1. *An Apparent Fallacy*

To qualify the truth of a proposition probabilistically is to place it within the scope of a special type of alethic modality. We expect that, as in other modal contexts, the merely probabilistic truth of an assumption in a valid inference must carry over to whatever conclusions are derived from the assumption. That expectation is not always fulfilled in ordinary reasoning about conditional probabilities. There are simpler ways of illustrating what I shall call the paradoxes of conditional probabilistic reasoning in ordinary language, but the following argument is a colorful example. Consider the following apparently deductively valid inference, by an imaginary inmate of a penal institution that is supervised by a bitterly hated warden and surrounded by many dangerous criminals, including the argument’s author:

1. [I solemnly, sincerely and truly promise that] If no else (other than me) actually murders the warden, then I will probably murder the warden myself.

2. The warden is so unpopular with so many dangerous criminals that I will probably not need to murder the warden.

3. Moreover, it is not really in my nature to commit murder, unless I am forced to do so by drastic circumstances or in order to fulfill an oath, such as expressed above in proposition (1), and I cannot imagine ever having an opportunity in which even to attempt to murder the warden, let alone succeed.

4. Hence, it is not the case that I will probably murder the warden myself. (2,3)

5. Therefore, it is not the case that no else (other than me) actually murders the warden. That is, someone else (other than me) actually murders the warden. The
warden will be murdered! (1.4 MTT)

There are several interesting aspects of this argument. The inference works by ordinary *modus tollendo tollens* (MTT) from the conditional oath in proposition (1), and the negation of the consequent of the conditional in proposition (4). We do not suspect this standard rule of deductive reasoning, so we turn our attention to the truth of propositions (1) and (4).

Looking first at the conclusion in (4), that it is not the case that I will probably murder the warden, its truth seems unassailable given the truth of premises (2) and (3). Indeed, almost any single consideration raised in these assumptions would be individually enough to secure the truth of (4). For example, if it is true as stipulated that the fictional argument author never even has an opportunity to try to murder the warden, perhaps because there is no reason to think that the author will ever be admitted into the warden’s presence.

What, then, about the statement of conditional oath in assumption (1), which the author makes the basis together with (4) for the final inference in conclusion (5)? It might at least be true in this sense, that the assumption is an expression of the author’s real and sincere intention to murder the warden if no one else does so, partly on the presupposition that the antecedent of the conditional is false, assuming circumstantially that there are many others who are ready to undertake the fatal action in any case, so that in all probability the author will not need to fulfill the consequent of the conditional oath with no risk to its truth, or to the oath maker’s rough sense of honor.

There is an element of time that also enters into the calculation, since the conditional statement of intent does not propose to say when the promised action will take place after whenever the condition of the antecedent is true or satisfied; for example, if years and years go by and still no one has murdered the warden, and the argument author through old age becomes increasingly unfit to fulfill the promise in the conditional’s consequent. We can tighten up some of these loose screws and still preserve the logical puzzle afforded by the example in specifying that if someone does not murder the warden by this weekend, then the argument author will probably do so by the following weekend, but the argument author for all the reasons previously detailed once again will not probably murder the warden by the
following weekend, therefore the warden more alarmingly is actually murdered by this weekend.

2. Conditional Statements of Intent

An oath is logically interesting, among other reasons, because it appears that it can be true and function at least superficially almost normally in language and logic, say, as in the murder argument, in the logical form of a conditional, and thereby taken up directly into reasoning just like any other, in this case, conditional, proposition. Any propositional structure might be involved in the statement of an oath, as an oath maker tries to anticipate various conditions and logically branching possibilities or compossibilities, conjoint or disjoint circumstances occurring both before and after the action sworn by the oath is imagined to be implemented. The conditional in assumption (1) is already enough to convey an idea of the potential difficulties in trying to use classical symbolic logic to formalize the logical structure of sentences and inferences in colloquial language involving oaths, promises of action, and similar ingredients of practical reasoning. What is fascinating logically about the logic of oaths is that they can be true or false merely as a sincere or insincere expression of intent, but they can be made false extra-intentionally if an oath maker deliberately renegs on the promise to act as the oath requires.

That is what seems to be going on in the murder argument. The conditional oath in assumption (1) we can assume is true as a faithful expression of the argument author’s intent. The author feels so strongly about the warden, hates the warden so bitterly, that the author at least in thought makes this grim conditional threat upon the warden’s life, assuming that there is virtually no probability that the author will ever in fact be called upon to fulfill the oath. A similar but more extreme and obvious use of promising that reveals this underlying logical structure is found in playfully unfulfillable antecedents, again of conditional oaths, such as: ‘I will gladly pay for someone else’s damage to your car, when pigs fly.’

Here in the murder argument the intent is obviously much more serious, but in a way, given the prisoner’s background knowledge formulated in premises (2) and (3), the conditional oath has rather different force, indicating what the argument author truly intends to do if a condition that is never expected to be fulfilled despite all reasonable expectations were after all to occur.

The inference is logically paradoxical because the mechanism of modus tollens is so apparently
innocent, and the assumptions can all be understood as true statements of intent or stipulated imaginary conditions that seem at least to be jointly logically consistent. The argument describes a possible set of circumstances in which all three assumptions could be true, provided that we interpret a sincere oath as a true statement of intent, and that the other conditions as they are described could obtain as they are said to in the prison. The inference is nevertheless deductively invalid, because the truth of the conclusion intuitively is not necessitated by the truth of the assumptions. The warden might or might not end up being murdered. Let us hope not. We surely do not expect to be able to deduce that a murder does or does not or will or will not actually occur merely from a set of assumptions including the conditional true intent that the murder take place. The road to hell is paved with bad as well as good intentions.

Perhaps the most obvious factor to fasten on in critically analyzing the murder argument is the apparent disanalogy between the truth conditions of ordinary conditional propositions versus conditional sincere oaths or other expressions of intent. If assumption (1) were true in the same way and in the same sense as ordinary conditional propositions, then, if the antecedent were true or its condition were satisfied, then the consequent would necessarily also be true. The trouble in the case of a conditional statement of intent, even if true in some sense or other, is that the truth or satisfaction of its antecedent at most calls upon the person who makes the conditional statement of intent to actually do something, and this is not logically guaranteed. Conditional statements always have two faces, however. As we say rightly with respect to many matters of difference of opinion in which neither party can be accused of logically faulty reasoning, one person's *modus ponens* is another person's *modus tollens*. The truth of a conditional can lead to contrary conclusions, depending on whether or not its antecedent is true or its consequent false.

3. *Promising to Attempt and Attempting to Fulfill*

The murder by logic argument involves a stipulatively true conditional statement of intent, that, if interpreted as functioning logically in the manner of an ordinary material conditional, results in a deductively invalid inference from true conclusions to a possibly (and hopefully!) false conclusion.
Thus, it would appear the sensible course for logicians trying to apply the truth table definitions of logical connectives to ordinary discourse involving practical reason that includes provision for true conditional statements of intent. We might try to salvage the situation by saying that the conditional oath or statement of intent in proposition (1) is not literally true, even if the argument author is sincere about what the statement says and really intends to murder the warden if no one else does. The proper statement of the argument author’s intent in that case might instead be something like:

1’. [I solemnly, sincerely and truly promise that] If no else (other than me) actually murders the warden, then I will probably try or attempt to murder the warden myself.

All of the reasons given in support of the original premises (2) and (3) equally support modifying them as stipulations to the effect that the argument author will not probably try or attempt to murder the warden. It remains true as before that the author is not by nature a murderer, has no expected opportunity to try to murder the warden, whereas the warden is surrounded by many hardened murderers who have the necessary will, skill, and opportunity to kill, and have, let us now add, frequently themselves expressed the intent to murder the warden before this weekend. To try or attempt to do something seems more within the realm of possible action for the argument author, even if the author does not have the knowledge, inclination or opportunity to fulfill the conditional oath when the specified time goes by and no else has yet murdered the warden. We can always try, although we do not always succeed. And it might be the mark of prudence generally to cast our promises conditionally or with any other logical structure in the form of what we will try to do rather than what we will actually or in fact do. However sincere we may be, we cannot always know in advance whether or to what extent our efforts in fulfillment of our intended course of action may actually be accomplished.

Naturally, the argument author might still back away even from fulfilling the promise to attempt the warden’s murder. In that case, however, by contrast with the original unqualified consequent in the conditional statement of intent and its supporting assumptions in the inference, we are conceptually on firm ground in denying that the assumption formulating the argument author’s intent is true, once next
weekend has come and gone and the warden (thankfully) remains not only unmurdered but with no attempt at the warden’s murder having been undertaken even in the slightest degree by the reneging author. The author’s prisonmates, if he or she has communicated the intent to them, would no doubt be justified in complaining that the author talked a good game to seem brave or to share in the general spirit of animosity surrounding the warden, but did not really or truly intend to murder the warden by the following weekend if no one else had done so by the end of this weekend. Such a strategy provides an easy way out of the invalidity of the argument, but only for applications of the argument’s propositional logical structure that turn out as a result of the oath maker’s subsequent actions to be unsound. At the time when the author makes the oath, it might be true as any other proposition, in the sense of corresponding positively with the author’s actual intent, and only later, when the author has acted or failed to act in such a way as to cast doubt on the truth of the statement, can we judge that the assumption formulating the author’s intent may be false in the sense of failing to reflect the author’s real intent.

4. Truth Conditions for Statements of Intent

This is finally what seems so strange about practical reasoning involving statements of intent. There is a case to be made for saying that the epistemology required to justify the truth of assumptions in evaluating the murder argument as sound or unsound, given the deductive validity of modus tollens, is no different in practical reasoning than in any other type of logical, scientific or theoretical inference.

When I issue an argument like the imaginary author’s, I may sincerely believe that what I promise is what I will try to do by next weekend if a certain prior condition is not satisfied by the end of this weekend. In that sense, my conditional or another truth functionally constructed statement of intent might be categorically true. The same is true, however, even of extra-intentional propositions, which have nothing to do with what I promise or propose to do if a certain set of conditions is or is not satisfied. I might sincerely believe that I have created cold fusion in a fishtank in my kitchen, and begin rationally to draw exciting inferences from what can still turn out to be a false assumption. Why should the case of an assumption involving conditional intent be any different?
I want to suggest that part of the difference in what ought to seem to be subtly different cases of argumentation involving the same underlying propositional deductive logic is that in the murder inference concerning an assumption expressing conditional intent, the future course of events which to a limited but relevant extent is in the hands of the argument author determines whether or not the assumption turns out to be true. The fact is clearly recognized in the well known phenomenon of persons often acting in a certain way against their later better judgment simply because on a previous occasion under who knows what emotional pressures they promised to do so. We can act or fail to act with regret, and we can judge what it is right for us to do rather differently from moment to moment in the practical order of sometimes rapidly complexly changing circumstances. We can confirm or cast doubt on the truth of our oaths and statements of intent in a sequence of practical reasoning by what we choose to do or refrain from doing. This power over the truth of personal statements of intent is an important feature of practical reasoning that has not received sufficient attention in informal or symbolic logical circles. It is already enough to make the logic of practical reasoning subtly different from that of theoretical, or what an earlier period in philosophy distinguished as speculative, reasoning. For it can, potentially, through the presumably free choice and action of the reasoner render a statement of intent true or false, and so render an argument in which the statement appears sound or unsound; thus, respectively, making the argument in question unequivocally deductively invalid; or, by assuring its unsoundness, avoid any such immediate challenge to its deductive validity.

5. Paradox and Persistence of the Fallacy

All well and good if the argument author should give cause to doubt the truth of the assumption formulating the author’s statement of intent. What happens, however, if the argument author sincerely and consistently believes in her or his own statement of intent, and, at the appointed time, when no one else has acted, does after all do something or other that represents a circumstantially best attempt to murder the warden, but the warden, an instant after the improbable attack of a practically reasoning prisoner who ordinarily would have had no access to the warden’s person, contrary still to the argument’s conclusion in (5), does not actually die then or at any other time except as a result of natural
causes?

There is thus still a deep paradox to be untangled involving the logic of propositionally complex statements of intent and their peculiar time-contexted truth conditions. Among many other morals that might be concluded from inferences like the murder argument, we might decide that the informal logic of practical reasoning cannot naturally be modeled in classical propositional logic combined with a preferred alethic modal logic and standard probability theory. We need something weaker, stronger, or in any case different.

If, indeed, the warden’s murder is perpetrated by someone in the prison, and we ask, ‘Who done it?’, we may discover the least favorable answer to be, ‘Elementary, dear reader — it was logic; indeed, a too elementary logic.’