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Explosion and Reasoning

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Abstract

The paper responds to two recent versions of the argument against *ex contradictione quodlibet* (the principle that says that a contradiction entails any proposition, also known as 'explosion') based on the normative role of logic for reasoning. Both versions of the argument I am concerned with assume that a subject has defeasible reasons to believe any logical consequence of her beliefs. After showing this assumption to be more controversial than it might seem, I argue that even if it is true, and assuming *ex contradictione quodlibet*, no absurdity follows about what reasons the subject with inconsistent beliefs has. There is an independent explanation of the fact that a subject with inconsistent beliefs is not in a position to rationally infer anything. The reasons that derive from the inconsistency, if there are any, are a of peculiar kind, which I call inert reasons.

Keywords: Ex contradictione quodlibet; explosion principle; paraconsistent logics; normativity of logic

And I would say, 'Well then, just don't draw any conclusions from a contradiction'.
Ludwig Wittgenstein, *Lectures on the Foundations of Mathematics*

1. Introduction

It has been suggested that the principle of *ex contradiction quodlibet*, also known as Explosion, can be shown to be flawed because it is in contrast with the normative role of logic. The principle says that a contradiction, or more precisely an inconsistent set of premises, entails any proposition whatsoever.[1] This is because it is not possible for a

[1]I will often talk, for short, of contradictions where the more general and precise expression should be 'inconsistent set of premises'. Relatedly, in the *Lectures on the Foundations of Mathematics*, after Wittgenstein's suggestion used here as an epigraph, we find Turing responding that '.if one made that rule, one could get round it and get any conclusion which one liked without going through the contradiction' (Wittgenstein (1976), p. 220). Of course, Turing is technically right. Nor could Wittgenstein have changed his suggestion, as I understand him, to 'don't draw any conclusion from an inconsistent set of premises'. The suggestion could perhaps have been 'don't draw, from an inconsistent set of premises, any conclusion which you could not draw from a consistent subset of those premises'. At any rate, I do not wish to claim the adjective 'Wittgensteinean' for anything said here, but I believe Wittgenstein's suggestion, which is made

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contradiction to be true, and therefore it is not possible, *a fortiori*, for a contradiction to be true while another proposition is false, and this is what entailment is supposed to be (A entails B when it is not logically possible that A is true and B is false). More formally, it can be stated as follows:

$$\text{EXP} : A, \sim A \models B$$

EXP is a valid entailment in Classical, Intuitionistic, and other logic. However, there are logics, often collectively called *paraconsistent* logics, that do not count as valid.[2] The argument against it (a version of which we are concerned with here) starts from the observation that, since human beings are not logically omniscient, they often have inconsistent beliefs. But then, assuming EXP, their beliefs entail any proposition whatsoever (including propositions unrelated to anything else believed). In that case, if one is committed in some sense to the logical consequences of one's beliefs, one is committed to believe any proposition whatsoever (and its negation too). But this is absurd. Here is a recent statement of the idea: '.Bohr's account of the behaviour of the atom was inconsistent. Yet, patently, not everything concerning the behaviour of electrons was inferred from it, nor should it have been. Hence, whatever inference mechanism it was that underlay it, arguably this must have been paraconsistent' (Priest et al (2022)).[3] However, the idea that one should infer the logical consequences of one's beliefs is, despite an initial air of plausibility, rather hard to make precise in a way that does not make it obviously false. What if one's beliefs are irrational to start with? What if one finds out their logical consequences contradict the evidence? Does logic produce a requirement to stick to them, and to go deeper and deeper into irrationality to be consistent? Surely not.[4]

Perhaps of course the idea that one is committed to the logical consequences of one's beliefs could be spelled out in a way that avoids this objection and similar ones. Steinberger (2016) provides a careful evaluation of the prospects of this strategy. He concludes that they are not promising. In particular, he argues that there is no suitable 'bridge principle', linking the logical facts to the epistemic obligations of the subject who has inconsistent beliefs, which can serve the purpose of the argument against EXP. All such principles, according to Steinberger, are going to be either too strong, and hence implausible for independent reasons, or too weak to derive the problematic conclusion from the validity of Explosion.

Not everyone has been convinced by Steinberger though, and two recent papers point in particular to the following bridge principle:

(Cr+) If *P1, . . . , Pn* $\models$ *Q*, then if *S* believes all the *Pi*, *S has (defeasible) reason* to believe *Q*.

Both Caret (2021) and Pinder (2017) claim that the principle is both sufficiently plausible and strong enough to create trouble for Explosion. Caret gives the following formulation of (Cr+) which he names *Reason*:

under the supposition that something like EXP holds, to be a good one as far as it goes in its letter, and a very good one in its spirit.

[2]See Priest et al. (2022) for an initial survey, and Priest (2002) for a more in depth one.

[3]See further references in Steinberger (2016) and Caret (2021). I must confess I find hard to adjudicate the weight of this sort of argument for proponents of paraconsistent logics. The argument is often proposed in a brief manner, as if it were obviously sound (this is also true after Steinberger's careful discussion, building on insights of Harman and Broome mentioned below, has definitely shown that there is nothing obvious about it). Of course, there are different arguments for paraconsistent logic that are not discussed here. Like Steinberger, I find the argument from the normativity of logic particularly interesting precisely because of the (perhaps naïve) appeal to the normative role of logic for reasoning.

[4]See Harman (1986), chapter 2 especially, and Broome (2000).

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(R) Agents have defeasible reason to believe any of the logical consequences of their beliefs.

Henceforth, I will use this formulation, which I take to be the informal equivalent of Cr+. Pinder exploits, together with R, the following premise, which I will name No Reason, taken from Steinberger's paper, to form a deductive argument against Explosion:

> (NR): Even if *S's* set of beliefs is inconsistent and any proposition Q whatsoever is entailed by it (courtesy of EXP), there are *Q*s such that *S* has *no reason* to believe *Q*.

R and NR are inconsistent, at least under the assumption that NR's antecedent is sometimes satisfied, so some subject has an inconsistent set of beliefs and, because of the inconsistency, they do entail any arbitrary proposition. Pinder thinks that there is at least a reasonable presumption that the culprit is EXP. Steinberger rejects instead NR, but Pinder does not find his argument compelling, and I agree with Pinder on this specific point.[5] Caret (who is responding to Michael (2016)) does not employ NR in his argument and thinks instead that the strongest strategy against EXP is an abductive argument, to be constructed starting from R and the observation that competent thinkers who do have inconsistent beliefs are not inclined to infer any proposition. The falsity of EXP is, in his view, a good candidate to be the best explanation of this fact.

In the next section, I will clarify the nature of principle R and its relation to some epistemological views. It will turn out that R is more controversial than both Pinder and Caret seem to think. Despite these difficulties, I will try to make room for a plausible version of the argument against EXP. In the following section, however, I will argue that the reasons, if there are any, that are afforded to a subject who has inconsistent beliefs by the validity of EXP are of peculiar kind, in that any attempt at using those reasons will necessarily fail to produce a positive epistemic status. This, I will argue, provides a reply to the abductive version of the argument against EXP. In the final section, I will consider the deductive version of the argument. I will argue there that, in light of the discussion of the previous sections, there are no good motivations to accept the conjunction of the two premises of that argument.

2. Section 1. Conservativism, closure, and contradiction

Both Caret and Pinder agree with Steinberger that R embodies a form of conservatism, the view that one's current beliefs have some sort of (weak) positive epistemic status just by virtue of being one's current beliefs. R entails this view assuming that logical entailment is reflexive.[6] So any belief one has is entailed by the beliefs one has, and therefore it follows that one has at least defeasible reasons to hold any belief one has. Let us call the latter claim Core Conservatism.

> CC: For any belief a subject has, the subject has a defeasible reason to hold that belief

[5]Pinder (2017) pp. 63–5.

[6]The radical move of giving up reflexivity for entailment would not change anything substantial in this context. It would not follow from the fact that I believe that the moon is made of cheese that I have a reason to believe that the moon is made of cheese; but the latter would still follow if I believed that all Earth's satellites are made of cheese, and that the moon is a satellite of Earth.

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This view has had some prestigious defenders.[7] It should be noted, however, that while R entails CC, the reverse entailment does not hold. One could hold CC without accepting that what we have reason to believe is closed under logical entailment, so we do not always have reason to believe everything that follows from what we have reason to believe (this combination of views is for example adopted in Harman (1986)). This is a dialectically rather important point because it seems to me that the assumption in the debate was that R, while far from uncontroversial, is a view that has had some prominent defenders in the epistemological debate. But while this is true of CC, I do not think it is true of R. R turns out to be equivalent to the conjunction of CC and a strong closure principle for 'having reasons to believe'. Closure principles are often qualified in some way, for example, by adding that the subject is justified in believing that the entailment holds. R does not instead require any awareness of the entailment. While both CC and unrestricted closure principles for justification or reasons have defenders, I am not aware of anyone explicitly defending the conjunction. I will, however, for the moment put aside this issue and proceed to discuss the argument against EXP as if R was no less plausible than CC.

Let us turn our attention to the plausibility of conservatism itself. One of its most prominent defenders was Gilbert Harman, who defended a form of conservatism he dubbed 'generalized foundationalism' (Harman (2001)). The radical nature of the view should not be underestimated. Pinder argues that a form of the view is defended by Williamson (2007), since Williamson maintains, allegedly, that we are 'entitled' to take all of our beliefs as knowledge, and therefore to take them as evidence. But if this sort of entitlement were to carry any serious weight, the view would be at odds with the thesis that evidence just is knowledge (Williamson (2000)), so when one uses as evidence a belief that falls short of knowledge (perhaps because it is false) one is violating an epistemic norm. This is not the place to discuss Williamson's exegesis of course. My aim is merely to point out that conservatism is very far from being a standard view in epistemology. One controversial aspect of it is that it is certainly in some sense an internalist thesis, since it makes a certain positive epistemic status (being supported by a reason, or even being *prima facie* justified) supervene on belief, a mental state of the subject. More importantly, most theorists would count the view as by far too liberal, in granting subjects some form of justification, or reason, in favour of their beliefs by default, even in the absence of a reliable cognitive process, adequate evidence, or any other requirement.

Something therefore needs to be said, to make a case for the initial plausibility of conservatism, about beliefs that are ostensibly completely unjustified or irrational, and so do not seem to have any reason in their favour. This is particularly relevant here because, according to a version of the normative argument against EXP, we would end up with a similar problem if EXP were true; the subject would be predicted to have reasons in favour of a belief that is pre-theoretically completely irrational. The conservatist deals with this sort of case by pointing out that a belief may be in tension with other beliefs the subject holds, and hence any initial presumption in its favour may

[7]See Christensen (1994) and Vahid (2004) for references and critical discussion, and McCain (2008) for a relatively recent defense. Christensen traces the origin of conservatism to two sources: Quinean holism and subjective Bayesianism. It should be noted that the popularity of the view, which was already a minority view, seems to have further declined in the last thirty years. Epistemic conservatism in the sense under discussion should not be confused with phenomenal conservatism, the view that we have defeasible reasons to believe what seems to be the case.

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be lost this way.[8] Chisholm put the idea as follows: 'Anything we find ourselves believing may be said to have some presumption in its favour—provided it is not explicitly contradicted by the set of other things we believe' (Chisholm (1982) p. 14). However, 'explicit contradiction' might be not necessary for defeat (and also not sufficient, for reasons we will see below). It could be the case that other beliefs provide inductive evidence against the first one. According to Harman, it might be also sufficient, to defeat the positive epistemic status of the belief, that the subject is aware that the belief was formed in an unreliable way (on this view, this is counted as a special case of 'tension' among beliefs). Here is how Harman puts the point:

'Objection: "In this view, as soon as one randomly comes to believe *P*, one is automatically justified in believing *P*." Reply: If one believes not only *P* but also that one randomly came to believe *P*, the two beliefs are in tension and one has a reason to abandon at least one of them'. (Harman (2001) p. 658).

How do these qualifications interact with the dialectics concerning Explosion? A first thought could be that since, ex hypothesis, the subject in the relevant situation has inconsistent beliefs, those beliefs are automatically discounted from being the basis for the justification of further beliefs. Their justification (or whatever presumption in their favour there is in virtue of their beliefs) is not just defeasible, it is automatically defeated, and so is the justification they could provide for their logical consequences. Because those consequences were never believed, and the reasons in their favour were defeated at the same time they started to exist, there never was any reason or presumption supporting those consequences. This could be used as a motivation to claim that R is to be rejected, even by conservative lights (a similar principle might be true, one qualified to restrict it to consistent beliefs). Alternatively, a conservative might want to stick to the letter R, while admitting what I will call *inert* reasons. We will come back to this.

However, counting inconsistent beliefs as automatically defeated, although some defenders of CC adopt this view, would be too quick. Inconsistent beliefs, obviously, cannot all constitute knowledge. So if one agrees, for example, with Simion (2021), who defends the claim that it is permissible to use a belief as a premise in reasoning if and only if that belief constitutes knowledge, one can already point out an epistemic failure related to reasoning from a contradictory set of beliefs. Of course, however, a similar view is very far from the spirit of R, and it is fairly controversial. We can concede, at least for the sake of the argument, that sometimes beliefs that are not knowledge are reasons, or at least provide us with reasons, in some sense of 'reason'. A very weak sense of 'reason' will do here, because it seems fairly plausible that one does not have even weak reasons to believe that the moon is made of cheese, or some similarly absurd proposition, even if one has inconsistent beliefs. Still, if it could be established that inconsistent beliefs are necessarily irrational, we would be able to block the argument against Explosion along similar lines. However, inconsistent beliefs need not fail to meet at least some minimal threshold of rationality; indeed, on some views of epistemic justification, in some cases, all beliefs in an inconsistent set could be justified.[9] Sometimes the

[8]It is interesting that Harman (1986) defended substantially the same view (as far as I can tell) he later called generalised foundationalism, but counted it as a form of coherentism.

[9]Hirvela (2022) writes that he 'think[s] accepting that a subject can believe with justification a set of inconsistent propositions is nowadays the mainstream position' (p. 1987). However, there are a number of complications. Firstly, it could be argued that defenders of CC need to oppose the mainstream position to avoid making their view too liberal. Secondly, the position, even if mainstream, has some opponents. Lastly, the issue is complicated by the distinction between believing a set of inconsistent propositions and believing the conjunction formed by the propositions in the set. Hirvela, e.g., is committed to the impossibility of believing with justification such a conjunction (this follows from his more general commitment to the impossibility of believing with justification a necessary falsehood). See also fn. 15 below.

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inconsistency is subtle and goes unnoticed, so we do not think the subject to be irrational in the usual sense of term or in any strong sense. It has been argued that some historically influential scientific theories contained inconsistencies.[10] Or think, for a classic example, of Frege while he is opening Russell's famous letter pointing out the contradiction that could be derived from one of the axioms of the *Grundgesetze*, which Frege certainly believed, without being irrational. Moreover, sometimes the subject is aware of the inconsistency but does not see how to put a remedy to it without abandoning some plausible belief. The lottery and, more clearly, the preface paradox provide some at least initially plausible examples.[11] If *ex contradictione quodlibet* is a valid rule of inference, do the subjects in these examples have reason to believe absolutely anything? As I pointed out, such a claim would be absurd, or at least very implausible, even on a very weak sense of 'reason'. In the next section, I will argue that even if subjects had reasons derived from the inconsistency of their beliefs, this would not mean that it would be rational or anyway epistemically fruitful for them to use such reasons. In the following section, I will get back to the issue of whether the defender of EXP really is committed to the existence of those reasons.

3. Section 2. The many risks and failures of explosive inferences

In this section, I will first discuss what the epistemic consequences of accepting R and EXP are, with respect to what a subject with inconsistent beliefs ought to infer, and, to anticipate, I will conclude that there are none. I will then explain how this blocks one version of the argument against EXP.

Principle (R) makes use, crucially, of the notion of having a defeasible reason to believe a proposition. What is it to have a defeasible reason to believe a proposition? Without the ambition to provide a complete definition or a conceptual analysis, we might initially say the following: if you have a defeasible reason *R* to believe a proposition Q, then if you form the belief that *Q* properly basing it on *R*, in absence of defeaters, your belief that *Q* will have some positive epistemic status. Different examples of a positive epistemic status might include at least: being knowledgeable; being justified (to a degree); being rational (to a degree); and being blameless.[12] In short, a reason is supposed to put the subject in a position to acquire some sort of rational support for what it is a reason for, at least if the subject makes use of it through impeccable reasoning and the reason is not defeated. Let us also note that R involves a high degree of idealisation. We often have a reason, according to R, to believe many things that logically follow from our current beliefs, although we do not see that they in fact follow from our beliefs, and presumably it is sometimes beyond our current cognitive capabilities to see that. Still, in some idealised sense, the reasoner, or an idealised counterpart of the reasoner, is in a position to use those reasons to provide some form of support for that belief.

Now suppose a subject *S* has inconsistent beliefs. It follows from this supposition and R that *S*'s beliefs form a reason *B* such that, for any arbitrary *Q*, if *S* were to form the belief that *Q* properly basing it on *B*, in absence of defeaters, *S*'s belief that *Q* would have some positive epistemic status. I take it that this conditional is what is supposed to be really problematic for the defender of EXP who also adheres to R. However, the situation

[10]The quote from Priest et al. above referenced one such case. See also Caret (2021).

[11]A recent survey specifically about either paradox is missing, as far as I can tell. See, however, Sorensen (2002) for a brief introduction, and Christensen (2004) and Hirvela (2019) for some further references.

[12]Being blameless is perhaps not a positive epistemic status but rather the absence of a negative one. But clearly some beliefs in propositions entailed by a contradiction would have negative epistemic features (false, irrational and so on).

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described in the antecedent, I will argue, is guaranteed to never arise, when *Q* is entailed by the subject's beliefs in virtue of their inconsistency.

Let us put aside for a moment inconsistent beliefs, and ask what it takes to form a belief by properly basing it on a set of premises that logically entails it.[13] For present purposes, I will stipulate that we call this process *competent deduction*. To start with, clearly, it is not sufficient to have some beliefs that in fact entail a conclusion and to form the belief that the conclusion is true, in order to perform a competent deduction. One might form the belief in the conclusion for unrelated reasons. It is also not sufficient that the belief in the conclusion is caused by the belief in the relevant premises. If my guru occasionally wishes to provide me with consistent expansions of my belief set and therefore checks that a certain proposition follows from my beliefs before telling me it is true, I cannot be said to have performed a deduction (let alone a competent one) in accepting the guru's word as usual. The subject performing a competent deduction responds in some way to the logical form of the argument. Of course, we should be careful not to overintellectualize this requirement. People could perform syllogisms before Aristotle. They still responded to the logical form of the argument. So you don't need to name the logical form of your premises, and you don't need to explicitly think about it at all. However, if someone infers, e.g., according to disjunctive syllogism, she would not normally infer in the same way from a different logical form (she would not infer from (p or q) and q to not-p). Similarly, if someone competently infers according to Barbara, then they would not normally infer from premises of the form 'All A are B' and 'All C are B' to a conclusion of the form 'All A are C'. Moreover, if you are competent in reasoning from a certain logical form, you infer accordingly when the premises are firmly believed and relevant to a question under your attention. If I may competently deduce q from p and p q, I will also be able to deduce r from p and p r, and so on. Although, as we already noticed, we do not need to name the logical form, or even explicitly think about the logical form as such, somehow, in order to respond to it, the thinker must be aware of it. In short, to properly base a belief on a set of entailing premises, one needs to have at least implicit awareness of the logical form and to be disposed to infer accordingly. One might ask something else, of a competent deducer: one might ask that the subject satisfies what Boghossian termed the 'taking condition'; roughly, that the subject takes the premises to support the conclusion, where taking is supposed to be a state distinct from belief, and infers because of this (in fact Boghossian proposes the taking condition as necessary condition on inferring in general). This, however, is a very controversial idea, so we will leave it aside for the moment.[14]

Now, consider again the subject that has inconsistent beliefs. Is this subject, idealising away from limitations of their cognitive abilities, in a position to competently deduce any arbitrary proposition? One reason to answer negatively is that, in order to exploit the inconsistency, the subject must be in some sense aware of it, and disposed to infer in a way that depends on it (so that one could not reach the same conclusion based on any

[13]This is, arguably, a special case of what in the epistemological literature is called the basing relation. I am not going to frame the discussion in terms of the existing views for two reasons. First, as I just said, I am concerned with a special case of this relation, that of deductive entailment. Secondly, the abovementioned literature is rather intricate and the discussion would take us rather far. However, the following discussion could be framed in those terms without any significant change, as far as I can see, with considerations related to what I discuss as externalist requirements addressing theories positing an appropriate causal connection between reasons and the belief based on them, and the discussion of the taking condition addressing theories that posit a belief that (or some form of awareness of) there is a support relations. See Korcz (2021) for a useful survey.

[14]Boghossian (2014). The discussion on the taking condition is ongoing. For some developments, see, for example, McHugh and Way (2016), Kietzmann (2018), Hlobil (2019), Siegel (2019), Koziolek (2021).

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consistent subset of one's beliefs). We already conceded that one can have inconsistent beliefs without being irrational, even if one is aware of the inconsistency. In a preface-type situation, one can see the inconsistency but be unable to eliminate it without giving up some belief which is very likely to be true. So, arguably, one should not always revise, even while being aware of having inconsistent beliefs. However, being aware, in some manner, of having inconsistent beliefs, is obviously not yet to use them in reasoning. Realising that one's beliefs are inconsistent, and accepting this state of affairs, might not be irrational. But deciding to exploit the contradiction to infer an arbitrary proposition is a further step, not dictated by any minimally plausible normative connection between logic and reasoning (including R), and I will argue that it is never rational.[15]

One way to indirectly support the latter claim is through considerations related to the *safety* of the resulting belief. Inference that employs EXP is not *safe*, in the epistemological sense of 'safe' (if you like, 'explosive inferences are not safe' might make for a decent pun; importantly, it is literally true). There are different accounts and definitions of safety, but the basic idea is that a belief is safe when it is formed in a way that could not have easily produced a false belief (Sainsbury (1995)). Now, if I form a belief using premises that entail any proposition whatsoever, clearly my belief is not safe, since I could have easily deduced one of the many false propositions that follow from the contradiction. For example, if I happen to infer a true proposition, I could have easily deduced its negation through the same premises and deductive procedure. Similar considerations can show that the belief would lack other interesting epistemic properties, such as reliability or sensitivity. And clearly, the belief wouldn't be possibly credited to any sort of intellectual virtue. This is already a significant point because it rules out certain forms of positive epistemic status for the belief hypothetically formed through such an inference. Even if R and EXP were true, and if one could have undefeated inconsistent beliefs, one could not derive knowledge from them essentially exploiting the inconsistency, stumbling on a true belief. Moreover, on externalist views of justification, one could not derive justified belief either through such reasoning. Of course, it could be replied that this is not relevant if we focus on internalist notions of justification or reasons. The fact that the inference is unsafe or unreliable, in general, does not entail that I must realise it is, or that it is in all ways irrational. However, in this particular case, it seems that the sort of minimal awareness of the logical form of my inference, which is required in order to properly base a conclusion on a set of premises, would normally be sufficient to realise that the proposition inferred might well be false. If one had a disposition to use inconsistent premises as a basis for inference, in a way that essentially depends on exploiting the inconsistency through EXP, one would be in a position to realise that one could infer anything whatsoever. Remember also that, at least according to Harman's version of conservatism, a belief loses any initial presumption in its favour if the subject is aware that it is formed in an arbitrary way.

There are indeed possible cases in which a subject is in fact exploiting the inconsistency but is not aware of doing it. Perhaps the reasoning involved is very complex, and although the conclusion reached is in fact entailed by the subject's beliefs only in virtue of the inconsistency, the subject is not aware of this (the subject might be

[15]There is a further difficulty, already mentioned in fn. 9. Some theorists who believe we can knowingly and rationally have an inconsistent set of beliefs, would still balk at the idea that we can rationally believe the *conjunction* of those beliefs (see e.g. Foley (1992) or Christensen (2004)). However, the use of a set or premises in an inference is arguably not very far from a conjunction. One has to accept all the (non-redundant) premises at the same time for the conclusion to go through (see Zardini (forthcoming) for discussion of this point). This might be particularly problematic, for the reason just explained, in the case of inconsistent premises. Here I put the worry aside for the sake of the argument.

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aware of the inconsistency or not; this does not seem relevant in this case). The case could be developed in such a way that the subject is not in an ordinary sense irrational or careless. When this is the case, a theorist who is interested in purely internalist epistemic notions is not in a position to say that it is absurd that the subject has a reason to believe the conclusion. The opposite seems true; from the subject's perspective, the conclusion was reached through deductive reasoning from justified premises. Here the externalist will disagree, for the reasons explained above. But from neither perspective, the combination of R and EXP predicts an absurd judgement. So we can put this sort of case aside.

If we adopt an internalist perspective, moreover, the taking condition, which we had left aside above, becomes relevant.[16] There has to be some form of awareness in the subject, not only of the logical form but also of the relationship between the premises and the conclusion of the inference. This awareness, again, will then make the inference irrational, if not even impossible. Boghossian (2014) argues that the taking condition has explanatory value in several respects, one of which is that some transitions, where the connection between premises and conclusion is not accessible to the subject, just do not count as inferences. More generally, the taking condition is presented by Boghossian as a way to develop a thought directly inspired by Frege, i.e. the following: 'S's inferring from p to q is for S to judge q *because* S *takes* the (presumed) truth of p to provide support for q' (Boghossian (2014) p. 4, original italics). In the case of an inference from inconsistent premises, there would be no presumed truth of the premises: the only reason the premises would entail the conclusion is their logically necessary falsity, which is irrelevant to the truth of the conclusion. Summing up what we found in this section so far, it seems clear that, for anyone who has the competence to infer according to EXP, anytime they exploit EXP in reasoning to a conclusion *p*, there will be a defeater for that conclusion, in that the process requires the subject to be aware of its own irrelevance to the truth of *p*.

I think one might be tempted to object here as follows: it is indeed irrational, perhaps even impossible, to infer from a contradiction, as such, to an arbitrary proposition. But is this not the case precisely because EXP is an implausible logical principle? It must be remembered though that here we are assuming that EXP is valid in the attempt to reach something like a *reductio*; and we are concerned only with inference as a way of adding beliefs to one's view, not with reasoning in a broader sense. The subject's beliefs, not other mental states or attitudes, are supposed to provide the subject with an excess of reasons. In suppositional contexts, if there is an inconsistency in our supposition, the logician who adheres to EXP will not object to using it as a guide in reasoning to the consequences of our supposition. So the conditional that has a contradiction as an antecedent and an arbitrary proposition as a consequent, for example, will come out true (on some understandings on conditionals at least). This might be objected to in itself, but that is a different kind of argument. The defender of EXP, absent that argument, can point to a role of EXP in reasoning (besides its falling out, so to speak, of other central theoretical commitments, including some that concern reasoning). As for inference in the sense of reaching new beliefs, I provided explanations of why it would be absurd for a subject to use EXP in inference which is compatible with the truth of EXP.

We can now go back to directly addressing the argument against EXP based on the normative role of logic. The foregoing provides a response to at least one version of the

[16]I do not mean to suggest that any internalist view about the epistemology of reasoning will adhere to the taking condition as stated by Boghossian. I am assuming, however, that there will be a requirement that the inference is rational from the point of view of the subject. Then analogous considerations will show that this will never happen for inferences essentially involving EXP.

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argument. We considered two versions of this sort of argument, one employing R and NR, the other one only employing R. The latter employs as data the fact that 'Scientists draw inferences discriminately when they use such [inconsistent] theories' (Caret (2021) p. 291) and concludes that EXP is false since its falsity is the best explanation of these data. Similarly, we saw Priest et al. note that 'not everything concerning the behaviour of electrons was inferred from [Bohr's inconsistent theory], nor should it have been'. Leaving aside the 'should' claim, they clearly seem to say that the fact itself that not everything *is* in fact inferred is highly problematic for the defender of EXP, and the best explanation of this fact requires us to jettison EXP (the abductive nature of the argument is explicit in Caret). But this version of the argument can be easily dismissed at this point. There are independent reasons, even assuming EXP, why we should not expect scientists, or anyone else, to make inferences based on inconsistent premises. Doing so would result in wildly unreliable and irrational beliefs; but people tend to meet at least some very minimal requirement of rationality, and they tend to employ belief-forming methods that are at least very moderately reliable, or at least may rationally be considered moderately reliable from their point of view, unlike the sort of inference we are considering.

A reviewer for this journal pointed out that a proponent of the abductive argument could accept that I provided an alternative explanation of the data, but still insist that the best explanation is, overall, the invalidity of EXP. This much is certainly correct. However, leaving aside the issue of burden of proof (it seems to me that it falls on the proponents of an inference to the best explanation to argue that their explanation is the best), I believe the comparison clearly favours the explanation I am proposing. I have relied only on epistemic principles that are neutral with respect to the issue of Explosion, and as uncontroversial as anything can be in philosophy. The argument I am responding to, however, is supposed to have some persuasive force even for someone who is inclined to accept EXP, or at least is open-minded about it. But in both cases, denying EXP is an unnecessary additional commitment to the proposed explanation of the fact that scientists and ordinary reasoners alike are not inclined to make use of EXP in forming new beliefs. The alternative explanation is, therefore, simpler and more conservative, unless one is convinced already that EXP is not a valid inference principle.

In connection with this, furthermore, it should be noted that the rejection of EXP, by itself, might not provide an explanation of the facts. In most paraconsistent logics, there is the possibility of a 'classical recapture'.[17] There are contexts in which the proponents of paraconsistent logics admit that classical validity is the appropriate standard for reasoning, which we may call 'consistent' contexts. This basic idea can be implemented in different ways in different paraconsistent frameworks. The notions of consistency and inconsistency may be expressed in the object language, and the principles of classical logic will then apply only if all propositions involved are consistent (for an extended introduction to this kind of paraconsistent logic see Carnielli et al. (2007)). Priest considers instead adding to the language an absurdity constant @ such that by stipulation all conditionals having @ as an antecedent are logically true. The assumption that a proposition p is consistent can then be expressed by the conditional $p \wedge \sim p \rightarrow @$ (see Priest (2002) p. 348), which might be true and rationally believed by a subject in some cases even by Priest's lights. Therefore, rejecting EXP, by itself, does not guarantee that we do not end up in a situation in which everything is entailed by a subject's beliefs. If the subject reaches inconsistent beliefs in a consistent context, due to limited

[17]Priest (2002) puts the point as follows: 'Most paraconsistent logicians have supposed that reasoning in accordance with classical logic is sometimes legitimate. Most, for example, have taken it that classical logic is perfectly acceptable in consistent situations'. (p. 347).

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reasoning capacities, or in a preface-like situation, in that context everything will be entailed by their beliefs. Of course, this could be taken to simply be an argument for a kind of radical paraconsistent logic that does not allow for any sort of classical recapture. There are however reasons why paraconsistent logicians find it useful to have this possibility. But I am not going to argue here for the need for classical recapture. I am merely noting that, even by most paraconsistent logicians' standards, the explanation offered by Caret requires some extremely strong commitments, which are unnecessary given the availability of my explanation.

4. Section 3 Inert reasons and the deductive argument against explosion

Let us go back to the deductive version of the argument against EXP. To remind the reader, that version, in addition to R, employs a second premise NR which is the following claim:

> (NR): Even if *S's* set of beliefs is inconsistent and any proposition Q whatsoever is entailed by it (courtesy of EXP), there are *Q*s such that *S* has *no reason* to believe *Q*.

Now, NR does not say anything about what new beliefs the subject is going to form based on their present inconsistent set of beliefs, or what the epistemic status of those new beliefs would be. It merely says that, for some proposition, the subject has no reason to believe that proposition. If so, a possible objection would go, it is irrelevant that if the belief were to be formed it would be unsafe, irrational, or anything else.[18] Therefore, the objector would continue, the whole discussion in the previous section is irrelevant (this cannot be said, though, of the section before that, insofar as it succeeded in establishing that R is much more controversial than previously assumed). Now, while it is true that there is no direct argument against NR to be derived from the fact that, even assuming R and EXP, there is no epistemic usefulness, so to speak, in having reasons in virtue of an inconsistency in our beliefs, this version of the argument can also be resisted, and the discussion in the previous section is not entirely irrelevant.

At this point, we need to consider the peculiar nature of the reasons that, assuming R and EXP, are possessed by the subject with inconsistent beliefs. Those reasons, it has been shown, are not merely defeasible. As we established in the previous section, they are such that any attempt to use them would necessarily be epistemically defective. They are epistemically inert reasons.[19] They might also be called elusive reasons since they disappear the moment one tries to use them. This is not, mainly, because the attempt to

[18]The point could be made in terms of the distinction between propositional and doxastic justification. This version of the argument starts with the assumption that R, assuming EXP; grants the subject with inconsistent beliefs some degree of propositional justification for an arbitrary proposition. NR denies the existence of such a justification. If I have only shown that there is no way that the subject can turn her propositional justification into doxastic justification, this does not eliminate the contradiction. The reply would be parallel to the one I am developing for reasons. The notion of a propositional justification that does not have the potential, even abstracting from the subject's cognitive limitations, to be turned into doxastic justification is of very dubious coherence. So we should probably deny, even if one is inclined to conservatism, that one automatically has propositional justification for any logical consequence of one's beliefs. If however we want to maintain this claim, we can admit without harm that someone who has inconsistent beliefs has this sort of 'inert' propositional justification for any arbitrary proposition.

[19]I have considered calling those reasons 'self-defeating', but this would create some confusion with respect to the use of this notion in Pollock (1995), which is somewhat related but not identical (or not clearly so). It is also possible to see inert reasons as a peculiar sort of *pro tanto* reasons, that are defeated, and thus cease to exist, as soon as one tries to put them to work.

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use them will require the subject to be aware of the contradiction in her beliefs, but because any attempt to use them will require the subject to be aware of the irrelevance of the entailment to the truth of the conclusion.

Given this, the defender of EXP who wishes to stick to R can refuse to accept NR in its full generality, saying that NR would be true if it was limited to reasons that are not inert. Pinder provides some interesting considerations that could be used against this option, although he does not use the label 'inert reasons' (Pinder (2017) pp. 68–9).[20] He considers the situation of someone who has inconsistent beliefs, so that, assuming EXP, the subject's beliefs entail both *P* and not-*P*, for any proposition P, and therefore, assuming R, the subject has reason to believe both a proposition and its negation. At that point Pinder is neutral between a) saying that the two reasons 'cancel each other out' and b) saying that there is no reason to believe either. The context here is the discussion of NR. So Pinder argues for option b), which preserves the truth of NR, making R and EXP incompatible. He gives three considerations against option a): 1) positing conflicting reasons that cancel each other out is 'superfluous' 2) it is 'potentially problematic' to posit reasons that do not influence how we ought to think or act 3) positing such reasons goes against what the subject perceives as their own reasons (Pinder (2017) p. 69). I agree on all three points. However, these points do not establish the incoherence of the notion (nor does Pinder claim that they do). And if one accepts R, I am going to show that these considerations against inert reasons cannot be given much weight. Consider that R entails that, if there are propositions too complex for a human mind to entertain (as it is plausible), we have reason to believe them, provided they follow from our beliefs. All three points made by Pinder above apply here, arguably. Possessing these reasons does not make an explanatory difference and, assuming some form of 'ought implies can', it does not affect what we ought to believe. Nor can we see that we have these reasons, except in a general way. In other words, R by itself forces us to posit something similar to inert reasons; they would not be inert reasons as I defined the notion, but they would have similar problems. But then, if one accepts R, one cannot give much weight to Pinder's considerations against option a) above. Conversely, if one does think that those considerations are very strong, one has good reasons to deny R. Moreover, the point about classical recapture noted at the end of previous section is relevant here again. Accepting R, with the additional assumption that we have sometimes inconsistent beliefs in consistent contexts, requires us to deny NR in its full generality, not only if one accepts EXP, but on most paraconsistent logical systems. So, unless one rules out the possibility of classical recapture, or one denies we ever have inconsistent beliefs, R forces us to accept inert reasons. For anyone accepting R, accepting inert reasons and denying NR is not a high additional cost.

As noted above, NR can be modified to say that for subjects with inconsistent beliefs, even if EXP holds, there are propositions that they have no non-inert reasons to believe. Call this principle NR*.

[20]Pinder says that, assuming R and EXP, the subject with inconsistent beliefs will have reasons for any proposition, but also for its negation, so the two reasons will 'cancel each other out', and there will be 'no *resultant* reason' (Pinder (2017) p. 68, original italics). He then argues against this option, as I discuss below in the main text. He does not elaborate on what it takes for a reason to be 'resultant', or fail to be resultant, in general, but his argument suggests that a resultant reason is one that we are in position to use. This would not be exactly the same as a reason that is not inert in my sense. A reason could be not inert while we are not in a position to use it for other reasons, as in the example discussed below of reasons for propositions that are too complex to be entertained.

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(NR*): Even if S's set of beliefs is inconsistent and any proposition Q whatsoever is entailed by it (courtesy of EXP), there are *Q*s such that *S* has no non-inert reason to believe *Q*.

The considerations that make inert reasons somewhat superfluous also make them innocuous, so to speak. As was shown in the previous section, there are no epistemic obligations that derive from reasons of this sort. If one accepts R, again, there is no high cost to pay here.

Of course, the defender of EXP also has the option of rejecting the notion of inert reason, accepting NR and rejecting R. This choice would be supported by considerations of section 1; R is more dubious than Pinder realises, both because Conservatism is a controversial view, and because R is a stronger claim than Conservatism. Moreover, R forces us to accept the dubious notion of inert reasons, if we accept EXP even restrictedly, and forces us to accept something similar to inert reasons in any case. My own view is that the rejection of R is, in the end, the most plausible way out of Pinder's argument. As noted, one could take this stance and still retain the thesis I have called Core Conservatism, which does not entail R. Moreover, there would be a principle even closer to R, but suitably limited, that the defender of EXP who wishes to adhere to CC and a fairly strong form of closure could accept, saying that for any consistent subset of a subject's beliefs, the subject has defeasible reason to believe the logical consequences of that subset.[21] Call such a principle R*.

(R*) Agents have defeasible reason to believe any of the logical consequences of any consistent subset of their beliefs.

For a subject that has consistent beliefs, of course, R* would be equivalent to R.

The reply here provided to Pinder's argument may be summed up in 3 points, reversing the order in which they have been discussed: 1) For both R and NR there are plausible ways of denying them while maintaining their intuitive motivation and EXP. R can be abandoned while retaining Core Conservatism and R*, NR can be denied in an unrestricted form while accepting NR* 2) There is a tension between the two premises employed in the argument: if one accepts R unrestrictedly, there are no good motivations to refuse to count inert reasons as genuine reasons, but then there are no good motivations for NR; if instead NR is accepted unrestrictedly, conversely, we have additional reasons against R. 3) R is less plausible anyway than it was previously supposed, and it just has not been defended by anyone in the literature. The upshot of 1–3 is that the defender of the deductive argument would need a lot more work to show that the combination of R and NR has some motivation beyond the purpose of arguing against EXP.

5. Conclusion

I considered in this paper a recent version of an argument against *ex contradictione quodlibet*, or Explosion (EXP), based on the normative role of logic. According to this sort of argument, assuming EXP, we get the absurd conclusion that a subject with inconsistent beliefs has reasons to believe any proposition whatsoever. The version of this argument that still has defenders relies on the initial plausibility of the principle that we have some reason to believe everything that follows from our beliefs, which turned out to be the conjunction of epistemic conservatism and a closure principle for having

[21]This might have several motivations beyond the desire to reconcile conservatism and *ex contradictione quodlibet*; for example, it is impossible to apply standard Bayesian methods to beliefs or credences involving an inconsistent set of propositions.

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reasons to believe, a view far more controversial than defenders of the argument seem to realise. However, I have argued that, even assuming that view, and assuming that contradictions entail any proposition, there are very good independent reasons why subjects with inconsistent beliefs are not going to, and should not, infer arbitrary propositions exploiting the inconsistency in their beliefs. The resulting beliefs would be radically unsafe and irrational.

The dialectical situation with respect to the deductive version of the argument is more complex. If we accept R, the principle that we have by default some reason to believe the logical consequences of our beliefs, then, assuming EXP, inconsistent beliefs will give us some reason to believe any proposition. NR is just the denial of this consequence, so if we accept NR we must choose between rejecting R and rejecting EXP. While, as I argued previously, R is dubious in itself, I have also shown that R and NR are an unstable combination. The reasons that arise from inconsistent beliefs, if R and EXP hold, are what I call inert reasons; we are not in a position to use them, since any attempt to do so would be epistemically defective. If this notion is acceptable, NR can be denied while adhering to a similar principle that only holds for reasons that are not inert. Pinder gives some considerations against positing reasons that we are not in position to use. However, if R is true, we often have reasons to believe propositions that we are not currently, or even constitutively, capable of entertaining. So any defender of R needs to posit reasons that we are in a position to use. The same considerations that Pinder gives in defense of NR therefore count against R.

I conclude that there is still no plausible argument against *ex contradictione quodlibet* from the normative role of logic for reasoning.[22]

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