Lecture 2
The Methodology of Explication

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Philosophy 517
Spring 2007

Carnap's account of explication

Definitions (Carnap 1950 p. 3)

*The task of **explication** consists in transforming a given more or less inexact concept into an exact one or, rather, in replacing the first by the second. We call the given concept (or the term used for it) the **explicandum**, and the exact concept proposed to take the place of the first (or the term proposed for it) the **explicatum**. The explicandum may belong to everyday language or to a previous stage in the development of scientific language. The explicatum must be given by explicit rules for its use, for example, by a definition which incorporates it into a well-constructed system of scientific either logicomathematical or empirical concepts.*

Singular	Plural
explicandum	explicanda
explicatum	explicata

Need to clarify explicandum (Carnap 1950 p. 4)

There is a temptation to think that, since the explicandum cannot be given in exact terms anyway, it does not matter much how we formulate the problem. But this would be quite wrong. On the contrary . . . we must . . . do all we can to make at least practically clear what is meant as the explicandum. What X means by a certain term in contexts of a certain kind is at least practically clear to Y if Y is able to predict correctly X's interpretation for most of the simple, ordinary cases of the use of the term in those contexts. It seems to me that, in raising problems of analysis or explication, philosophers very frequently violate this requirement. They ask questions like: 'What is causality?', 'What is life?', 'What is mind?', 'What is justice?', etc. Then they often immediately start to look for an answer without first examining the tacit assumption that the terms of the question are at least practically clear enough to serve as a basis for an investigation, for an analysis or explication.

How to clarify (Carnap 1950 p. 4)

Even though the terms in question are unsystematic, inexact terms, there are means for reaching a relatively good mutual understanding as to their intended meaning. An indication of the meaning with the help of some examples for its intended use and other examples for uses not now intended can help the understanding. An informal explanation in general terms may be added. All explanations of this kind serve only to make clear what is meant as the explicandum; they do not yet supply an explication, say, a definition of the explicatum; they belong still to the formulation of the problem, not yet to the construction of an answer.

Example of clarification (Carnap 1950 pp. 4–5)

I might say, for example: ... "I am looking for an explication of the term 'true', not as used in phrases like 'a true democracy', 'a true friend', etc., but as used in everyday life, in legal proceedings, in logic, and in science, in about the sense of 'correct', 'accurate', 'veridical', 'not false', 'neither error nor lie', as applied to statements, assertions, reports, stories, etc." This explanation is not yet an explication; an explication may be given by a definition within the framework of semantical concepts, for example, by Tarski's definition of 'true'.

Requirements for an explicatum (Carnap 1950 p. 7)

1. *The explicatum is to be* **similar to the explicandum** *in such a way that, in most cases in which the explicandum has so far been used, the explicatum can be used; however, close similarity is not required, and considerable differences are permitted.*

2. *The characterization of the explicatum, that is, the rules of its use (for instance, in the form of a definition), is to be given in an* **exact** *form, so as to introduce the explicatum into a well-connected system of scientific concepts.*

3. *The explicatum is to be a* **fruitful** *concept, that is, useful for the formulation of many universal statements (empirical laws in the case of a nonlogical concept, logical theorems in the case of a logical concept).*

4. *The explicatum should be as* **simple** *as possible; this means as simple as the more important requirements (1), (2), and (3) permit.*

Fish example (Carnap 1950 pp. 5–6)

- Explicandum: The prescientific meaning of "fish," i.e., animal living in water. Carnap calls this concept "Fish."
- Explicatum: The scientific meaning of "fish," i.e., animal which lives in water, is a cold-blooded vertebrate, and has gills throughout life. Carnap calls this concept "Piscis."
- The motivation for narrowing the concept was fruitfulness.
- *That the explicandum Fish has been replaced by the explicatum Piscis does not mean that the former term can always be replaced by the latter; because of the difference in meaning . . . this is obviously not the case. The former concept has been succeeded by the latter in this sense: the former is no longer necessary in scientific talk; most of what previously was said with the former can now be said with the help of the latter (though often in a different form, not by simple replacement).* (p. 6)

Concepts, not terms

Carnap allowed explicandum and explicatum to be either concepts or terms.

> We call the given concept (or the term used for it) the **explicandum**, and the exact concept proposed to take the place of the first (or the term proposed for it) the **explicatum**.

I say they must be concepts, not terms.

- The term used to express the explicandum is often ambiguous, i.e., it is used for more than one concept.
- One thing that we do in clarifying the explicandum is to distinguish these concepts and specify the one that is our explicandum.

Examples

1. The term "probability" is used for both inductive and physical probability. The explicata for these two concepts must be very different.

2. Carnap said:

   I might say, for example: ... "I am looking for an explication of the term 'true', not as used in phrases like 'a true democracy', 'a true friend', etc., but as used in everyday life, in legal proceedings, in logic, and in science, in about the sense of 'correct', 'accurate', 'veridical', 'not false', 'neither error nor lie', as applied to statements, assertions, reports, stories, etc."

   Here the explicandum is a term "as used in" a certain way, i.e., a concept, not really the term.

The fish example is fishy

- An explicatum is supposed to be usable in place of the explicandum. Carnap claimed that is true here:

    [Fish] is no longer necessary in scientific talk; most of what previously was said with [Fish] can now be said with the help of [Piscis](though often in a different form, not by simple replacement).

    That doesn't seem to be true. Carnap gives no examples.

- An explicatum is supposed to be more exact than the explicandum. That isn't true here.
    - Fish: Animal that lives in water.
    - Piscis: Animal that lives in water, is cold-blooded, a vertebrate, and has gills throughout life.

    Piscis is *narrower*, not *more exact*.

- The real situation: Scientists used the existing word "fish" for a new but related concept. That's not explication.

- Carnap may have been mislead by thinking of explicanda as terms, rather than concepts.

1. Explain the meaning of "explication," "explicandum," and "explicatum."

2. What is meant by "clarification of the explicandum?" What are some ways of doing this? How does this differ from explication?

3. Does Carnap regard explicanda and explicata as terms or concepts? Is this satisfactory? Why, or why not?

4. Carnap said:

   > One might perhaps think that the explicatum should be as close to or as similar with the explicandum as the latter's vagueness permits. However, it is easily seen that this requirement is too strong, that the actual procedure of scientists is often not in agreement with it, and for good reasons.

   What example did Carnap use to support this claim? Does that example really support his claim? Why, or why not?

In the previous lecture I was clarifying the explicandum. In the next lecture I'll start specifying an explicatum. General idea:

- We define a two-place function p which takes sentences as its arguments and has real numbers, denoted $p(H|E)$, as its values.
- The definition will consist in stating rules that determine the numbers $p(H|E)$ for all H and E in the domain of p.
- The function p will be our explicatum for inductive probability, in the sense that $p(H|E)$ explicates the inductive probability of H given E.
- This definition of p is chosen so as to make p a good explicatum, i.e., similar to inductive probability, exact, fruitful, and simple.

They aren't the same

- An explicatum is often specified by giving an explicit definition of it.
    - We define the function p by specifying the values of $p(H|E)$.

    But what we are here defining is the *explicatum*, not the *explicandum*. No precise definition of the explicandum is possible.

- An explicatum can be specified without giving an explicit definition of it.
    - We can instead specify its meaning by stating postulates that it obeys. Concepts introduced this way are called "theoretical concepts." Example: Quark.

Carnap's remark on "explicatum" (Carnap 1950 p. 3)

Perhaps the form 'explicans' might be considered instead of 'explicatum'; however, I think that the analogy with the terms 'definiendum' and 'definiens' would not be useful because, if the explication consists in giving an explicit definition, then both the definiens and the definiendum in this definition express the explicatum, while the explicandum does not occur.

The value of explication

It seems prima facie evident that to offer formal explanations of key terms of scientific theories to one who seeks philosophical illumination of essential concepts of non-scientific discourse, is to do something utterly irrelevant—is a sheer misunderstanding, like offering a text-book on physiology to someone who says (with a sigh) that he wished he understood the workings of the human heart.

Explication gives us improved new concepts that can serve the same purposes as the ordinary concepts that created the puzzles; the problems are solved by using the new language instead of the ordinary language in the problematic contexts.

Carnap's microtome analogy (Carnap 1963 pp. 938–939)

A natural language is like a crude, primitive pocketknife, very useful for a hundred different purposes. But for certain specific purposes, special tools are more efficient, e.g., chisels, cutting-machines, and finally the microtome. If we find that the pocket knife is too crude for a given purpose and creates defective products, we shall try to discover the cause of the failure, and then either use the knife more skillfully, or replace it for this special purpose by a more suitable tool, or even invent a new one. [Strawson's] thesis is like saying that by using a special tool we evade the problem of the correct use of the cruder tool. But would anyone criticize the bacteriologist for using a microtome, and assert that he is evading the problem of correctly using a pocketknife?

Criticism of Carnap's reply (Maher forthcoming)

- Carnap seems to have thought that we don't need to take problems about ordinary language very seriously because, when such problems arise, we can develop a new more precise language that serves the same purposes and avoids the problems.

- But in many cases our purpose is to resolve a problem about a concept of ordinary language, and Carnap has not indicated how a new more precise language can serve that purpose.

- Example: Suppose our purpose is to determine whether E raises the inductive probability of H. We can define an explicatum p for inductive probability, but Carnap hasn't explained how that serves our purpose.

- A good explicatum must be similar to the explicandum, so an explicator can't dismiss problems about ordinary language.

A better reply (Maher forthcoming)

Suppose our problem is to determine whether a sentence S of ordinary language is true. If we apply the method of explication, we will formulate a corresponding explicatum sentence S' and determine whether it is true. That doesn't *by itself* solve the problem but can greatly assist in three ways:

1. The attempt to formulate S' often shows that the original sentence S was ambiguous or incomplete and needs to be stated more carefully.

2. If the explicata appearing in S' are known to correspond well to their explicanda in other cases, that is a reason to think that they will correspond well in this case too, and hence to think that the truth value of S will be the same as that of S'.

3. We can translate the proof or disproof of S' into a parallel argument about the corresponding explicanda and see if this seems to be sound; if so, we obtain a direct argument for or against S.

Example (Maher forthcoming)

Nicod claimed that a law of the form "All F are G" is confirmed by evidence that something is both F and G (where "confirms" means "raises the inductive probability of"). Suppose our problem is to determine whether this is true.

1. Attempting to explicate confirmation reveals that whether E confirms H depends on background evidence. We might restate Nicod's claim as:

   N. A law of the form "All F are G" is confirmed by evidence that something is both F and G, given no background evidence.

2. In (Maher 2004) I defined an explicatum C for confirmation, formulated an analog of N using C—call this N'—and proved that N' is false. I showed that C corresponds well with the concept of confirmation in other cases, so this is reason to think N is false.

3. I showed that the proof that N' is false makes intuitive sense when translated back into qualitative explicandum terms.

Strawson conceded this (Strawson 1963 p. 513)

I should not wish to deny that in the discharge of this task [resolving problems in unconstructed concepts], the construction of a model object of linguistic comparison may sometimes be of great help.

If explication can "be of great help" then it is *not* "like offering a text-book on physiology to someone who says (with a sigh) that he wished he understood the workings of the human heart."

5. State two reasons why explicating a concept isn't the same as defining that concept.

6. Strawson said:

   > *To offer formal explanations of key terms of scientific theories to one who seeks philosophical illumination of essential concepts of non-scientific discourse, is to do something utterly irrelevant.*

   How did Carnap reply to this? Was his reply adequate? Why, or why not?

7. According to Maher, how does the method of explication help to solve philosophical problems about concepts of ordinary language?

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