

The Most Encompassing Absolute

Marcia R. Pinheiro

IICSE University, Australia

Abstract This short note is about how to fit Language into the constraints of Logic. Such a move should not be always possible, but if we want to say The Liar is a logical problem, then we have to be able to fit the piece of human language it deals with entirely inside of Logic. If we talk about logical systems, we need to find the right logical embedment of the problem and that will then determine if it belongs to Classical or Nonclassical Logic. We search for the right embedment using linguistic tools. The main finding there is that opposing and negating are very different things, despite holding some intersection: the truth may never be told but that does not mean one always lies. The flexibility of human language leads to several places and one of them is the impossibility of applying logical systems to it. Only in a very special universe, where Language is limited in several ways, could we think of applying logical systems to it in a successful manner. If Language is considered per se, no logical system can deal with its entire complexity. We can use (philosophical) Logic to deal with it, though, just not logical systems. The note then presents a proof that no logical system can deal with Language per se, so without artificial restrictions, and a solution to The Liar inside of Classical Logic after a few restrictions have been applied to Language.

Keywords Liar, Paradox, Logic, Language, Translation

1. Introduction

The root of the success of The Liar is found when this paradox is put against other paradoxes – say Sorites (Pinheiro 2023) and Dichotomy (Pinheiro 2016): it is the error deriving from thinking of it as something computer science can cope with. It is as if who created the paradox noticed something nobody else noticed: in Language, negating a sentence is not necessarily stating its opposite, yet everyone will apply what became known as Classical Logic (CL) thinking to this problem and truly believe that is the right thing to do if we present things in the ‘right’ way.

(Cambridge Dictionary Authors n.d.) brings the definition of NEGATE: “to show something to be wrong or to be the opposite of what was thought (...)”. Here we take the idea of the opposite but also the idea of simply making it wrong. While the opposite of I LIE is I NEVER LIE or I DO NOT LIE, to make I LIE wrong, we can have the own I LIE, for the case when the sentence would have been uttered with irony.

The negation of I LIE is also, but not exclusively, I NEVER LIE, for that is the opposite or contrary of I LIE and that is the most absolute negation of the sentence, but we also have the least absolute negation, which is the own I LIE, since the sentence might be said with irony implied and all other gradations in-between.

In what comes to world references (Pinheiro 2022) and human discourse, a few equivalents of the negation of I LIE are I LIE, I TOLD THE TRUTH ONCE, I SOMETIMES TELL THE TRUTH, I ALMOST NEVER LIE and I NEVER LIE.

Language is way more than what logical systems can cope with and here we have some strong evidence on that. When dealing with Language through logical systems, all we can do is leaving the negation indicated: We would not be able to cater for all variations in human discourse, so that we call I LIE, absolute version, so a version where irony is not being used, to mention one of the implied restrictions, B and say its negation is $\sim B$. Observe that, when we deal with Language through logical systems, we don’t replace $\sim B$ with A, where A is I TELL THE TRUTH; not usually. We usually make logical operations with the symbols, so with $\sim B$, instead. All the theory in this paragraph is better explained in (Horn & Wansing 2020). We can replace $\sim B$ with A if there is a premise stating that $\sim B$ is equivalent to A, though. An example of such a deal appears in (Pinheiro 2023): $\sim T = F$.

In this paper, we discuss language equivalents for I DO NOT LIE and I LIE. The objective is showing that The Liar is formed from not thinking deeply about the sentence that we are initially given. Some would then argue that the paradox evolved and is now stated as THIS SENTENCE IS FALSE. Yet the same analysis we apply here for ‘LIE’ can be applied for ‘IS FALSE’. We would just change the equivalents. From the discussion of these equivalents, we prove that the negation of I LIE is not I DO NOT LIE only and there is a common core to all negations of I LIE. The

* Corresponding author:

mrpprofessional@yahoo.com (Marcia R. Pinheiro)

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same is done with I DO NOT LIE. That is not a change in the metalanguage of Classical Logic, but just a change in how we translate its tokens into normal language instead.

2. Development

The approach we take to solving The Liar should also be called modificational, following terminology introduced by Gomulka & Wawrzyniak (2017, p. 181): it is modificational of first type, since it is about rules on how to form correct linguistic expressions. Modificational approaches are rejected as a solution to The Liar by Gomulka & Wawrzyniak (2017, pp. 179-199): they assume the grammar (Wittgenstein's sense) needs correction because, with it, it is possible to form paradoxes. Yet we can simply say that the Liar Sentence is senseless instead (Gomulka & Wawrzyniak 2017, pp. 185-187). "A sentence assigning a truth-value to a senseless sentence lacks sense too" (Gomulka & Wawrzyniak 2017, p. 184). If no truth-value is assigned to the Liar Sentence, there is no paradox, so that the paradox would be solved by this Wittgensteinian-based reasoning. The problem with this approach is that most people see sense in The Liar Sentence. The argument presented by Gomulka & Wawrzyniak (2017, p. 196) is that our mind plays tricks on us, so that our judgements are not always sound. They then talk about Wittgenstein saying that "the criteria of understanding cannot be internal" (Gomulka & Wawrzyniak 2017, p. 196). Yet at most the sentence presented by Tarsky would have to make perfect (external) sense: "'s' is true if and only if 's' is not true" (Gomulka & Wawrzyniak 2017, p. 180), especially in the context he proposed it. Gomulka & Wawrzyniak (2017) fail to deliver a sound (Pinheiro 2023, p. 4) argument as to why modificational approaches would not be OK therefore.

Why would other approaches, which are nonclassical, not be preferred to ours? Let's then consider one of them: Tzouvaras (1998) goes full power on symbolic logic and solves The Liar by creating a new logical system, KU, a mix between Classical Propositional Logic, K (knowledge-based) and U (utterance-based). This system is a two-valued system (either assertion or negation) that allows for both negation and assertion to be true/false at the same time (the 'or' is not exclusive or in (Tzouvaras 1998, p. 91). Therefore, it is a nonclassical logical system, likely to have three truth-values in its table, similar to the Logic of the Paradox (Priest 1979), as seen in Wikipedia (2023). Tzouvaras (1998, p. 91) uses 'knowing' and 'uttering' as tools for decision in his analysis of The Liar, but knowing and uttering have gradations that are then being completely ignored by him: someone might know something today and lose their memory tomorrow, asserting something by copying their past assertion. Someone might have seen 60% of truth in a sentence and believe it is true or simply say it is based on that. Another person might need 70% instead. Another may think it has to be 100%... . As said before, the criteria would have to be external to the person instead.

We then present a modificational classical approach. We explain the metalanguage of Classical Logic in more detail and that solves the paradox per se. We worry about matching logical tags of the type 'false' and 'true' with natural language.

If we are matching logical tags with natural language, what is missing is studying the metalanguage (Pinheiro 2022) deeper: if something is false, then the negation of that something is true; not its opposite or not only its opposite.

(A) I DO NOT LIE is equivalent to:

- (A1) I LIE (irony)
- (A2) I LIED SO FAR BUT ON THIS ASSERTION I DO NOT LIE
- (A3) I TOLD THE TRUTH ONCE
- (A4) I SOMETIMES TELL THE TRUTH
- (A5) I ALMOST NEVER LIE
- (A6) I OFTEN TELL THE TRUTH
- (A7) I ALWAYS DO NOT LIE (which is not incompatible with I DO NOT TELL THE TRUTH, for a person may do both at the same time even all the time)
- (A8) others

(B) I LIE is equivalent to:

- (B1) I DO NOT LIE (irony)
- (B2) I TOLD THE TRUTH SO FAR BUT ON THIS ASSERTION I LIE
- (B3) I LIED ONCE
- (B4) I SOMETIMES DO NOT TELL THE TRUTH
- (B5) I ALMOST NEVER TELL THE TRUTH
- (B6) I OFTEN DO NOT TELL THE TRUTH
- (B7) I ALWAYS LIE
- (B8) others

We need to notice that A1 is equivalent to B and B1 is equivalent to A and they therefore allow for the listed translations (Pinheiro 2015, p.2), B1-B7 and A1-A7, respectively.

We now need to translate this into logical system entries, so again we need to work on the metalanguage: to change I DO NOT LIE into one logical entry, we must look for something that is shared by all the mentioned equivalents. We look for a single logical entry because that is the shape we see in the original problem: it is how we end up thinking of CL and end up with something that resembles a paradox.

Whoever writes about The Liar so far would like A or I DO NOT LIE to be equivalent to I TELL THE TRUTH, but it is equivalent to at most {there is at least one x such that x belongs to X and x does not belong to Y, where X is all that is said and Y is all that is false} instead, this even in Classical Logic (there we frequently deny 'all' with 'there is at least one'. See (Binegar 2023, p. 4). In human discourse, however, a person may utter 'I do not lie' and mean precisely the opposite, so 'I do lie'. That happens in irony (Encyclopaedia Britannica's Authors 2023). We are allowed to use irony and frequently do it. Notice that, in the case of irony (A1), A is not equivalent to the most encompassing absolute or {there is

at least one x such that x belongs to X and x does not belong to Y , where X is all that is said and Y is all that is false}.

More than two sentences then derive from I DO NOT LIE and all satisfy {there is at least one x such that x belongs to X and x does not belong to Y }. {There is at least one x such that x belongs to X and x does not belong to Y } or A is therefore the most encompassing absolute. Notice that we are obliged to put an end to human language and change it all into computers' language to be able to discuss this, so that I ALWAYS TELL THE TRUTH has to mean {there is no x belonging to X that is in Y } and cannot be irony or changed into one of the equivalents of irony (anymore). Here we are then adopting a modificational approach (Gomulka & Wawrzyniak 2017, p. 181) to solve the paradox by means of a logical system and we claim that only by doing that can we deal with Language completely inside of Logic.

In language, the meaning of 'often' and 'always' is completely different at least sometimes and it is counting on those times that we define I OFTEN TELL THE TRUTH (A6) as {there is more than 50% of X that is not in Y }, so that the majority of the time what is said is true. Again here we modify language, working on the metalanguage to do that. The inspiration comes from Fuzzy Logic (Dadios 2015): with Fuzzy, it is about degrees of truth of a predicate or degrees of pertinence to the predicate. We simply applied the same reasoning to 'often', so that it is about degrees of pertinence to often.

B , on the other hand, is equivalent to {there is at least one x such that x belongs to X and x belongs to Y } and it cannot be irony or changed into one of the equivalents of irony (anymore). I OFTEN DO NOT TELL THE TRUTH (B6) would then be defined as {there is more than 50% of X that is in Y }, so that the majority of the time what is said is not true. I SOMETIMES DO NOT TELL THE TRUTH (B4), on the other hand, could be a 25%.

Either we deal exclusively with the truths of Logic or with the truths of Language therefore so far: irony is certainly allowed in Language, just to mention one piece of wealth that is lost with the translation of language tokens into logical entries. 'Often' varies from speaker to speaker and there could be someone who thinks often is more than 80% of X not being in Y , just to mention one variation, a mathematical one. This proves that the world of purely human language is much larger than both the world of objective language and the world of Logic.

Having acknowledged the flexibility of Language, we can now study the influence of time in The Liar. We start with studying it in an old version of the paradox and we then come to the sentence that matters to apply the conclusions of the study to it: Going back to the past should not be possible if time is all (Pinheiro 2016a), so if we include a coordinate of placement in time to go together with the assertions. From (Pinheiro 2012, p. 11): 'I always lie' is at least ('I always lie', X (subject who said that), date W , time R , true or false (for the utterer))'.

If the shape of the paradox is 'If I told you I always lie, would you believe me?', and the listener is obliged to write yes or no (Pinheiro 2012, p.3), what is the logical answer?

Believing equates truth values for the person answering the question and, according to the constraints of Classical Logic, the truth values are the most commonly seen, so TRUE and FALSE.

If I told you I ALWAYS LIE (in t_0)

- FALSE: You sometimes tell the truth and you may have told the truth right now, so that you always lie, but now, in this assertion, you did not do that. The paradox then does not eventuate.
- TRUE: You have just lied, then you sometimes tell the truth, but not on this occasion. The paradox also does not eventuate.

WOULD YOU BELIEVE ME? (in t_1)

If we believe them, they have just lied (in t_0) and therefore they sometimes tell the truth, but not on this occasion.

If we do not believe them, then they sometimes tell the truth. If they told the truth on this occasion, they have lied on all previous occasions, but not on this one. If they lied on this occasion, they sometimes tell the truth, but not on this occasion.

If we assume the sentence is false and we apply bivalence to it, 'I always lie' is false implies the most encompassing absolute, so at least one x in X that is not in Y and therefore also implies 'I sometimes tell the truth', which does not generate a paradox.

If we assume the sentence is true and we apply bivalence to it, 'I always lie' is true implies at least one x in X that is not in Y , since the sentence itself is true, therefore also implies the most encompassing absolute and therefore also implies 'I sometimes tell the truth', which does not generate a paradox.

One could argue that we are changing the metalanguage of Classical Logic and therefore we are perverting it somehow and therefore we are presenting a nonclassical system. Yet it is not possible to find the metalanguage of Classical Logic anywhere, so that we are entitled to say this is simply the right metalanguage, originally proposed with the classical system.

3. Conclusions

The Liar is a problem that is created from having an incomplete understanding of human language and communication, but also of Logic. Negating something is not asserting the opposition to that something: it is following the rules of Logic and therefore asserting that there is at least one instance for which the assertion is not true if the assertion involves a 'forall' or the inverted A , if we want to use symbols. Solving The Liar, just like it was when solving The Sorites, is mixing Language with Logic in a proper way, therefore working on the metalanguage or on the translation between one and the other. Whoever sticks to pure logic

when solving The Liar or The Sorites misses the point, which is making the enormous wealth of Language (enormous when compared to Logic) evident: these problems are allurements that teach us why computers will never replace us.

When translating I OFTEN TELL THE TRUTH into THERE IS MORE THAN 50% OF X THAT IS NOT IN Y, we may ask why not more than 51%? We are obliged to put a line here to make Language fit Logic, but it is clear that such a move is not really possible without a lot of loss. Language is way more than Logic and we can only fit it inside of Logic with a lot of sacrifice: it is as if Language were a human being and Logic a box and we had to break arms and legs to put the human inside of this box, but we wanted to transport them in the box at any expense, say to save their life from the enemy army... We can do that and it will save the 'rest' of the human, but we must understand the loss involved as we do it and think the gain is really worth it. We tend to think automating stamping in what comes to letters and controlling speed in what comes to cars are worth the trouble.

If we want to be absolute, as Logic seems to demand, I LIE and I DO NOT LIE would have to be equivalent to the most encompassing absolute, which is {there is at least one x such that x is in X and x is in Y } for the former and {there is at least one x such that x belongs to X and x does not belong to Y } for the latter where X is all that is said and Y is all that is false.

Both The Sorites and The Liar create a non-negligible impact on the human brain because important pieces of information are hid from the audience: if we were honest, we would say 'I always lie but I am not lying on this occasion' or 'I always lie and I am lying also on this occasion' instead of 'I always lie' when proposing The Liar and 'considering a vertical accumulation of grains' or 'considering a horizontal accumulation of grains' when proposing The Sorites. We would also explain that I ALWAYS LIE is false is equivalent to I SOMETIMES TELL THE TRUTH, I TELL THE TRUTH and others. For The Sorites, we would explain that there will be moments when adding one grain will not make a difference, but those moments will be part of a nonheap, heap or confusion area, where we cannot say there is a heap because some think there is not.

The approach we presented does not modify Classical Logic in any sense: it simply explains it better than previous approaches. We are simply working on clarifying the original metalanguage of Classical Logic. We don't say we have the correct approach to its metalanguage: we have a more correct approach only.

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