

Abduction in Philosophy
IVR World Congress, Special workshop SW 41
Disciplinary perspectives and legal truth
Frankfurt, Germany, August 15, 2011
Professor Scott Brewer
Harvard Law School

Abduction (inference to the best explanation) and the role of viewpoint

- Explanations are always offered from and according to the criteria of a "viewpoint" (see Brewer, *Scientific Expert Testimony and Intellectual Due Process*, 107 YALE L.J. 1535, 1568 ff.). There are, therefore, many logical species of what philosophers refer to as "abduction" (or, synonymously, "inference to the best explanation"). For example:
 - factual abduction
 - legal abduction
 - moral abduction
 - logical abduction
 - interpretive abduction
 - theological abduction
- I use the term 'abduction' and the phrase 'abductive inference' to identify the abstract genus to which all these species belong.
- In this special IVR panel, we will be hearing about the points of view from which your particular discipline performs the reasoning task of abduction.
- Abductive inferences are *arguments*. 'Argument' is defined as a set of propositions (formal) arranged into subsets of premises and conclusion such that the conclusion is asserted to be warranted on the basis of premises. There are no other constraints on the content of the propositions that can appear as premises and conclusion – e.g., 'P therefore P' is an argument, so is 'P therefore not-P'
- Examples of uses of "point of view" in philosophy and legal theory
 - Oliver Wendell Holmes's "bad man"
 - H.L.A. Hart: "internal" and "external" attitudes--points of view--toward legal rules.
 - Dworkin: legal interpreters seek to put the legal materials they interpret in their "best light," best "from the standpoint of political morality."
 - Hotly contested claim in a branch of recent legal academic writing is that there is a distinct "women's point of view" or "black point of view."
 - Laurence Bonjour: "[t]he distinguishing characteristic of epistemic justification is . . . its essential or internal relation to the cognitive goal of truth."
 - Literal point of view: "bird's eye"
 - "Expertise and "point of view"

An expert witness might tell a jury or judge what the facts are from the point of view of a biologist or a chemist or a ballisticsian or a psychiatrist--indeed, the point of view of the expert scientist will be of central concern for my later analysis of practical epistemic deference. The facts that are salient from these expert points of view will by no means always be the same as the facts that are salient from some practical point of view, such as a legal or moral point of view.

- Institutional or social point of view
One may also refer to the point of view of a particular type of actor in an institutional or other social setting--the point of view of a legislator or a judge, a lawyer or a citizen, a president or a "bad man," a parent or a child, a professor or a student.
- Enterprise point of view: systems of moral reasoning ("moral point of view"), of philosophical reasoning (the philosophical point of view), systems of reasoning in support of business objectives (the business point of view), the military point of view, the economic point of view, the religious point of view.

The basic structure of all inferences to the best explanation -- revision of Peirce's scheme

The conclusion of an abductive inference is an explanatory hypothesis, sometimes referred to as an *explanans*, an "explaining thing" (plural, *explanantia*). The premises consist of

(i) a proposition that describes some event or phenomenon that the abductive reasoner believes stands in need of explanation (this proposition is called an *explanandum*, a "thing to be explained," plural *explananda*);

(ii) one or more propositions to the effect that, *if* some specific explanatory hypothesis were in fact true or otherwise warranted, then the explanandum would be sufficiently **plausibly** explained for the reasoner's purposes; this we will refer to as the "sufficient explanation conditional." As suggested by this phrase, this premise appears in the form of a logical conditional, *If $\Phi \checkmark \rightarrow \Theta$* (read "If Φ were true that would **plausibly** explain Θ ") in which the antecedent (Φ) is some specific explanatory hypothesis (the explanans) that the reasoner has "discovered" in the course of the abductive reasoning, and the consequent (Θ) is the explanandum that is asserted in the first premise of the abductive inference. Note that there can be several such explanantia (Φ_i), each of which can be represented as a separate premise in the abductive inference. In fact, at this stage of abductive inference, reasoners **tend to** pass the Φ_i through a "plausibility filter" -- that is, each Φ_i tends to provide a plausible explanation of the explanandum -- sufficiently plausible to warrant the effort of confirming or disconfirming the Φ_i (see Brown, *The Economy of Peirce's Abduction*). The criteria of plausibility will vary greatly according to the point of view from which the explanation is offered (logical, legal, interpretative, religious, etc.). However, passing the considered Φ_i through

a plausibility filter is not a formal or invariant requirement at this step of abductive inference.

(iii) a proposition asserting that, for some explanans Φ_n among all the Φ_i for which the sufficient explanation conditional is true, no other Φ_i explains Θ as well as Φ_n . We shall refer to this as the "uniqueness condition." This condition is met (and thus the assertion of the proposition in this step is putatively warranted) when the reasoner has confirmed Φ_n and either disconfirmed each other Φ_i or determined that Φ_n is a better explanation than other still potentially plausible competitors. A reasoner will assert a "best explanation conditional" just when she determines that the uniqueness condition has been met by a candidate for Φ_n . The best explanation conditional may be represented as, 'If $\Phi_n \checkmark \rightarrow \Theta$ ', read as, " Φ_n explains Θ and for all Φ_i , if Φ_i explains Θ then Φ_i is identical to Φ_n ". Note that in some argumentative settings abduction can be *inconclusive*, pending more data or more theory. In the special domain of "inference to the best legal explanation," however, burdens of persuasion and burdens of production virtually always yield a selection of a single Φ_n .

Glossary

- ' Θ ' stands for an explanandum
- ' $\Phi_1 \dots \Phi_n$ ' stands for (*plausible*) explanatory hypotheses (explanantia)
- 'If $\Phi_i \checkmark \rightarrow \Theta$ ' stands for a "sufficient explanation conditional" -- "If Φ_n were true, that would (plausibly) explain Θ ";
- "If $\Phi_n \checkmark \checkmark \rightarrow \Theta$ " stands for a "best explanation conditional" -- " Φ_n explains Θ better than any Φ_i where $\Phi_i \neq \Phi_n$ "

Schema

1. Θ
 2. For each candidate Φ_i , ' $\Phi_i \checkmark \rightarrow \Theta$ ' is true.
 3. For candidate Φ_n , ' $\Phi_n \checkmark \checkmark \rightarrow \Theta$ ' is true.
- therefore, Φ_n

Table of features of abductive inferences

Element of abductive inference	# of items	abstract representation
explanandum	usually one focal item "to be explained"	Θ
"sufficient explanation conditional" and "plausibility filter": for each candidate explanans Φ_i this must be true: If $\Phi_i \checkmark \rightarrow \Theta$	often, but not always several; limit point is when only one is plausible and if confirmed; then the sole one will, perforce, be "best" because "only"	$\Phi_1, \Phi_2, \Phi_3 \dots \Phi_n$
"uniqueness condition": for the candidate	the goal is to reach one, the "best" according to	Φ_n

inferred explanans Φ_n this must be true: $\Phi_n \checkmark\checkmark$ → Θ	applicable viewpoint criteria	
--	-------------------------------	--

Worksheet for elements of abductive inference

What is the explanandum?	
What are the potential explanantia?	
Is each of the potential explanantia Φ_i such that the sufficient explanation conditional is true for it?	
Is there an explanans that satisfies the uniqueness condition such that the best explanation conditional is true for it?	

Routine abduction vs. novel abduction

Some abductive inferences actually yield hitherto unknown or unstated explanations of their explananda. We may call these "novel" abductions. It is novel abductions that are referred to in the characterization of abduction as an integral part of the process of "scientific discovery" -- as with (at the time), Einstein's theory of relatively.

A great many abductions take place within explanatory frameworks that are already established. We may call these "routine" abductions -- such as use of DNA fingerprint evidence in a trial to explain the presence of a given blood sample at the scene of the crime, where genetic typing is a well-established theory.

The species of philosophical abduction: three types

(1) "Apparent excluder analysis"

Many philosophical problems are ones of understanding how something is or can be possible. . . . How is it possible that we know anything, given the facts the skeptic enumerates The form of these questions is, how is one thing possible, given certain other things? Some statements $r_1, . . . , r_n$ are assumed or accepted or taken for granted, and there is a tension between them and some other statement p ; they appear to exclude p 's holding true. Let us term the r_i *apparent excluders* (of p). Since the statement p is also accepted as true, we face the question of how p is possible, given its apparent excluders. . . . The strongest

mode of apparent exclusion would be logical incompatibility: the apparent excluders, in conjunction, logically (appear to) imply that p is false" "To rebut an argument for not- p from specific apparent excluders removes a reason for thinking p cannot hold, and so counts as a kind of explanation of how p is possible." (R. Nozick, **Philosophical Explanations** (1981), pp. 8,9,10)

Explanatory options in apparent excluder analysis, example from Descartes

- p: I know that I'm sitting in a classroom right now.
- r_1 : For all I know, there exist an evil demon
- r_2 : For all I know, that evil demon is has the power to deceive me about what I believe about the world on the basis of my senses
- r_3 For all I know, a powerful evil demon is currently deceiving me into thinking that I'm sitting in a classroom right now.

- Descartes offered a *philosophical explanation* of how it is possible that p (I know that I'm sitting in a classroom right now) when the *falsity* of p seems to be entailed by r_1 through r_3 (that is, when the truth of r_1 and r_2 and r_3 , taken together, "apparently excludes" the truth of p). Descartes explained how we could *trust* our judgments about the external world (including, the judgment about where in world we are at the moment), despite the *doubt* posed by the "evil demon" apparent excluder (and also despite the doubt posed by the "I could be dreaming now" apparent excluder).

(2) Socratic Method and Conceptual Analysis

Form of the method

1. Interlocutor asserts a proposition (often, a definition of a virtue, such as justice, see *Gorgias* and *Republic*, or temperance, see *Charmides* , or piety, see *Euthyphro*, or courage, see *Laches*), d
2. Socrates secures the interlocutor's agreement to further propositions, q and r
3. Socrates then argues, and the interlocutor agrees, that q and r entail not- d
4. Socrates claims that not- d has been proved
5. Interlocutor tries d' . . .

Example (Plato, *Republic*):

d : " Justice consists of not deceiving anyone and giving everyone what is owed to him."

e : if a friend left a knife, his property, with you, you "owe" it to him to return the property; he comes to you with a murderous look in his eye screaming that he wants to kill Fred and asks you where the knife is. (Assume you can't talk him out of it.) Should you lie?

(3) Reflective Equilibrium

Principle (tentatively) believed, d: Justice consists of not deceiving anyone and giving everyone what is owed to him.

Challenge to this principle:

e: One *should* intentionally deceive a friend who came to us "not in his right mind" and asked us to give him back his knife.

f: One *should* choose not to give the crazed friend his knife, even though we are only custodians of it and it's rightly his -- as mere custodians, we "owe" it to him.

- **Options for reflective equilibrium:** "hold onto" your view that d is true and give up your view that e and f are true, **or** "hold onto" your view that e and f are true and give up your view that d is true -- leading to some kind of modification of d (see example above, modifying "rule" for appropriate scope of philosophy).
- **In the typical Socratic method,** the proof goes "one way": giving up d and holding onto e and f.