Validity, paradox, and the ideal of deductive logic

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Contents

1 Thinking about plan B

There are three basic ingredients that together give rise to the semantic paradoxes, and correspondingly there are three basic strategies for a straightforward solution to them. The first ingredient is a logic, like classical logic. This we can simply take as a set of inference rules associated with certain logically special expressions. The second is a truth predicate, or something like it, and some rules or schemas that are associated with it, say introduction and elimination rules, or the Tarski schema. The third ingredient is some other expressive resources that allow one to formulate one of the trouble inducing sentences, like the liar sentence, or the Curry conditional. Once we have these three we can derive contradictions and anything whatsoever using only the rules we have, with the help of the problematic sentences.

The three main strategies for a straightforward solution see the problem either in the logic, in the rules governing the truth predicate, or in the problematic sentence. Maybe we have to weaken classical logic, or the rules governing the truth predicate, or maybe the problematic sentences are not of the kind that the rules properly apply to. Any such solution will hold that one or another of the rules that we naively hold to be valid really isn't valid, or that for some reason the rules don't apply to the problematic sentences. Such a solution to the paradoxes I will call *a plan A solution.* It would simply solve them by showing where our reasoning that leads us into trouble went wrong. It would point out which inference rule is not valid after all, and thus which rule is not to be reasoned with.[1] Most, if not all, solutions to the liar paradox are plan A solutions. And there is a tremendous amount of progress in finding such a solution. We have supervaluational solutions, [McGee, 1991], paraconsistent solutions,[2] [Priest, 2006], contextualist solutions, [Simmons, 1993], Field's sophisticated new solutions, [Field, 2003] and [Field, 2006a], and way too many more to list. But there is a growing sense among some of us that none of this is going to work in the end as a solution to the philosophical problem that the paradoxes pose. Without question there is much to learn from all these solutions and much to admire in their sophistication, but will they solve the philosophical problem that the paradoxes present? Here the main source of doubt is the existence of revenge

[1] I will ignore solutions that find the problems not in the rules but in the problematic sentences alone. This mostly won't be relevant to contrast plan A with plan B, and that's why we will leave it aside for the most part.

[2] Of course, such solutions accept that it is fine to derive a contradiction, the error comes once you try to derive anything whatsoever from that contradiction.

paradoxes. It appears that even the most sophisticated solutions face further paradoxes that can be formulated using the terms of the solution. The justification for why certain rules are to be rejected as invalid will use certain new semantic terminology that then can be used to state new semantic paradoxes, ones especially tailored to the solution of the old paradoxes in question. If this is indeed so then one is faced with a dilemma. Either one pushed the problem simply somewhere else, or one has to insist that the solution does not apply to a language like our natural languages. But either way, the philosophical problem that the paradoxes pose is then not solved, it is simply pushed around.

To be sure, whether the standard plan A solutions all face revenge paradoxes is controversial, and some prominent proponents of such solutions explicitly claim that their solutions are revenge immune. I don't want to argue here that we can always find another revenge paradox, or that plan A solutions are to be given up. I personally have my doubts about them, but that shouldn't count for much. I simply want to ask in this paper: what if this is right? What if plan A solutions won't solve the paradoxes? Are there other options? Is there a plan B?

There is certainly one other option available, which isn't much of a plan, so it doesn't count as plan B. Maybe the paradoxes have no solution and this shows that our conceptual schema of describing the world and our talk about it in terms of truth and falsity, or warranted and unwarranted belief, simply collapses. If the reasoning in Curry's paradox is simply correct then it seems that every statement is true, and every statement is false. And if correct inferences transmit warrant from the premises to the conclusion then it also shows that every belief is equally warranted. This we could call *the Great Collapse*, and it would be the greatest imaginable disaster for the project of inquiry. But maybe there is another possibility. Maybe the Great Collapse can be avoided even if plan A solutions fail. Let's call *a plan B solution* to the paradoxes a solution that avoids the Great Collapse and is not a plan A solution. This would have to be a solution that does not hold that one of the inference rules, either a logical one or one governing the truth predicate, is to be rejected, nor that the problematic sentences aren't appropriately instantiated in these rules. Rather a plan B solution takes the rules to be valid and the problematic sentences to be well formed and meaningful, but avoids the Great Collapse nonetheless. This might seem clearly impossible since if all the rules of classical logic plus the introduction and elimination rules for the truth predicate are valid, and the problematic sentences are allowed, then anything follows. But this, I think, is a mistake and ignores one option to respond to the paradoxes that to my knowledge has been neglected.[3]

In this paper I would like to outline how such a plan B solution can go. I believe that it does not face revenge issues that bring down plan A solutions, and that it is generally attractive. In fact, I have my money on such a solution. According to the plan B solution to be outlined below, the real culprit is our conception of deductive logic as aiming for a certain ideal which is a philosopher's dream, but one we can live without. According to this plan B solution the problem isn't that we have the wrong rules, either logical or for the truth predicate, but rather that we have a wrong conception of what it is to have a deductively valid rule. I will outline how this could go in this paper, I say more about it in [Hofweber, 2007], and I hope to develop it in detail in the future.

2 Deductive logic, default reasoning, and generics

The rules of classical logic[4] are rules of a deductive logic. That is to say that any inference that is licensed in this system is valid and thus truth preserving, and the same holds for the inference rules governing the truth predicate. In fact, being truth preserving can be seen as the defining feature of a valid inference rule in a deductive logic:

(1) Inference rules are valid iff they are truth preserving.

But then, how can there be a plan B solution? If the inference rules are truth preserving and we consider the instances of them that lead to Curry's paradox or the liar paradox we simply get the Great Collapse. How is there even conceptually room for a way out? To see that there is more to say here, let's make a slight digression into rules that are used in ordinary, everyday reasoning that are commonly contrasted with deductively valid rules.

[3] The notions of a plan A and plan B solutions do not quite correspond to Schiffer's notions of a happy face and unhappy face solution to the paradoxes. A happy face solution is much like a plan A solution in that it aims to uncover the error in our reasoning that leads into trouble. But for Schiffer an unhappy face solution is one that accepts defeat and then proposes a revision of our concepts that doesn't lead us into trouble. The plan B solution to follow is not revisionist in this way, and thus I prefer a different terminology. See [Schiffer, 2003].

[4] I will stick to classical logic in the following, since I will hold that it can be defended in the face of paradox even together with the full Tarski schema for the truth predicate. Thus the paradoxes don't force us to give it up. There might be other reasons to favor a different logic, but everything I will say about classical logic below works for basically any other logic as well.

Ordinary, everyday reasoning mostly is not strictly deductive. When I think about what I should do when I see a bear in the wild I will reason with information that I represent as

(2) Bears are dangerous.

To accept (2) is closely tied to accepting an inference rule. It is the rule that allows one to infer from

(3) t is a bear

to

(4) t is dangerous

This is perfectly good ordinary reasoning, but it is not strictly deductively valid. Not all bears are dangerous. Some old bear without teeth might not be dangerous, but this does not make it the case that (2) isn't true. (2) is a generic statement. It means something like

(5) In general, a bear is dangerous.

Generic statements allow for exceptions. That is, the truth of a generic statement like (2) is compatible with the falsity of the corresponding universally quantified statement, in this case

(6) All bears are dangerous.

Nonetheless, they are closely tied to good inference rules, but these inference rules also allow for exceptions. Such inferences are ones that one is entitled to make unless one has overriding information. So, if I know nothing about Freddie except that he is a bear and I know (2) then I am entitled to infer that Freddie is dangerous. But if I learn in addition that Freddie is old and lost all his teeth I am not entitled to make that inference any more. Such reasoning is thus non-monotonic. More information can make an otherwise appropriate inference inappropriate.

This is commonly called default reasoning. By default I am entitled to make a certain inference, although more information can take that entitlement away from me. And generic statements like (2) closely correspond to inference rules in default reasoning. To accept a generic statement as true is closely tied to regarding such an inference in default reasoning as a good inference. All this is so even though the generic statement is not without exceptions, since not absolutely every bear is dangerous, and correspondingly, inference rules in default reasoning won't always be truth preserving since they can lead from the true premise that Freddie is a bear to the false conclusion that Freddie dangerous, which he is not any more. It is still perfectly rational to conclude that Freddie is dangerous from the premise that he is a bear even thought the rule I rely on in making this inference allows for exceptions, and even though I realize very well that it does so, and that not absolutely every bear is dangerous. There are many subtle features about generics and default reasoning which we won't be able to discuss here, but there is a rather straightforward lesson for our topic here. It is the key to having a plan B solution to the paradoxes.[5]

Default reasoning is commonly contrasted with reasoning that is deductively valid. Deductively valid inference rules are truth preserving in all instances and are monotonic whereas inference rules in default reasoning do not preserve truth in all instances and are non-monotonic. This is the ideal of deductive logic that I think we have to abandon. Even in deductive logic not all inference rules are always truth preserving, although it is rational to reason in accordance with them. I will propose that default reasoning and deductive reasoning are thus alike in this respect, although deductive logic can be different in various other ways from standard cases of default reasoning like the one discussed above. This is the lesson to be drawn from the paradoxes, it is the outline of a plan B solution to the paradoxes, and it in fact is much less radical than it might seem.

What seems to be distinctive of inference rules in deductive logic is that they are truth preserving, and above we considered it to be a defining feature of valid inference rules that they are truth preserving:

(1) Inference rules are valid iff they are truth preserving.

This is hard to deny, and we should not deny it, properly understood. In fact, (1) has two readings. One of them, which we could call the strict reading, requires that each instance is truth preserving. But (1) also has a generic reading. The right hand side has a generic reading which is nicely

[5] The connection of generics to default reasoning is well known and widely discussed. See the introductory essay in [Carlson and Pelletier, 1995] for a survey of a number of topics about the semantics of generics, and [Pelletier and Asher, 1997] for a discussion of the relationship that generics have to default reasoning. We don't need the subtle details discussed in these articles for our main point in this paper, so I am being brief here.

brought out by using the plural. Inferences are truth preserving according to the generic reading just like bears are dangerous. That doesn't mean that each and every instance is truth preserving, just like the latter doesn't mean that each and every bear is dangerous. But nonetheless, (1) is literally true on this reading. So, since the right hand side of (1) has two readings we should make this explicit and consider each reading a defining feature of two senses of validity:

(7) a. Let's call an inference rule *strictly valid* iff each and every instance is truth preserving.

b. Let's call an inference rule *generically valid* iff instances are truth preserving (understood as a generic statement).

The *ideal of deductive logic* holds that inference rules in deductive logic are strictly valid, and that this is the distinctive feature of *deductive* logic. The *default conception of deductive logic*, in contrast, holds that inference rules in deductive logic are only generically valid, although they might form a special subclass of the generically valid rules. I will propose that we should abandon the ideal of deductive logic and embrace the default conception of deductive logic instead. If we do so, we can have a plan B solution to the paradoxes, but there are other reasons to do so as well.

Suppose you take classical logic, in a rules only natural deduction version for now, as well as unrestricted introduction and elimination rules for the truth predicate. The default conception of this logic will hold that these rules are all valid, in the generic sense. And it will hold that it is rational to reason according to these rules, unless you have overriding reasons to the contrary in a particular case. This is exactly what we need to have a plan B solution to the paradoxes. According to the default conception of logic and the truth rules, all of them are valid and thus to be accepted. But there are instances of these rules that are not truth preserving. Curry's paradox is one, the liar paradox is another. These are the exception cases to the generically valid rules. They are the equivalent of the old toothless bear. Thus we can accept the rules, but rationally reject particular instances of them, and thus avoid the Great Collapse even though we accept classical logic and the truth rules. What we do have to give up is the ideal of deductive logic, but this isn't giving up very much. Thus the default conception of deductive logic gives one the tools to have a plan B solution to the paradoxes, at least in rough outline. In the next section I would like to elaborate on various aspects of this main idea. I won't be able to defend it in detail in this paper, but I would like to discuss some of the issues that need to be addressed if one wants to defend it.

3 Spelling out the main idea

Taking the rules of inference in deductive logic to be generically valid, but not strictly valid, gives us the possibility of a plan B solution to the paradoxes. Here are some questions that need to be addressed to develop this further, and how I intend to address them.

3.1 How is this a solution?

The proposal outlined above does not solve the paradoxes in the way a plan A solution aimed to do it. Plan A solutions basically try to find the mistaken inference rules that we used in reasoning ourselves into trouble, and to propose a framework or theory that shows how they are in fact mistaken. A plan A solution says what the mistaken inference step was, and why we made it nonetheless. On the present proposal each step in the reasoning that leads to paradox is correct in the sense that it is based on a rule which is (generically) valid and which is appropriately used in reasoning. So, in this sense there is no mistake in the reasoning that leads to paradox. But nonetheless, the present account holds, the conclusions drawn with the particular cases of the (generically) valid inference rules are rationally not to be accepted. In this sense it is a solution. Nothing went wrong in the reasoning. Each step is correct, in the sense that it is based on a (generically) valid rule of reasoning, a rule we are entitled to reason with, but the conclusion is still rationally not to be accepted. Thus we can accept the reasoning that leads us into paradox, but not accept its conclusions, or the Great Collapse. This is all the solution that the paradoxes need.[6]

And this captures exactly the natural reaction to the paradoxes. Ordinary reasoners accept all of the steps that lead to the paradoxes, they accept the relevant sentences with which we reason as perfectly well formed and meaningful, but they reject the conclusion of the reasoning without rejecting any of the steps. Now, the usual reaction from the philosophical side

[6]This solution only applies to the semantic paradoxes like the liar and Curry's paradox. It does not simply carry over to other paradoxes like, say, the Sorites paradox, or the paradoxes of motion, and so on. There are connections to other paradoxes as well, but in general I think there is more philosophical work to be done in these other cases than in our present case. In this paper we restrict ourselves to the semantic paradoxes.

is that this is irrational and that there must be a mistake in the reasoning somewhere, one we philosophers will uncover. The present proposal sees a lot of wisdom in the natural reaction. And the default conception of validity and inference rules shows how it is not irrational at all. Each step is in accordance with a valid rule, one that it is rational to follow, but the conclusion is nonetheless rationally rejected.

3.2 What are the exceptions?

If the inference rules of deductive logic and for the truth predicate are not strictly valid, but only generically valid, then the question arises: which cases are the exceptions to the strict validity? Which cases are the ones such that it is rational not to accept the conclusion derived from premises one accepts? Here the answer is quite straightforward for a believer in the default conception of deductive logic, although this answer must be quite unsatisfactory for those who prefer plan A solutions to the paradoxes and who like the ideal of deductive logic.

The exceptions to the generically valid rules are simply the instances that don't preserve truth. This is, of course, not a very informative answer for those interested in the cases, but it is all that has to be said at the general level of spelling out the default conception. Compare this to inference rules in default reasoning, like inferring from that t is a bear to that t is dangerous. Which are the exceptions to this rule? All the cases where t is a bear that is not dangerous, i.e. all the cases where this rule is not truth preserving. That is the right answer, but it doesn't help with the individual cases. If you want to find out if this particular bear is one which is an exception then you have to find out if he is dangerous. And the same holds for instantiations of the inference rules in logic with a truth predicate.

But then, why is it rational for us not to accept the instances that lead to the liar paradox, or the instances that lead to Curry's paradox? We are entitled to not accept them because we can clearly see that these are cases that don't preserve truth. In the Curry's paradox case it might preserve truth by accident, if the consequent of the relevant conditional is true. But we can see that this inference would have worked just as well for anything else, and thus if it did preserve truth it is an accident. Thus we can see that we are not entitled to the conclusion that we drew. This is quite clearly what we do realize when we think about the argument that leads to Curry's paradox, and because of this it is rational to reject this particular argument, although we accept all the rules of inference that were used in it.

And similarly for the liar paradox.

3.3 How about revenge?

Plan A solutions seem to be threatened by revenge paradoxes, and this in part motivates plan B. But does plan B also lead to revenge paradoxes? Is it, too, only a way to push the problem somewhere else? Suppose we explicitly add the vocabulary of the present plan B solution to the language and we aim to formulate more paradoxes. Won't this cause trouble just as much as it did in the plan A cases?

Here plan A and plan B really differ. Plan A solutions will lead to revenge paradoxes unless they lead to expressive incompleteness. If they are expressively complete then we can formulate new sentences that lead to contradictions, or arbitrary conclusions. And this shows that the particular plan A solution won't work. But for our plan B solution this is different. This solution already accepts that there are instances of the (generically) valid inference rules that lead to contradictions or arbitrary conclusions. But these instances are the exceptions to the (generically) valid inference rules. Any revenge paradox can only lead to more of these cases. A new super liar using the notions of generic validity or default reasoning could at best lead to further cases of instances of the inference rules that are exceptions to their (generic) validity. Since we already grant that there are such instances all that the revenge liar could show is that there are even further cases of the already accepted phenomenon. But this does not threaten our plan B solution. The threat of revenge for plan A solutions, and the fact that it disappears for plan B solutions which are based on generic validity, are a real advantage for plan B. There are other reasons to prefer plan B as well, but this certainly is one of the main ones.

4 How radical is it?

I suspect that there is a feeling that abandoning the ideal of deductive logic in favor of the default conception of deductive logic is simply going too far. Many people have suggested that radical consequences are to be drawn from the paradoxes, and maybe this is just another far out proposal that we have to give something up we clearly should try to keep. I don't think this is correct. In fact, what I am proposing that we give up has to be given up anyway, even for those who hold onto plan A solutions. And I don't think we are giving up that much in the end. The default conception of deductive logic is good enough for most of the things that the ideal of deductive logic was supposed to do for us.

4.1 Counterexamples to the inference rules

If the paradoxes show that the inference rules in deductive logic are not strictly valid, it wouldn't be the only thing that shows this. In recent years a number of people have proposed counterexamples to various deductive inference rules, understood as rules for inferences in natural language. Vann McGee and Bill Lycan, for example, have argued that modus ponens fails for ordinary English conditionals.[7] Their arguments don't rely on the paradoxes, and if they are right then either modus ponens is to be rejected as a rule of inference, or it is to be modified in such a way that it is still acceptable, or it is to be understood as a generically valid rule. The default conception of deductive logic has no problems with such examples, as long as, in general, modus ponens is valid. That there are exceptions does not refute the rule.

4.2 Truth preservation and plan A

If the default conception of deductive logic is correct then it is perfectly rational to accept an inference rule as valid even though one realizes very well that it does not always preserve truth. This might seem radical. However, Hartry Field has recently made a very good case that traditional plan A solutions to the paradoxes in fact have to accept just that. Field, in [Field, 2006b], considered the question of why a certain intuitive argument for the consistency of arithmetic fails. The argument is simply that since all axioms of arithmetic are true and inference preserves truth, all consequences of the axioms are true, and since all of their consequences are true, the axioms are consistent. Field notes that this argument has to break down somewhere, and depending on what one says about how a truth predicate is added to the underlying logic, there will be different places where it breaks down. In particular, Field argues that standard ways of adding a truth predicate without allowing for the deduction of everything can't maintain that all of the axioms are true and all of the rules are truth preserving. That is, given a certain system consisting of an underlying logic and a truth predicate governed by either axioms or rules that together avoid triviality, one of the following two options will hold for it: either it is a consequence of that system that one of its own axioms isn't true or that one of its own

[7] See [McGee, 1985], [Lycan, 1993] and [Lycan, 2001].

rules isn't truth preserving, or at least one can't consistently maintain from within that system that all the axioms are true and all the rules are truth preserving.[8] What this suggests is that even for plan A solutions, which are the ones Field discusses, one can't coherently hold that all the inference rules that one accepts are strictly valid. A plan A solution will either imply that there are instances of the rules that are not truth preserving, or at least will determine that one won't be able to consistently maintain that they are truth preserving. This takes quite a bit of the wind out of the sails of the criticism of the default conception of deductive logic. Everyone will have to accept that it is rational to accept rules while one is at the same time unable to hold that all of their instances preserve truth.

Field's conclusion from his observation about why the intuitive argument against Gödel's second incompleteness theorem breaks down is partly congenial with the present approach, and partly in conflict with it. Field concludes that one should not think that the notion of validity of inference rules can be defined in terms of truth preservation. Rather it should be seen as a primitive, and it should be more closely associated with which rules it is rational to follow in inference. But this isn't the right lesson to learn, it seems to me. We can take

(1) Inference rules are valid iff they are truth preserving.

to define validity in terms of truth preservation, as long as the right hand side is understood as a generic statement. And if we grant that the truth of a generic statement gives us a good inference rule in default reasoning then we can see why this definition of validity makes valid rules good ones to reason with. And this is how it should be. To understand validity in terms of preservation of truth clearly gets something right, and to tie this to good rules to follow in inference clearly gets something right, too. The default conception of deductive logic has these results.

4.3 How to live without the ideal

The ideal of deductive logic as involving strictly valid inference rules is based on the thought that there are forms of reasoning where we can never go wrong, no matter what the instances. This we have to give up. But almost everywhere where we rely on this ideal we could live with the default conception of deductive logic just as well. Certain generic statements are tied

[8] Field notes that for a more limited case than what he discusses this can be read off some of the results of [Friedman and Sheard, 1987].

to inference rules in default reasoning, and it is rational to reason according to such rules, although there are exceptions to them. In addition, when we reason according to rules in default reasoning we are warranted to hold the conclusions we draw using them, although we can not hope to achieve absolute certainty this way. We might have used them on one of the exception cases, and it might be that what we concluded isn't true. But absolute certainty is neither required for knowledge nor for much else. In addition, it is not clear absolute certainty can be achieved even if the ideal were correct. Since the rules tied to generics are epistemically very much like strictly valid rules there will really be little difference.

Many other theses that are commonly associated with deductive logic carry over to the default conception. For example, one can still hold that having a certain inferential role is constitutive of the meaning of the logical constants. But the inferential role has to be understood as figuring in certain generically valid inferences, not strictly valid inferences.

In addition, it will still be possible to draw an interesting distinction between deductive logic and other cases of default reasoning. The exception cases in deductive logic might be of a different kind, and there might be a special reading of the generic statement that is the appropriate one when we say that the inference rules are truth preserving. On a fuller development of the story which I can only outline in this paper I hope to have more to say about this. In particular, I hope to distinguish different readings that generics can have and isolate the one that is relevant for characterizing in what sense deductive logic involves inferences that are truth preserving.

5 Schemas and the truth value of the liar sentence

Suppose what I have said so far is more or less correct. Then we can accept classical logic and the introduction and elimination rules for the truth predicate. Thus we get the features that come with classical logic in this setting, including

(8) $p \vee \neg p$

(9) $True('p') \vee True('\neg p')$

And to accept classical logic is to accept these schemas. So, what if we substitute the liar sentence for 'p'? Since it is classical logic one or the other disjunct has to be true. Which one is it?

Above we focused on a rule-centered version of classical logic. This doesn't have to be so, of course. We could start out with axiom schemas instead. But in either case, the question arises how we should understand schemas, either when they are axioms, or when they are derived using the rules and schematic formulas. As far as I can tell the believer in the default conception of deductive logic has two options here. Both are strictly speaking available, but one is more congenial to the overall view than the other. Both options accept

(10) Instances of a schema (which is either an axiom or derived) are true.

but do so in different readings. (10) has a strict and a generic reading as well. According to the strict reading each and every instance is true. According to the generic reading instances are in general true, but there may be exceptions. On a strict reading it might well be that fewer schemas can be derived with the (generic) rules since particular instances of these rules aiming to derive a schema might turn out to be exceptions to the generically valid rules. Let's see what would happen if we take (8) or (9) to be derived, and what we should say about the truth value of the liar sentence on each reading of instances of a schema that can be derived.

Suppose we accept the strict reading of schemas, that is, we take each and every instance of the schema to be true. Then this holds for the liar sentences as an instance. Since we assume classical logic we can ask which one of the disjuncts is true. One of them has to be true, but whichever one it is, it will lead to a contradiction. But any argument towards this contradiction will use some rules which are only generically valid. And the instances of these rules with either the liar sentence or its negation, or the claim that the liar sentence is true, or the claim that its negation is true, will be exceptions. They will lead to contradictions. Thus on this option either the liar or its negation is true, but one can't rationally conclude which one it is. It will be a case of ignorance, although there is an answer to the question. This option I take it is consistent with the default conception of deductive logic, but maybe not as congenial with it as the next one.

Suppose, on the other hand, we accept the generic reading of schemas, i.e. instances of the schemas are true, understood as a generic statement. Then we can accept the schemas (8) as well as (9) and hold that instances of them with the liar sentence are exceptions. If one takes this route then the liar sentence will be neither true nor false, although the schema (9) is such that its instances are true, and the claim that the liar is either true or false is one of its instances. Again, this is no contradiction since we are assuming a generic reading of the claim that the instances of the schema are true. Of course, that means that

(11) $\neg True('\lambda') \wedge \neg True('\neg\lambda')$

which leads to contradictions in our classical setting, but this, again will simply involve another case of an exception to the generically valid inference rules. This option is available to us as well. It denies that we are bound to ignorance of the truth value that the liar has, since it is neither true nor does it have a true negation. This does not give rise to a revenge liar problem any more than the liar is a problem. It simply gives rise to different exceptions to the generically valid inference rules. And there are other options as well. I will remain neutral which option should be chosen in this paper.[9]

6 Conclusion

The paradoxes arise when we apply what looks like valid rules to what looks like a perfectly meaningful sentence. Plan A solutions try to say where this reasoning goes wrong. One of the rules, or the sentence, will have to go. Plan B solutions deny this. They accept the rules as well as the sentence, but avoid the Great Collapse nonetheless. This is what we do when we pre-philosophically encounter the paradoxes, but it is not clear how it can be anything but irrational. The default conception of deductive logic is a way in which the ordinary reaction to the paradoxes can be seen as perfectly rational, and how a plan B solution to the paradoxes is possible. It has in its favor that it captures the wisdom in the natural reaction to the paradoxes, that it doesn't seem to be threatened by revenge paradoxes, and that it explicitly affirms out front what otherwise seems like a counterintuitive consequence, namely that our inference rules are not (strictly) truth preserving. They are not truth preserving or valid in the strict sense that the ideal of deductive logic hoped for, but they are truth preserving in the generic

[9] The default conception of schemas gives a nice contrast to the "openendedness" of schemas advanced by various philosophers. According to their conception, to accept a schema is to accept any meaningful instance, expressible in our language or not. Thus if I increase my vocabulary I thereby accept another instance. This, I take it, is correct, subtleties aside. But on the default conception one might accept a schema without accepting every instance of it. The default conception and the openendedness conception are not incompatible, as long as the acceptance of inexpressible instances is understood generically.

sense. Thus on this conception of validity all the rules of classical logic and the natural rules for the truth predicate are valid, generically, while at the same time some instances of them lead from truth to falsity. And while it is rational to accept the rules and to reason in accordance with them, it is also rational to reject particular conclusion that can be drawn this way. This, it seems to me, is the answer to the philosophical problem that the semantic paradoxes pose. All this does not take away from the value in the sophisticated work that has been done in seeing which ones of the strictly valid rules avoid triviality or contradictions. But in the end it won't solve the philosophical problem with the paradoxes. What made them problematic is the ideal of deductive logic as the paradigm case of good reasoning. It is not which inference rules we took to be valid that caused the trouble, but what we took a valid inference rule to be.[10]

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