay ≠ sweet-eating is the cause of tooth decay

There will not in general be any one item which has a unique claim to be regarded as *the cause* even of an individual event, and even after the causal field has been determined. Each of the moments in the minimal sufficient condition, in each minimal sufficient condition, that was present can equally be regarded as the cause. They may be distinguished as predisposing causes, triggering causes, and so on, but it is quite arbitrary

to pick out as "main" and "secondary", different moments which are equally nonredundant items in a minimal sufficient condition, or which are moments in two minimal sufficient conditions each of which makes the other redundant.

§ Necessity and Sufficiency

When S and T are general terms:
___ 'S is a necessary condition of T'
is equivalent to, or at least entails 'All T are S'
___ 'S is a sufficient condition of T'
is equivalent to, or at least entails 'All S are T.'

Thus, the causal statement: '(A… or ….) was necessary and sufficient for P in F' will be represented approximately by two universal statements:
(i) All FP are (A… or …); and
(ii) All F(A… or …) are P.
___ The … are left blank when we cannot completely specify a necessary and sufficient condition for P in F.

*** Much of our ordinary causal knowledge is knowledge of such pairs of incomplete universals, of what we may call *elliptical* or *gappy* causal laws.**

§ The Direction of Causation: A causes P (and not P causes A)

1. **Causal priority is one-directional.**
2. **Causal priority ≠ temporal priority (there could be backward causation).**
3. **Causal priority is separate from the notion of necessary and sufficient condition.**
4. **Causal priority is not necessarily linked with controllability.**
5. **Causal priority is partly based on the direction of explanation.**

§ Conclusion

The advantages of Mackie's analysis of causation:
1. **The account agrees with our informal understanding of causal statements.**
2. **The accounts shows how causal statements can be supported by observation and experiments.**
3. **The account throws new light on the nature of causation and causal explanation and the status of causal knowledge.**
4. **The account is given within the Regularity Theory of Causation:**
   ___ Singular causal statements are governed by causal laws that reveal the regularity of causation between types of events.