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Qualified Reasoning Approaching Deductive Validity

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Title: Qualified Reasoning Approaching Deductive Validity[1]
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Much reasoning in our everyday lives comes close to being deductively valid (especially when an assumption is added that seems to be needed by, or used by, the argument), but seemingly is not deductively valid because the parts include implicit or explicit qualifying words like 'usually', 'rarely', 'probably', 'probable', 'likely', 'almost certainly', 'ceteris paribus', and 'prima facie'. Here is an example of such reasoning that I offered recently to a friend:

Basic Raccoon Example:

> Raccoons rarely attack a human when they do not feel threatened and do not feel that their young are threatened. The raccoon that is ambling across the yard does not feel threatened by us, and its young are not around (and so the raccoon does not feel that they are threatened). So the raccoon will probably not bother you, even though you are within fifteen feet of it.

Note the occurrence of the qualifiers, "rarely" and "probably" in this argument, making this a case of qualified reasoning. Although I shall in this essay consider only arguments to which deductive standards are being applied, as well as Trudy Govier's conduction (1999, Ch. 10), the definition of 'qualified reasoning' under which I am operating is not so limited. Rather it includes any reasoning that explicitly or implicitly contains qualifying terms such as those listed above. I am working on a longer essay considering qualified reasoning to which other standards are being applied, including generalization, best-explanation, and value-judging standards.

Here I shall contend that the raccoon argument is not deductively valid, contrary to the opinions of some people about arguments like this one; that instructive variations of the form of this argument are not deductively valid or have significant problems; and that subjective probability approaches and attempts to substitute numbers for qualifiers, do not help. Failing to find a better approach, I shall offer what I believe to be a reasonable way to handle qualified reasoning, one that employs standards, but that also depends on experienced, knowledgeable, sensitive, and intelligent judgment. The approach I tentatively recommend is, I argue, an improvement upon Trudy Govier's conductive reasoning at least because it explicitly employs established standards to help us make judgments. Michael Scriven (2000) recently noted the problem I discuss in this essay, but offered no concrete way to handle the kind of arguments with which I shall be dealing.

There is an initial plausibility to a judgment that the raccoon argument is deductively valid. After all, there is a qualification in the reasons and an accommodating one in the conclusion of an otherwise apparently deductively-valid argument. Alvin Plantinga (1993, p. 163), Stephen Toulmin (1964, p. 131), and Perry Weddle (1979, p. 3), among others, are willing to ascribe deductive validity to similar examples, though Plantinga hedges with a limited-to-the-evidence qualification. Respectively, their examples are as follows:

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[1]This working paper is part of an attempt to develop and elaborate a portion of a more comprehensive paper (Ennis, 2001).

> Plantinga: "Feike can swim is probable with respect to 99 of 100 Frisean lifeguards can swim and Feike is a Frisian lifeguard" (p. 161, italics in original).
>
> Toulmin: "Petersen is a Swede; scarcely any Swedes are Roman Catholics; so, almost certainly, Peterson is not a Roman Catholic" (p. 131).
>
> Weddle: "When a low pressure ridge moves down from the Gulf of Alaska (etc.), we usually [in Sacramento, California] get rain the next day, and a low pressure ridge is moving down right now (etc.); hence, it is likely to rain tomorrow" (p. 3).

Each of these arguments, which their authors claim to be deductively valid, is instructive. But before considering them, I should like to show why the raccoon argument is not deductively valid.

I might well believe the first two propositions of the raccoon argument, but also observe that the raccoon is foaming at the mouth, and consequently believe that the raccoon is rabid. In that case I would be wise not to assert the conclusion that the raccoon probably will not bother you. It might well be wrong to say that the raccoon probably will not bother you. How then could the conclusion follow necessarily from the reasons? The denial of the conclusion would not contradict the assertion of the premises. This confluence of circumstances constitutes a counterexample to a claim of deductive validity for the raccoon argument.

"On the Evidence Provided" and Similar Protective Qualifications

Plantinga's qualification, "with respect to", succeeds in shielding his argument against such counterexamples because a counterexample would introduce more facts about the situation, which the qualification precludes. Other phrases he uses, including "on the evidence provided" (p. 162) and "given just that evidence" (p. 161), similarly signal the ignoring of any other factors, known or unknown, that might be relevant.

The trouble with these limited-to-the-evidence qualifications is that the conclusion is then not the sort of thing we want to know in most real situations because all we learn under such a qualification is what the evidence to which reference is made supposedly tells us, no matter how incomplete or one-sided that evidence may be.

In the Feike case, the conclusion is that with respect to the given evidence (no matter how incomplete or one-sided) it is probable that Feike can swim. The conclusion is not simply that it is probable that Feike can swim. For if it were the simpler conclusion that it is probable the Feike can swim, then the argument would be a standard statistical syllogism and would be vulnerable to the counter-evidence that I am about to produce.

Suppose that I offer Plantinga's argument to the conclusion that on the evidence provided, Feike can swim, knowing full well that Feike's mother is Prime Minister of Frisia, and that Frisia is a corrupt country, rife with nepotism and influence peddling. Furthermore, suppose I know that Feike has always been placed as a redundant lifeguard in the beach positions to which he has been assigned, and, for these and other reasons, I actually think it probable that he is unable to swim. Suppose further that you are the new chief lifeguard at a Frisian beach, and are trying to decide to what position to assign Feike. One question of interest to you could well be, 'Is it probable that Feike can swim?' rather than 'Is it probable that Feike can swim on just the evidence that 99 out of 100 Frisean lifeguards can swim and Feike is a Frisean lifeguard?' Under those conditions, to offer Plantinga's argument is not responsive to your interest—or to most

conceivable real interests. Adding the limited-to-the-evidence qualification actually could divert your attention from the matter of interest in this case as I have developed it. The frequency ratio, 99 to 1—with no other evidence in the background—is by itself insufficient evidence for your concern.

I realize that sometimes an argument qualified with "on the evidence provided" is good enough for the situation—when for example, we know that the arguer is an expert, has done a thorough job of looking for evidence on both sides of a question, and makes reference to all of the evidence discovered. But a simple frequency ratio like 99 to 1 all by itself is not enough, not even in the common balls-in-urn cases. The urn set-up might be crooked and there might be good reasons to think so, even though we could be, but are not, aware of these reasons.

Toulmin's Petersen

Contrary to Toulmin, I hold that Toulmin's argument about Petersen's religious status is not deductively valid. Consider: Peterson might live in a small town in Sweden in which most of the population is Roman Catholic. If that is the case, then it might well not be almost certain that Peterson is not a Roman Catholic—even if Toulmin's two premises are true. So denying Toulmin's conclusion does not contradict the assertion of the premises. This argument is quite similar to the raccoon argument.

However, Toulmin is rather emphatic in claiming that the argument is valid (and given his surrounding discussion, I do not see how he could mean anything by "valid" but 'deductively valid', as do most contemporary philosophers). He says this in the face of his admission that a case like my counterexample town in Sweden could occur. That is, he admits that we could "know something further about Petersen which places him very probably in the Roman Catholic minority" (p. 133). This is parallel to Plantinga's case of failing to attempt to attend to all the evidence that one can reasonably be expected to find and consider—in deciding what necessarily is almost certain, or probable. Suppose that we visit a predominantly Roman Catholic town in Sweden, meet Petersen in a shop, strike up a conversation with him, and learn that he has lived there all his life. At that point, I am not saying that we should say that he is probably a Roman Catholic. But we have no right to claim that he is almost certainly not a Roman Catholic, even though we know that scarcely any Swedes are Roman Catholics. We do not know enough yet.

Weddle's 'Etc.'

Weddle's double use of "etc." leaves us in doubt about the specific content of his weather argument. It is difficult to appraise an argument with such vague content.

So I shall first attempt to supplement the content of the argument in a way that I believe Weddle would accept. Presumably the word, "etc.", in both occurrences stands for the same finite list of factors that obtained in his situation, and that in the past have, when associated with a low pressure ridge moving down from the Gulf of Alaska, usually been followed by rain the next day. If it is an infinite list of significant factors, then we cannot tell whether they have all occurred on this occasion, nor could the generalization have been established. So it must be finite. If, as I suspect, Weddle is the sort of amateur meteorologist that I am, there will be roughly three or four of these factors.

However, we all know that weather predictions of this sort sometimes do not work out -- because some other factor intruded -- not one of the three or four. For my counterexample I need only note the possible existence of one of these other factors, perhaps the unexpected rapid east-northeastward advance of a Pacific cold front that trails to the west well north of Sacramento, pushing the ridge of low pressure eastward well to the north of Sacramento, making it unlikely that it would rain in Sacramento tomorrow. Then, even though the two premises (as filled out with some set of factors satisfactory to Weddle) are accepted as true, the conclusion is false. So the argument is deductively invalid.

Weddle, as I have sketched out his argument, seems to be neglecting the importance for likelihood of the details of the situation. If the details of the actual situation imply that something is unlikely, then it cannot be likely, even though such an occurrence usually would be likely. Since his conclusion does not necessarily follow in the circumstance I described, the argument is deductively invalid.

Suppose, on the other hand that we replace the "etc." in Weddle's generalization with a "ceteris paribus" qualification, which might be what he intended. If we then just omit the "etc." in the instantiating premise, then the "*ceteris paribus*" in the first premise tells us that there might be exceptions, making the argument deductively invalid. If instead, we also replace the "etc." in the instantiating premise with a "ceteris paribus" (meaning, I suppose, "Other things are equal"), there would then seem to be no way to establish the second premise, knowing, as we do, from the "ceteris paribus" in the first premise that there are possible exceptions, unknown in advance. The argument then might be deductively valid, but not useful.

Not All Qualified Reasoning is Deductively Invalid

I do not want to give the impression that all qualified reasoning is deductively invalid. For example, I am not here challenging reasoning fitting the propositional schema, 'If P, then probably Q, P; so probably Q' and variants thereof, which contain the same qualifier as part of the same proposition throughout.

Nor do I want to challenge the deductive validity of arguments fitting the schema, 'Probably all A's are B's, x is an A; so x is probably a B', and variants thereof,

Assigning Numbers to the Qualifiers and Producing a Number for the Conclusion

One way to attempt to deal with arguments containing one or more qualifiers explicitly or implicitly is to convert the terms into numbers. For example, we could replace "rarely" in the first raccoon premise with 'with a probability (or plausibility, or strength-of-support) of .04'. David Hitchcock,[2] among others, including Nicholas Rescher in Plausible Reasoning (1976) and John Pollock in Cognitive Carpentry (1995) has suggested this idea. The result in Rescher's and Pollock's systems could be respectively a plausibility or strength-of-support syllogism with all qualifiers replaced by numbers and numbers assigned in every statement.

One significant problem with these approaches is that there is no reasonable way to assign numbers to qualifiers, so far as I can see. For one thing, qualifiers are vague and numbers are

[2] Personal communication, 2000.

precise; for another, it is unclear on which part of the number spectrum to focus for a selection. What number can we assign to "rarely'? Why, for example, pick .04 for "rarely" in the raccoon argument rather than .03, or .0516, or .006, or .092? In response, one might pick a range, say .01 to .07; but then we could ask why that range rather than .0101 to .06981? In response, one might suggest a .05 confidence interval of .0100 to .0516, but why that confidence interval? Alternatively one might assign a normal probability distribution with a mean of .04 and a standard deviation of .02. But again why that particular range rather than, say, one with a mean of .04001 and a standard deviation of .019998, and why a normal distribution instead of one of a large number of other possibilities?

The word "rarely" is vague, and often usefully so. Numbers are precise. I am reminded of Aristotle's advice to let the degree of precision fit the subject matter[3] The qualifier, "rarely", is too vague and lacking in sufficient focus to assign a number, or range, or confidence interval, or probability distribution to it without being arbitrary about it. When I made my statement about raccoons, I had no number in mind, and could not have produced one if asked. Yet my statement is true.

It is even stranger to assign numbers to '*ceteris paribus*' and '*prima facie*'. That boggles the mind.

The systems actually worked out by Rescher and Pollock have many complexities that I have not presented. But the complexities do not eliminate the basic problem noted.

Subjective Probability

Another possibility is to treat statements containing qualifiers (as well as straight probability statements that contain numbers) as statements of strength of belief, expressible in numbers (ranging from +1 to -1). Under that approach, called "subjective probability", the conclusion of the basic raccoon argument could become:

> My strength of belief that the raccoon will not bother you is .96.

As before, a range or a confidence interval, or a probability-like strength-of-belief distribution could also be used (although it is difficult to imagine that most people could understand and report these more complex beliefs). My previous comment to the effect that 'rarely' and other qualifiers are vague could then be countered by saying that we each could give our own numerical meaning to them, and accordingly that each time we use them, the expression of strength of belief is within the control of each believer according to the varying ranges, strengths, distributions, and degrees of precision felt by the believer.

Unfortunately, there are strong objections to the subjective approach. I shall give two that show that such substitutions radically change what we are saying, omitting important things that we do with qualifying words, like making claims about the world outside of our heads.

First, the subjective approach wipes out real disagreement among people. If A says, "Probably the raccoon will not bother you", and B says, "Probably the raccoon will bother you", they are disagreeing with each other. But under the subjective probability interpretation, they are not disagreeing with each other. A would be saying that A's strength of belief that the raccoon

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[3] *The Nichomachaen Ethics,* I, 3.

will not bother you is, for example, .96, something to which B can readily agree. That is, B can readily agree that A's strength of belief is .96. The disagreement disappeared.

Secondly, it leads to oddities when the person's belief is contrary to the objective probability. For example, a gambler rolling a single honest die after twelve rolls without getting a six, might have a strength of belief of .9 that a six will come up next, meaning under the subjective interpretation that the probability of getting a six is .9, or implying that the next will probably be a six. But the probability of getting a six on the next roll of an honest die is not .9; it is 1/6. Nor is the next roll probably going to be a six; it is probably not going to be a six, contra the gambler's fallacy.

The prospects look dim for a useful deductively valid interpretation of the raccoon example, and similar examples.

Conductive Reasoning

I believe that Carl Wellman (1971) originated the term, "conductive reasoning" and Trudy Govier has been its standard bearer in the field of informal logic. For Govier (1999), conductive arguments have "one or more premises…put forward as reasons supporting a conclusion [,]…as relevant to that conclusion, as counting in favor of it, but not providing conclusive support for it" (p.155); for Govier, common characteristics of conductive reasoning include not being taken as entailments by the arguer or the audience (p. 155), the arguer's possibly acknowledging points that actually or apparently count against the conclusion (p. 155), and convergence. In interpretation of convergence, she says, "That is to say, each premise constitutes, or is put forward as constituting, a distinct reason or piece of evidence that the arguer brings forward as relevant to his or her case. If some premises were to be removed, the relevance of the others to the conclusion would not be affected" (p. 156).

It seems odd to me that Govier should require that the relation not be taken as an entailment by the audience. How can the audience influence the nature of what is being offered?

I also wonder why she insists on convergence. Doing so eliminates a large number of arguments, including all that I have so far considered in this paper. Possibly she wants to avoid any hint of the use of deductive standards.

Here is one of Govier's examples of a conductive argument:

Govier's Manager Example:

> She would be a good manager because she has considerable experience, she is very good at dealing with people, and she knows the business well (p. p. 158).

In this example, Govier apparently believes that each reason supports the conclusion independently of the others. Hence, for her, the manager argument satisfies the convergence condition. However, each could be an INUS condition (insufficient but necessary member of an unnecessary but sufficient set),[4] making these conditions dependent on each other.

[4] To crib from J. L. Mackie (1993, p. 34).

According to Govier (p. 166-7), "Wellman … claimed that there are no rules that could be given for the evaluation of conductive arguments", other than to think the argument through. Govier thinks that we can do somewhat better than that.

She offers nine helpful questions (p. 170) to ask in appraising conductive arguments, questions that emphasize acceptability of, relevance of, and strength of support provided by the reasons; counterconsiderations; and total amount of support, on balance, provided for the conclusion. All this is good advice, but no mention is made of deductive standards, best-explanation standards, generalization standards, etc.

She also suggests ascribing assumptions that constitute a qualified universalizing of each reason because "reasons must have a degree of generality" (p. 171). For the manager argument, one such assumption is "Other things being equal, insofar as P1 is true, C" (p 171), in which "P1" stands for "she has considerable experience", and "C" stands for "She would be a good manager". The other two she offers for this case result from the successive substitution of "P2" and "P3" (and their associated propositions concerning dealing with people and knowing the business well) for "P1". That she calls them "qualified universals" (p. 171) suggests strongly that the assumptions she ascribes are generalizations with a ceteris paribus qualification. This process of ascribing qualified universals is a much better idea than one she rejects, ascribing straight universals, such as, 'If P1 is true, then C',[5] because, as she points out, the latter "are absurdly easy to falsify by counterexamples" (p. 171). I have similarly argued.[6]

However, she is in fact assuming deductive standards in this qualified universalizing. Why not universalize as follows, 'Other things being equal, insofar as C is true, P1' (in which "P1" and "C" are exchanged)? The problem with such a universalizing is that it fails to produce a deductively valid argument when the qualifier is omitted. So her attempt to avoid the use of deductive standards is not successful. She merely disguises their use.

Interestingly, when her qualified universals are added as assumptions, the argument becomes non-convergent. That is, the original P1 and its qualified universal depend on each other for providing support.

Sometimes we argue by offering qualified generalizations without the instantiating claims. For example, (1) 'She would be a good manager because people with considerable experience, who are good at dealing with people, and who know the business well tend to be good managers.' As is, that argument is as convergent as the original. However, when the instantiating assumptions (that were the reasons in her original argument) are added, we lose the convergence and have an argument (much like the raccoon argument), which would be deductively valid with the qualification, "tends to be" replaced by 'are'. She should classify such arguments as conductive because their non-convergence, if any, when the specified assumptions are added is no different in degree from the non-convergence of her original with the qualified universals added. If she includes them, then she will need to use deductive standards to show that an argument employing the converse of the reason I just offered is less strong. The argument employing the converse is, (2) 'She would be a good manager because people who are good managers tend to have considerable experience, to be good at dealing with people, and to know

[5] Assuming that she means this relationship to be between propositional functions rather than propositions.

[6] Ennis (2001).

the business well.' With the instantiating assumptions, this argument would be deductively invalid even after removing the qualification "tend to". All of this shows that her convergence requirement should probably be abandoned (along with her audience requirement), and she should acknowledge the use and need for deductive standards.

Although, on balance, Govier's conductive approach seems for the most part reasonable, as far as she goes (except for her audience and convergence requirements); her approach needs an explicit distinction between deductively valid and invalid background arguments. Although she apparently eschews the use of deductive standards in conduction, she implicitly incorporates them in showing the relevance of the qualified universals. Furthermore, she needs them to deal with my generalization version of the manager argument.

How then should we deal with cases of qualified reasoning?

A Possible Approach

I have become convinced that although the application of various types of standards can be very helpful, making the final judgment also requires sufficient care, experience, knowledge, situational information, sensitivity and intelligence. Briefly, the general strategy I recommend is to remove qualifiers, judge the stripped argument, making use of a set of standards, reinsert the qualifiers, and judge again.

Elsewhere (Ennis, 2001), I have argued that classifying an argument as inductive, deductive, evaluative, etc. prior to evaluating it, although oft-recommended, is not a viable strategy. The alternative I assume here is successively to apply legitimate sets of standards, judging the argument to be acceptable if one or more sets of standards are satisfied, and not acceptable if no set of standards is satisfied. The part of the approach outlined[7] below (#1-5) is only for one such application, in this case the application of deductive standards.

In somewhat greater detail, here then is a way to proceed in the application of deductive standards to a qualified argument:

1) Temporarily eliminate all the implicit and explicit qualifiers in an argument being prepared for the application of deductive standards, including arguments leading to value judgments from implicit or explicit generalizations. If a qualifier in a generalization is negative (like "rarely"), create a negative universal. (In the raccoon example, "rarely" would be replaced by "never", and "probably" would be removed".)

2) Judge the reasoning (though not the reasons) while the eliminated qualifiers are missing, using deductive standards. If deductively invalid, stop, and, if appropriate, apply some other set of standards (e.g., generalization, best-explanation, and value judging standards). If, on the other hand, it is deductively valid, continue. (The raccoon argument is judged deductively valid at this point, so we continue.)

3) Reinsert the qualifiers to restore the original argument.

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[7] A more rudimentary version of which is in my Critical Thinking (Ennis, 1996, pp. 157-158).

4) Judge the original reasons for their acceptability

5) Judge the resulting qualified argument carefully, sensitively, and intelligently (enough for the situation); taking into account the result of the application of the standards in Step 2 to the stripped argument; and employing sufficient experience, background knowledge, and situational information. Satisfying all of the above conditions, I judge the original raccoon argument to be valid[7], though not deductively valid.

These judgments, for which an argument appraiser assumes responsibility, are not determined by the application of standards, but do make explicit use of standards, thus distinguishing this approach from that of conductive reasoning, although both emphasize attention to context, content, knowledge, and sensitivity.

This approach, for which I have here provided a sketchy outline and defense, gives us, I believe, a reasonable way to deal with qualified reasoning. I know of no better one, but invite suggestions.

Summary

Qualified reasoning is reasoning containing implicit or explicit qualifying words like 'usually', 'rarely', 'probably', 'probable', 'likely', 'almost certainly', 'ceteris paribus', and 'prima facie'. I have argued that most central cases employing generalizations (including frequencies in populations) are either deductively invalid or of little interest, although many would be deductively valid with the conversion of the generalizations to universals and the elimination of other qualifiers. In particular, I have argued:

1) that my original raccoon example is deductively invalid;

2) that attempting to save the situation be adding a limited-to-the-evidence qualifier to the conclusion (as Plantinga did) saves the deductive validity at the cost of changing the conclusion to one that is usually of little interest;

3) that toughing it out (as Toulmin did) can be done only at the cost of being oblivious to possible strong counterevidence;

4) that making the parts vague (as with the word, "etc.", as Weddle did) at first glance makes it impossible to be sure whether one is applying the generalization; but that on filling it out, either one converts it to an unusable infinity claim, or there are possible counterexamples; and that replacing "etc." with '*ceteris paribus*' either leads to obvious counterexamples or to an apparently deductively-valid argument with an instantiating premise that can not be substantiated;

5) that equating qualifiers to numbers is a mistake;

[7] Meaning "well-grounded", the preferred meaning in my dictionary (*The American Heritage Dictionary of the English Language* (2000), which is consistent with all of the other dictionaries I have consulted, including *Webster's* (1947), *Random House* (Urdang & Flexner, 1968), and *Oxford Universal English Dictionary* (1937).

6) that interpreting the qualifiers as equivalent to degree-of-belief indicators obliterates real disagreements, and leads to strange claims; and

7) that Govier's and Wellman's promotion of conduction is a move in the right direction, although the definition of "conduction" is needlessly narrow, and the approach explicitly neglects, but implicitly employs, deductive standards.

Because of time constraints I have not dealt with statistical syllogisms, nor with the application of inductive (generalization and best-explanation) and value judging standards. These are discussed in a more complete version of this paper (in process).

The procedure I recommend when preparing to check for deductive validity calls for eliminating qualifiers, doing the check, and, if satisfactory so far, restoring the qualifiers, checking the truth or acceptability of the premises as is, and judging the total argument carefully, sensitively, and intelligently (enough for the situation), taking into account the result of the application of the standards to the stripped argument, and employing sufficient experience, background knowledge, and situational information.

I realize that this is a hazardous area and welcome comments and suggestions.

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