THE BLUSHING LIAR

Franca D'Agostini
University of Milan, Italy

Elena Ficara
Paderborn University, Germany

Suppose a person blushes iff what she says is false and she says: 'I am blushing'. If she blushes, she doesn't, and if she doesn't, she does. This Blushing Liar (BL) is a new paradox, similar in some respects to the Pinocchio Paradox (PP): Pinocchio's nose grows iff he says some falsity, and he says: 'my nose is growing'. Both paradoxes involve physical properties, and both, supposedly, confirm the existence of metaphysical dialetheias (see Eldridge-Smith 2011). In the paper, we note first that while PP relies on the rather implausible scenario of a wooden puppet whose nose grows iff he is lying, so it is debunked by the objection of fictionality (raised by Beall 2012), BL is more plausible. Many people in our world blush, and it is not difficult to imagine someone whose saying is causally related to blushing in a similar way. A second question is whether blushing can be directly connected to falsity, without deliberate conscience, on the part of the speaker, of saying a false statement. So we explore the consequences of intending 'I am blushing' as a 'lie', in the strict meaning of the term, and we claim there is no substantial difference, but for the fact that the paradoxical effect is even more plausible. Third, we check whether BL and PP do really release metaphysical dialetheias, and we argue they do not: they lack the fundamental requisite of Liar-like contradictions, i.e. the stratification of properties.

INTRODUCTION

Each time Victoria says some falsity she blushes. But she only blushes if what she says is false. Suppose now Victoria says:

V = 'I am blushing'

If she blushes, then she cannot blush (as she does not say falsity), but if she does not, then she must (as what she says is false): so Victoria blushes iff she does not.

This *Blushing Liar* (BL)[1] is a Liar-like paradox very similar to the one devised by Veronique Eldridge-Smith, presented by her father, Peter Eldridge-Smith (Eldridge-Smith and Eldridge-Smith 2010), and commonly known as *Pinocchio paradox* (PP). Stated that Pinocchio's nose grows if and only if Pinocchio says some falsity, suppose he says:

P = 'My nose is growing'

The nose is growing iff it is not growing. The two sentences V and P behave (or are supposed to behave) like the sentence L = 'L is false': if L is false then is true, and if it is true, is false.[2]

Our proposal in this paper is to present BL as a new and interesting version of the Liar, similar to PP, but with some distinctive aspects that deserve to be noted. More specifically, both paradoxes seem to be good cases for enlightening three issues of a metaphysical analysis of paradoxes.[3] First, Victoria as well as Pinocchio are fictional characters, so there is the problem of establishing the *ontological plausibility* of a paradoxical (more or less fictional) case. We define 'ontological plausibility' in terms of closeness or similarity to the actual world, and we note that Victoria's possible world is in principle more plausible than Pinocchio's world, as many people in our world blush, and it is not difficult to imagine a connection between talking and blushing along the postulated lines. Second, we note that such connection is even more plausible if we assume that Victoria blushes iff she *lies*, in the strict sense of asserting what she believes false. We claim that such version of the paradox might not change the basic dialetheic interpretation, whereby Liar-like assertions release true contradictions (Priest 2006 and Beall 2009). Third, we reflect on whether Victoria's asserting 'V' actually yields a metaphysical dialetheia, i.e. a 'true contradiction', in a non-merely-semantic sense, and we claim it does not. Rather, there are reasons to conclude that these largely 'physicalist' versions of the Liar, once interpreted in the light of closeness to our world, do *not* release metaphysical gluts. They lack the important property of stratification, which is typical of truth and of other iterable predicates.

THE PLAUSIBILITY OF FICTIONAL PARADOXES

In Eldridge-Smith's account, PP differs from the standard Liar just in involving a physical and non-semantic feature "having one's nose grow is not a synonym for 'false'": the nose grows *because* Pinocchio says something false, and this is, definitely, a metaphysical relation (Eldridge-Smith and Eldridge-Smith 2010, 213). In this respect, Pinocchio's case would offer a good counterexample to semantic dialetheism (Eldridge-Smith 2011), because in Pinocchio's world, as soon as Pinocchio says 'P', his nose is expected to grow and not grow at the same time.[4]

JC Beall (2012) has contended that Pinocchio's world is a fictional world, and fictional dialetheias are not metaphysical. He says Pinocchio's case falls within the scope of the operator 'according to the story…', so there is no genuine paradoxicality,

for in the story (like in other impossible or absurd stories), we can peacefully accept that Pinocchio's nose grows iff it does not grow, and so (maybe) grows and does not grow at the same time. But the premises are implausible, and hence the most usual definition of paradox as "the apparently unacceptable conclusion of an apparently sound argument" (Sainsbury 2009[3], from Quine 1962) is not satisfied. To suppose some possible worlds in which Pinocchio-like contradictions truly occur means, in Beall's view, confounding *fictionality* and *possibility*: "stories are free: make them as you please. Possibility is different: possibility is independent from our creativity" (Beall 2014b, 29).

The objection may seem weak, at first. In general, as we know scientific fictions are extremely useful, in many different respects, and thought experiments have important heuristic and explanatory properties in philosophy. In particular, many paradoxes are 'narrative', i.e. involve some fiction.[5] The Liar itself could be seen as a case occurring 'according to a story': the story of classical logic, involving Excluded Middle and naïve truth. By appealing to similar arguments, Eldridge-Smith has opposed that the fictionality restriction does not hold in case of PP: "why should Pinocchio's world become impossible while Epimenides' world dialetheic, if they make their respective statements?" He claims that there is a difference between a contradictory scenario, like the Barber's, in which an openly contradictory property is presupposed; and a contradictory situation created by a consistent set of properties, closed under logically reasonable devices, such as the T-schema. Pinocchio's paradox "is a version of the Liar: its scenario is apparently possible […] and it relies on the same principle of truth and the same inferences as some other Liars" (Eldridge-Smith 2012, 752).

In fact, Beall's objection is not completely debunked by these considerations. The idea that fictional paradoxes are not really 'paradoxical', eventually, do not seem to regard only 'logical impossibility'. As a dialetheist, Beall does not consider a potentially contradictory scenario a reason of implausibility. Rather, the objection is to be read as implying that truly paradoxical properties should not simply be non-contradictory (or only 'implicitly' contradictory): they must also be *ontologically plausible*. So the question is how we can state ontological plausibility, and whether ontological plausibility is really a feature for true paradoxicality.

Paradoxes and degrees of plausibility

As variously stressed (see Sainsbury 2009[3]; Lycan 2010; Paseau 2013) paradoxes 'come in degrees': basically, degrees of 'plausibility', to be intended as weaker than logical possibility. Paseau's scale for paradoxes is explicitly focused on epistemic values, as distinct from logical values: "it seems restrictive to stipulate that paradoxes must be beyond *logical* belief […] inconsistency is no longer the key" (Paseau 2013, 18).[6] So if we accept the gradualistic account, and if we stay at the idea that paradoxes are more or less narrative, then we ought to admit that degrees of paradoxicality/plausibility are inversely proportional to degrees of fictionality.

The reference to fictional scenarios implies that the evaluation is not only epistemic: it is also ontological. In Sainsbury's scale the import of ontological

considerations is evident: "paradoxes come in degrees depending on how well appearance camouflages reality", so stronger paradoxes – more definitely paradoxical cases – have to be more plausible insofar as presenting 'real' cases. In Sainsbury's diagnosis, a typical example of paradox at the lowest degree ("the weak or shallow end") is the Barber's case, judged less paradoxical just because the premises are 'implausible', and implausible just because there cannot be such a barber, or such a village. "The story is unacceptable" (Sainsbury 2009[3], 1-2).

At the other end of the scale, Sainsbury places the Liar and similar paradoxes: one cannot say that such cases 'do not exist', and "there is severe and unresolved disagreement about how one should deal with them" (Sainsbury 2009[3], 2).[7] In this regard, one may assume that (more) fictional paradoxes are those that typically, and uncontroversially, suggest what Field calls the Non-Existence Solution (Field 2008, 4-9). In Field's account, non-existence is given by the evidence that the predicates involved do not have any corresponding property: stated that "'meaningful predicate' in the technical sense is a predicate that expresses a property […] we must rely on a theory of properties that avoids the Russell paradox by the Non-Existence Solution to that" (Field 2008, 4-9 and 13).

Fictionality in the closest world

The Barber's scenario is implausible, at first, because the property of 'being a man of the country who shaves all and only the men of the country who do not shave themselves' releases the contradiction (the Barber's shaving and not shaving himself). But inconsistency cannot be enough, as such, for stating fictionality, and thus uncontroversial non-existence, because, if we are dialetheists, for instance, we accept inconsistent worlds. If we admit, in principle, the possibility of contradictions, to state non-existence (thus non-paradoxical fictionality) we need something else.

We propose to express ontological plausibility how it is usual in modal metaphysics, since the seminal work of Stalnaker (1984) and Lewis (1973), i.e. in terms of *closeness*, or *similarity*, to the actual world (Lewis 1986, 20-21). This is very intuitive. Expressing the actual world by @, a world – a 'scenario', a 'story', or a 'case' – can be said ontologically plausible inasmuch as it is close to @. Say, a world that is identical to @, but in which this paper has been published in 2014 is closer to @ than a perfectly identical world in which there are talking frogs, or there is no gravity, or some physical law is randomly violated. Fictionality varies accordingly: in stories, as Beall says, you can do what you want; but some stories are more plausible than others, and we assume they are, to the extent that the properties involved are closer to the properties we can acknowledge as existing in our world.

Adopting this perspective, we see that in the Barber's case, what states his non-existence (in the closest worlds) is not the contradiction as such, but the barber's *practical* impossibility of shaving and not shaving himself, so the impossibility of being the entity he is supposed to be. To stay at what our world is like, as dialetheists, we might accept that the Barber's property as such violates the Law of Non-Contradiction, but we can hardly accept that it violates practical consistency. Not by

chance, a widely shared point of dialetheic theories is the idea that there are no practical contradictions: as Priest (2006[2], 61) states: "a person cannot simultaneously catch a bus and miss it", just as they cannot "win a game of chess and lose it."

Now we have all we need to place PP and BL in a scale of paradoxicality. Eldridge-Smith is right in claiming that PP should not be at the weakest level, just because the property that Pinocchio is held to instantiate is not 'logically impossible' as such. So his world gains a certain advantage on the Barber's in terms of plausibility. However, we ought to concede that Pinocchio's world is not that close to our world. In Collodi's novel, Pinocchio is a wooden puppet who speaks and behaves like a little boy, and whose nose grows when he lies. We have no notice of a similar puppet in our world and we can hardly imagine that such a case might occur under the action of our laws of nature. The property G = 'having one's nose grow iff saying some falsity' is not contradictory but (relatively) implausible.[8] Not only that, non-existent properties may have some metaphysical significance, to the extent that they contribute to describing and interpreting the actual world.[9] But this does not seem the case of G: it does not seem useful for describing our actual reality (at least as far as the world remains as we know it); and apparently, we do not need the hypothetical existence of such property for some scientific purpose (or it is hard to imagine what such a purpose could be).

In the BL case instead, we know people variously react to their own speaking, and many people blush, in the widest range of occurrences. So in principle Victoria is a more plausible character: she is a human being, sharing all sorts of properties that humans actually have, but for the fact of blushing iff what she says is false. As blushing is a natural property, one can even study the neuronal facts related to assertions and one's face turning red or pale. Indicatively, a range of *neuro-semantic paradoxes* can be imagined, in the line of BL.

So we have a preliminary 'scale of plausibility'. While we are in the condition of stating that the Barber paradox is totally fictional, i.e. logically and ontologically implausible, we can say that Pinocchio – as wooden puppet endowed with the property G – is not logically but ontologically implausible, and Victoria has higher level of ontological plausibility: her world is definitely closer to @. So stated, we would say the fictionality objection is less serious for our BL, and we have a true (non-totally-fictional) Liar-like paradox.

THE LIAR AS A LIAR

In the version of the stories we have presented so far, Pinocchio's nose grows and Victoria's face blushes iff what they say is objectively false (or untrue), so that the causal relation between falsity and the intended effects on face and nose is 'magic', i.e. purely mechanical and arbitrary. Pinocchio's and Victoria's assertions seem to have the queer causality of any magic formula. As Beall has furthermore stressed (Beall 2014b), one can imagine all sorts of fictional connections between the truth or falsity of an uttered sentence and one or the other physical property. We can imagine all sorts of Pinocchio-like stories, such as, Beall suggests, "the grass grows iff Rapunzel says

some falsity, and Rapunzel says 'the grass is growing'": but this does not make the resulting case paradoxical.

In principle, BL may present some advantage with respect to Beall's Rapunzel (in terms of naturalness in a closer world), as it involves the plausible changes that the act of speaking produces to speakers' bodies. Telling the truth or saying falsities are complex activities, involving many emotional states, and as emotions in our world have physical effects, the idea of binding these effects in the frame of a property, such as B = 'blushing iff what one says is false', is not so implausible. But the important point is that in our world such sort of connections are not due to falsity or truth as such but to speakers' *awareness* about what they say, namely to what speakers *believe* about their own statements. In our world (and we postulate: in the closest worlds), what makes a person blush in connection with her speaking, normally, are *de se* facts, *de se* truths, i.e. what the person thinks (knows or believes) about what she says and her act of saying. So 'about' should be intended here as regarding the content: is what I'm saying true or false?; as well as the propositional attitude: do I believe what I'm saying?

The Liar, Pinocchio and Victoria as true liars

The original version of the Liar's story, credited to Eubulides (and, indirectly, to Epimenides), made explicit reference to 'lying': the Liar (*o pseudomenos*) was conceived as someone who, in saying 'I'm lying', declares (asserts) she does not believe what she is saying. So 'lying' was intended in the way that is fairly canonical nowadays, whereby a 'lie' is an assertion (or more in general a sort of speech act) in which the speaker does not believe what she says.[12] So 'p' is a lie iff a speaker asserts that p and she believes that 'p' is false.[13] We see now that in the notion of 'lie' the *de se* reference is clear: a liar, strictly speaking, is a person who has some ideas about what she's saying, and these ideas define her saying as a lie.

The technical treatment of the Liar paradox does not need to involve what the Liar thinks about her own assertion (about the content of it, or about her own propositional attitude): the point is simply to state the truth value of a sentence that seems syntactically appropriate but is resistant to normal – classical – evaluations. The paradoxical focus is on 'L' as such, so that 'the Liar' is not the speaker, but the sentence.[14] Things change in the case of PP and BL, because, as suggested, their paradoxical plausibility is largely due to the possibility of the *de se* connection.

As to PP, it should be noted that what Collodi wanted, in proposing the magic principle, was making intentional falsity visible, so revealing the deceiving strategy of the liar. The truth and falsity of what people say have no empirical evidence as such, and this represents an unquestionable advantage for liars, as to detect lies we need indirect means. Accordingly, the nose growing was intended to reveal Pinocchio's attempted deception, so exposing the lie to public reproach. In this respect, Victoria's case is more plausible because we tend to relate moral shame – in terms of self-contempt or fear for public reprobation – to blushing, and not to nose growing, and this would get around the difficulty: a 'liar' who blushes would be definitely more

plausible and less 'magic' than a person who mechanically blushes when she says something false, without any specific awareness about her saying.

Paradoxical lying

We see now that Victoria's case may have a higher degree of ontological plausibility if we modify B into B* = 'blushing iff *lying*'. In virtue of the property B*, Victoria's face does not react to facts in the world, but to what Victoria thinks or believes about them. In Collodi's novel, the original rule was: 'Pinocchio's nose grows iff he *lies*', so Pinocchio was intended having the property G* = having one's nose grow iff lying. What does it change, of PP and BL, in the lie-versions PP* and BL*? Are they still paradoxical?

If the utterances 'P' and 'V' must be 'lies' in the canonical definition, the foreseen effects are expected to obtain in virtue of what the asserters *believe*: about facts and about themselves. And as we know, lies may fail (what the speaker says is believed false, but it could be in fact true), so one may contend that the context of BL* and PP* is such that there is no effect of their saying.[10] If Victoria was actually blushing and Pinocchio's nose was growing, but they believed it was not so, the world in which they live would not change. Thus, apparently, the reference to lying increases plausibility but at the cost of weakening the paradox.[11]

In fact, this conclusion is not convincing. Our view is that there is no significant difference, except that, as mentioned, speaking of 'believed falsity' implies a double self-reference, *de re* and *de se*: Victoria talks about the content of what she says (which is her own blushing), and about her own epistemic attitude (which is what she believes about it). Now we simply have to assume she knows the rule, she knows that she has the property B*, so lying and blushing are for her perfectly equivalent, and in saying V = 'I'm blushing' she knows she is saying 'I'm lying'. Hence the classical Liar-like case can be easily inferred. In the content-sensitive account, given that 'lying' means *believing that what one's saying is false*, in saying 'V' Victoria is meaning that she believes what she's saying is false, but as what she's saying is that she lies, then she believes what she's saying is true, but evidently if she believes so, she believes she does not lie, and thus she does not lie. You get the same bi-conditional mechanism, whereby you have that Victoria believes she lies and does not lie at the same time. In an attitude-sensitive account, we have the same result. Victoria believes and does not believe that she's lying at the same time.

Now note that this epistemic uncertainty would act in some sense on Victoria's face. In principle, she ought to blush but cannot blush: because she says she believes and does not believe what she is saying, and believes that what she is saying is false and true. Here is thus the difference between BL* and BL: that in case of lying (believed falsity) the paradoxical effects of Victoria's utterance are not only related to her effective blushing (which will make what she says true or false), but also to what she believes. That this particular state of mind is such as to generate an effective, 'real' contradiction, is the point that needs to be discussed. And there are reasons to doubt that Victoria's situation actually releases a metaphysical dialetheia

(also in the non-doxastic version of the story), which is what we are going to show.[15]

PP AND BL DO NOT RELEASE METAPHYSICAL GLUTS

What is controversial, in our view, is whether these paradoxes give rise to metaphysical gluts, i.e. real – actual or possible – contradictions. To check this, we go back to BL and PP (but what we say largely holds for BL* and PP*).

A metaphysical glut is some fact or state of affairs (in the world we are speaking about) that makes a proposition of the form 'p $\land$ ¬p' true. [16] As Priest writes: "if something is true, there must be something that makes it so […] if some contradictions are true, then the world must be such as to make this the case."[17] Now to state whether the utterances 'V' or 'P' truly release metaphysical dialetheias, we have to look at what happens in Victoria's and Pinocchio's (closest) worlds, exploring whether the corresponding truthmakers of 'V $\land$ ¬V' and 'P $\land$ ¬P' might obtain or not.

The Liar's world

It is advisable to compare the two worlds with the world W_L in which the Liar utters the statement: L = ''L' is false'. So we will have three worlds, corresponding to the three scenarios: Victoria's world (W_V), Pinocchio's world (W_P) and the standard Liar's world (W_L), where the three fictional characters, respectively, assert 'V', 'P' and 'L'. The point is to state what happens in the three worlds after the three speech acts.

According to the dialetheic picture, in W_L we would have:

(1_L) the Liar's utterance 'L'
(2_L) the bi-conditional state L $\leftrightarrow$ ¬L[18]
(3_L) the contradiction L $\land$ ¬L

(That we are entitled to admit bi-conditional (or even conditional) states of affairs is arguable: for now, and for charity, let's assume we are.)

Now we can easily see that the only 'fact' uncontroversially occurring in W_L is (1_L). For one thing, if in the actual world a person says 'what I'm saying is false' (or 'I'm lying') she can go on saying this without any consequence; the passage to (2_L), and thus the difficulty, only appears if you ask whether what she is saying is true or not.[19] The sentence-fact, i.e. the Liar's utterance, has no causal effect; you cannot move on to the Inclosure Schema (2_L) without adopting a semantic ascent, or some second order attitude of whatever kind. Which means that to have the bi-conditional contradiction the naïve theory of truth, or diagonalization, or some reflexive action are required.

As to the move from (2_L) to (3_L), it normally requires the Excluded Middle: given Inclosure and L $\lor$ ¬L, we get L $\land$ ¬L from L, and L $\land$ ¬L from ¬L, and hence unquestionably: L $\land$ ¬L. Now it is hard to believe that the Excluded Middle (otherwise

a controversial principle) is a metaphysical law, in some way comparable to the laws occurring in the actual – natural – world.[20] So if W_L is the closest world, and we assume a basic truthmaker view, we conclude that (2_L) and (3_L) are not real facts, they do not belong to the world's outfit, as the property involved is 'being true', a semantical property, which supervenes on being, and the law whereby the Liar's sentence releases a contradiction has a semantic and not metaphysical power. The two states (2_L) and (3_L), jointly or separately, are due to second-order or inferential and not causal processes, at least they need the reflexive intervention of the concept of truth. This simply confirms that the Liar's contradiction is purely semantic, which is not controversial in principle.

Victoria's and Pinocchio's quasi-normal worlds

Moving to Victoria and Pinocchio, we have implicitly assumed until now that in their worlds some Liar-like situation would occur, with the only difference that the properties involved are of physical nature. Thus, in the world W_p in which Pinocchio's nose behaves in the way figured out by Collodi and Pinocchio utters 'P', there would be three consecutive states of affairs:

(1_P) Pinocchio's utterance 'P' (Pinocchio says 'my nose is growing')
(2_P) the bi-conditional state of affairs $P \leftrightarrow \neg P$ (the nose grows iff it does not grow)
(3_P) the contradiction $P \wedge \neg P$ (the nose grows and does not grow).

Accordingly, in the world W_V in which Victoria blushes iff she lies, and she utters 'V', we would have:

(1_V) Victoria's utterance 'V' (Victoria says 'I am blushing')
(2_V) the bi-conditional $V \leftrightarrow \neg V$ (she blushes iff she does not)
(3_V) the contradiction $V \wedge \neg V$ (she blushes and she does not).

Is this account legitimate? We assume that the utterances of the first steps occur in both worlds, so what we have to check is whether the subsequent states of affairs positively obtain, as metaphysical and not purely semantic facts. While in W_L the states (2_L) and (3_L) are due to semantic processes, here we will have that (as Eldridge-Smith stresses) Pinocchio's and Victoria's statements ought to produce some effective, non-semantic, fact. The point is to state whether this 'fact' will have the form of (2) and (3) (so confirming the dialetheic picture), or will not.

As the two worlds are intended to be the closest to ours, important empirical conditions may modify the judgement.[21] We are interested in the metaphysical plausibility of the dialetheic interpretation, so we can partially avoid the details of an empirical line of analysis, but we have to maintain, as preliminary conditions, that Victoria and Pinocchio say 'V' and 'P', and they do (and did) not say anything else.

Once assumed the occurrence of (1_P) and (1_V) in the two worlds, at first there is no compelling principle that leads us to accept the further passages. Suppose you favour the idea that 'P' and 'V' are *ungrounded*, and more specifically they are 'failed sentences': they fail their assertive aim.[22] In this case, Pinocchio and Victoria do not say anything that could be true or false, hence (as they did not say anything else) there would not be any truthmaker for 'V' or 'P' and for 'not V' or 'not P'. In this line of reasoning, you conclude that nothing happens in W_P and W_V: no metaphysical glut.

However, we see that this gap-strategy fails: if nothing happens at all, then the two sentences become false. Victoria is saying she is blushing but she's not blushing, Pinocchio says his nose is growing but the nose does not grow; they both say something false. Now the mechanism will be activated: as 'V' and 'P' are falsities, their being uttered in W_V and W_P is held to produce the due effects (blushing and growing, respectively). But in the very moment in which Victoria's face begins to blush and Pinocchio's nose begins to grow, their sentences will become true, which would possibly block the process: Victoria would stop blushing, and Pinocchio's nose would stop growing, and if it is so, then again the mechanism is to be activated, and the process begins again…

In fact, Collodi does not specify duration and intensity of the nose growing. And we do not know the exact nature of Victoria's blushing (as she is a fictional character too). But if W_P and W_V are the closest worlds, then we are entitled to suppose that the situations brought about by the two utterances is in some way describable by the bi-conditional contradictions $P \leftrightarrow \neg P$ and $V \leftrightarrow \neg V$. More generally, some passage from (1) to (2) in both worlds would plausibly obtain, and we can also accept that such passage would be somehow *natural*, as produced by the power of Pinocchio's and Victoria's internal dispositions, informed by the properties G and B. So an interesting feature of PP and BL with respect to the standard Liar is that while the Liar's utterance does not produce any metaphysical effect (as suggested, the Liar can go on saying she's not telling the truth without any consequence), and to have the bi-conditional mechanism we need to apply the naïve theory of truth (or diagonalize the truth predicate, or reason about whether what is said is true or not), in the case of PP and BL no strategy of this sort is needed. That some effect can be brought about in BL without the T-schema (which is a point of Eldridge-Smith 2018) is also clear as soon as we confront this simple version of the paradox:

1   for any 'φ' (said by Victoria), Victoria blushes iff not φ [23]
2   Victoria says 'V' = 'Victoria blushes'
3   Victoria blushes iff not V   ($\forall$E from 1)
4   Victoria blushes iff Victoria does not (=E from 2,3).

All this stated, we may accept, at least by analogy, that a situation correctly captured by 'P iff not P' and 'V iff not V' would positively occur in W_P and W_V.

But still, the further passage, from (2) to (3), remains unjustified. Even if we assume that the analogical picture of Pinocchio's and Victoria's case in bi-conditional terms is indicatively appropriate, as something of this kind plausibly occurs in the

closest worlds, this does not seem enough for saying that we are facing a real glut. As suggested, a metaphysical dialetheia is a state of affairs (positively occurring in some actual or possible world) that makes some proposition of the form 'p and not p' true. Assuming, for sake of the dialetheic view, that the state descriptions 'V iff not V' and 'P iff not P' correctly express the alternate blushing-and-not blushing of Victoria's face and the growing-and-not growing of Pinocchio's nose, we infer 'V $\land \neg$V', and 'P $\land$ $\neg$P', respectively, only on the basis of the EM (as seen: we get V $\land \neg$V from V, and V $\land \neg$V from $\neg$V, and hence unquestionably: V $\land \neg$V). But there is no causal action involved, and in no way the state description in terms of the Inclosure Schema authorizes us to conclude that the intended glut actually obtains.[24]

The same argument may be constructed considering the *stratification* of properties occurring in the Liar's case. Contradictory stratifications, such as T(T¬L) (claimed truth of what is claimed false) are typically due to predicates that are meaningful as they express properties that allow for self-predication (or diagonalization or iteration). Pinocchio's and Victoria's properties G and B differ from the typical properties involved in Liar-like paradoxes in that G and B *do not admit of any stratification*. While the Liar's assertion can be seen as true and false as claiming the truth of what is claimed false, there is no case of 'growing of non-growing' or 'blushing of non-blushing' in Pinocchio's and Victoria's world. We may suppose that if Victoria *begins* to blush just after saying 'V', then she must *stop* blushing, but then if she stops, she must begin again, or possibly: she ought to blush and turn pale, and again recursively blushing and turning pale. But this would be a temporal process, hardly interpretable as a dialetheic state of affairs.[25]

In a word, 'V $\land \neg$V' and 'P $\land \neg$P' do not seem adequate state descriptions of what happens in Victoria's and Pinocchio's world. We can imagine a variety of possible 'explosive' cases, occurring at molecular level, as consequences of P iff not P and V iff not V, but we can hardly imagine the truthmaker of a dialetheia. To get this, we need EM, so the intervention of a logical law that is hardly interpretable as a metaphysical principle. Or at least we need a stratification of properties that is hardly adaptable to empirical givens.

CONCLUSION

We conclude thus that the properties involved in PP and BL (and maybe in paradoxes of the same family) do not release genuine metaphysical gluts. Not because they are purely semantic, as in fact they involve physical actions and events, but because the events occurring in Pinocchio's or Victoria's worlds are hardly comparable to truthmakers for some instance of '$\alpha \land \neg\alpha$'.

The metaphysics that would correctly explore the scenarios of these paradoxes may contemplate quasi-normal worlds, in which some bi-conditional contradictory facts may occur, even if their conjunctive equivalents do not obtain. But the analysis of such hypothesis exceeds the aims of this paper. If it is true that paradoxes are worth to be studied because they 'teach' us something, then we may say that BL teaches us something about logical and physical laws, semantic and metaphysical properties.

NOTES

1.   Viktoria Schneider, one of our students, has suggested the idea. We thank her for this insight: BL is to be credited to her.

2. As in principle we move in a classical scenario, we assume exclusion and exhaustion, so that falsity and untruth are equivalent.

3. Other issues have been treated in the literature about PP. The effective occurring of Pinocchio's utterance in a temporal system is explored by Gams, Černčič and Montanari (2016), who note: 'as with most logic paradoxes when faced with real life [PP] turns out valid for only a short period of time' (365). Luna (2016) has developed a physicalist interpretation of PP, to the effect that assuming mental states as supervening on bodily states leads to the idea that 'P' is a paradoxical and non-paradoxical sentence.

4. Eldridge-Smith also holds that PP is a counter-example to Tarski's aetiology of paradoxes (Eldridge-Smith and Eldridge-Smith 2010), whereby paradoxes arise from the use of semantic predicates. In fact, this point is *prima facie* arguable. As we will specify later, which are not only 'semantic', but at least have the special iterability of truth.

5. See Olin (2003, 9-14) for preliminary ideas about 'narrative' paradoxes.

6. In fact, Paseau does not work with Sainsbury's definition of 'paradox', and follows Lycan (2010), but this does not imply any significant change to the gradualistic account, for our needs.

7. We leave aside now the question of the different values interacting in a scale of paradoxicality: one of them is surely the more or less 'serious' level of disagreement.

8. It is a 'free lunch', ontologically speaking (Armstrong 2010, 90). Accepting (with Lewis) that similarity is to be interpreted in Armstrong's terms, as 'sharing of properties', as any complex predicate as such can be intended to express a property made of a cluster of sub-properties, we see that the property G = 'having one's nose grow iff what one says is false (or untrue)' shares some (if not many) sub-properties with Pinocchio's counterparts actually existing in our world, but it supervenes on them in a way that has no metaphysical impact (the property has no instantiated counterparts in the closest worlds).

9. Typically, 'being true': you can concede that truth supervenes on being, so it is not a natural property, but you must acknowledge it is a grounding and unavoidable resource, stated its paramount role in human knowledge (and life). This is what locates the Liar at the highest levels in the paradoxical scale, and discourages any Non-Existence strategy, as renouncing truth is technically impossible (ultimately, 'truth' is an-elenctic concept).

10. A similar objection has been raised to BL by two anonymous referees: we thank them for encouraging our reflection on this theme.

11. One could admit that Victoria blushes and Pinocchio's nose grows in case of *successful lying*, i.e. when they *know* that what they say is actually false. We would

say that the due effect appears when Victoria says 'V' while she is not blushing: so she must blush because what she says is false (and she knows it is so), but in blushing, she would make her assertion true, so she cannot blush; and thus she must and cannot blush at the same time.

12. In fact, there is a variety of definitions, we say this one is 'fairly canonical' as it is basically endorsed by Mahon 2016. It has been launched by Carson (2006 and 2010) and Sorensen (2007).

13. The third clause: "the speaker wants to deceive someone by saying that p" was sometimes included in traditional definitions; it is generally omitted nowadays, because it is assumed that there are different sorts of 'non-deceptive lies'. This omission has been discussed (see Lackey 2013), but we can concede that if Pinocchio and Victoria are intended to *lie* in saying 'P' and 'V', they do not have deceptive intention (if not else, because both must be aware of the objective effects of their lying).

14. Some reference to the Liar 'as a liar' is to be found in Eldridge-Smith (2004). The import of mental states is at the basis of the AI approach of Luna (2016).

15. In case of PP, see Luna (2016) for details about Pinocchio's 'states of mind'.

16. In the official definition, a 'dialetheia' is a proposition that is true and whose negation is true too, so it bears an overlapping of truth and falsity, which would imply a false-truthmaker and true-falsemaker. Such hypothesis, in our judgement, is less plausible than the idea of a single conjunctive truthmaker for 'p $\land$ ¬p', without truth-distribution (see D'Agostini 2014).

17. Priest (2006[2], 299). Armstrong found the possibility of contradictory truthmakers unconvincing (see Armstrong 2004, 108); the realistic involvement of dialetheism has been variously explored and discussed (see Mares 2004; Priest 2006, 299-302; D'Agostini 2014), but we assume for the sake of argument that there might be contradictory facts, i.e. metaphysical dialetheias.

18. This corresponds to Priest's account, whereby the Liar instantiates the Inclosure Schema (1995). One may draw the contradiction without Inclosure (see Beall 2014a and Beall, Glanzberg, Ripley 2016), but the classical bi-conditional account is epistemically and metaphysically expressive, so it is especially clarifying for our discourse.

19. Which may justify the medieval idea of *cassatio*, intended as an ignore-tactic: leave the Liar's sentence to itself (see Goldstein 2006).

20. See on this Armstrong (2010, 88-92).

21. Some aspects and consequences of PP in this regard are explored by Gams, Černčič, Montanari (2016), and by Luna (2016).

22. A similar strategy has been proposed by Goldstein for the Liar and other paradoxes (2000 and 2006).

23. We use 'φ' as variable for propositions, and 'φ' (with quotation marks) as the proposition made true by the fact φ (without quotation marks).

24. Otherwise, the idea that one can accept α ↔ ¬α without conceding α $\land$ ¬α has been advanced in various ways. Interestingly, Hegel's theory of contradictions can be interpreted in these terms, but not properly in virtue of some failure of the EM, rather, grace to a specific interpretation of the *consequentia mirabilis*: see Ficara (2018).

25. We have examined at length the lack of stratification in the case of BL in D'Agostini and Ficara (2016), where we give some further details. See also (for PP) D'Agostini (2014). Eldridge-Smith (2018) thinks that the absence of stratification makes of PP and BL good examples for debunking hierarchical approaches. Now we think that yes, PP and BL do not allow for distinct predicative levels, so 'hierarchies' strictly speaking, but in our diagnosis, to arrive at the dialetheic state the intervention of truth (with its special feature of iterability) is required.

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