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## The Epistemology of Risk<sup>a</sup>

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The primary purpose of analytical enquiries is knowledge production. So too, in the risk field. When analysing risks, the overriding aim is to make us more knowledgeable about risks. Epistemologists standardly conceive analytical knowledge as propositional. The purpose is to generate knowing-that knowledge, hence knowledge stating that something is the case. Until the landmark article of Edmund L. Gettier in 1963, propositional knowledge was widely assumed to consist of three elements: justification, truth and belief. After Gettier through a couple of examples demonstrated how beliefs can be justified as well as true without signifying knowledge, the tripartite account of knowledge is widely considered to be inadequate. A widespread approach for countering the critic has been to add a fourth knowledge criterion to prohibit wayward lines of justification. In the risk field, however, leading scholars have made a case for subtraction rather than amendment. Instead of adding a fourth criterion, the claim is that in the risk domain there is nothing more to knowledge than justified beliefs. The purpose of this paper is to assess the cogency of this proposal. Noticing the truth-forbidding features of the risk, disconnecting knowledge from truth in the risk domain, is clearly an inviting move. All the same, it is also a highly challenging move in which the single most important objection is that it gives rise to a threatening circularity. When arguing why the best justified belief is to prefer, the only option available seems to emphasize its justifying merits, thus, to assume what the argument is intended to prove. Resultingly, the viability of a two-partite justified belief concept of knowledge crucially depends on the prospects of successfully overcoming the problem of circularity. In this analysis, three different strategies for overcoming this problem will be examined. The first strategy will be to deny the claim of circularity, the second strategy will be to deny the viciousness of the circularity whereas the third strategy will be to deny the claim of the circularity to be non-transcendent. As will be shown, the third strategy offers the most promising response. But it is also a response that comes with the caveat of undermining the distinctiveness of the two-partite concept. According to this response, the justified belief perspective is only truth negating without disconnecting knowledge about risk from the realization of some other epistemic good.

*Keywords:* Knowledge, justification, truth, circularity, reliabilism

### 1. Introduction

The primary aim of any analytical enquiry is knowledge production. The purpose is to make us more knowledgeable about things that prior to the analyses were unbeknownst to us.

Analytical knowledge is propositional. Knowledge production takes the form of generating propositions in terms of knowing that-statements, hence statements expressing that something is the case. Propositional knowledge can be contrasted to immediate and procedural knowledge, that is knowledge deriving from our direct and unmediated awareness of something, and

knowledge deriving from our ability of how to do something (Scheffler 1965, Lehrer 2000).

Until the landmark article of Edmund L. Gettier in 1963, propositional knowledge was widely assumed to consist of three elements: justification, truth and belief. After Gettier through a couple of examples demonstrated how beliefs can be justified as well as true without signifying knowledge, the tripartite account is nowadays, with some noticeable exceptions (BonJour 2010, de Grefte 2023), widely considered to be defective. Since the Gettier examples showed how it is possible to become accidentally true

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even if being justified, a common response to the critic has been to add a fourth knowledge criterion that specifies the requirement for being properly epistemic justified (Lehrer 2000, Ichikawa & Steup 2024).

In the risk field, however, leading scholars have made a case for subtraction rather than amendment. Instead of adding a fourth criterion, the claim of them is that in the risk domain there is nothing more to knowledge than justified beliefs.

Arguably, searching for truth about risks is undeniably challenging. All the same, disconnecting knowledge from truth, is also beset with difficulties in which the single most important difficulty is that it gives rise to a threatening circularity. When eliminating truth, how then to explain why the best justified belief is to prefer without appealing to the merits of justification, thus assuming what's to be explained?

The aim of this paper is twofold. First, to outline why a rejection of the truth requirement gives rise to a tautology that challenges the cogency of a two-partite justified belief view on knowledge. Second, to examine different strategies for countering the threat of circularity to preserve the cogency of the claim that there is nothing more to knowledge than justified beliefs.

The article is organized as follows. Section 2 provides a brief review of the basic structure of propositional knowledge. Following these introductory remarks, section 3 describes the motives for a shift from a three-partite towards a two-partite concept of knowledge in the risk domain. Thereafter, in section 4, the problem of circularity following such a change, is more fully outlined. Since the cogency of a justified belief view on knowledge crucially depends on the threat of circularity being effectively countered, sections 5 to 7 discuss three possible strategies for how to do so. The strategies range from denying the claim of circularity; to deny it's viciousness to deny it's non-transcendent character. Although circularity poses the greatest threat to a two-partite risk epistemology, two other problems also needs to be addressed. They are briefly introduced in section 8. Finally, section 9 summarizes the

result of the analysis, moreover, make some brief suggestion for further enquiries.

## **2. Propositional Knowledge**

Propositional knowledge is factual by nature. It is knowledge we are acquiring when learning that something is the case. Obviously, we do not accept any statement as knowledge. Epistemic acceptance depends on their factual correctness.

A most natural interpretation of factual correctness is truth, something which is embodied by the sheer labelling of knowing-that knowledge as propositional. Propositions are generally characterized as statements that can be assigned a truth-value (Grayling 1997).

For propositions to become knowledge, truth is not enough. The propositions must also be believed to be true. Moreover, their truthfulness must be reasonable believable. Beliefs cannot be accidentally true. In brief, propositional knowledge consists of a truth part, a belief part and a justification part (Dancy 1985).

As the Gettier example illustrated, however, people can become waywardly true even if being justified. The traditional true justified-belief account of knowledge has therefore lost much of its attraction. Nevertheless, the great majority of epistemologists still consider knowledge to be closely related to justification, belief and truth (BonJour 1985, Lehrer 2000, Pritchard 2014, Ichikawa & Steup 2024). Hence, a standard reply to the Gettier problems has been to add an anti-gettierian clause so that a person S knows proposition P if, and only if,

1. S believes P
2. P is true
3. P justifiably S to be true
4. P justifiably S to be true non-gettierian

Insofar as epistemologists have considered some of the above listed knowledge conditions as superfluous, they have primarily been targeting the third and the fourth condition. Following causal and reliable theories of knowledge, there is nothing more to knowledge than true belief. A person knows a proposition if it is appropriately causally produced or if it is appropriately reliably produced

without any further requirement of it also being justified (Ichikawa & Steup 2024).

## 2. Risk knowledge as justified beliefs

Like other field of research, analyses of risks are guided by a search for knowledge. Ever since the pioneering works of Charles Perrow (1984), Kristin-Schrader Frechette (1991) and Ulrich Beck (1992), a recurrent theme in the risk scholarly debate is that there is a fundamental mismatch between what we know about risks and how we are affected by risks.

Although risk scholars strongly emphasize the need for risk knowledge, they significantly differ in their definition of knowledge (Aven & Ylönén 2018). More important for our purposes, few attempts have been made to provide a propositional-epistemic interpretation of risk knowledge. A noticeable exception is Terje Aven. In different writings, he has explicitly introduced a knowledge perspective dressed up in a propositional wearing (Aven 2014, 2018a; Aven & Ylönén 2018). Compared to mainstream epistemologists, however, the view of him is that risk knowledge is merely two-partite. Furthermore, as opposed to the minority of epistemologists favouring a two-partite approach, the claim of him is that we can do without truth rather than justification. This conception of knowledge has also been adopted by the Society of Risk Analysis (SRA) which distinguishes between two kinds of knowledge: “Know-how (skill) and know-that of propositional knowledge (justified beliefs)” (SRA-Glossary-Final 2018).

Schematically, a justified belief view on knowledge amounts to a claim that a person S knows a risk proposition P if, and only if,

1. S believes P
2. P is justified in believing P

In his writings, Aven repeatedly stresses the futility of searching for truth in the risk field. In his book *Risk, Surprises and Black Swans*, he provides the most detailed account for the need of a truth-free risk epistemology. To quote him:

A risk analysis group may have strong knowledge about how a system works and may be able to provide strong arguments in

favour of why it will not fail over the next year, but the group cannot know for sure whether or not it will in fact fail. Nobody can. However, the group’s beliefs can be expressed through a probability....

Following this line of thinking, clearly knowledge cannot be objective, since a belief is expressed by a person. In general, therefore, knowledge needs to be considered as subjective or at best inter-subjective among people, for example experts.

From such a perspective the term ‘justified’ becomes critical. Philosophers and others have discussed this issue since ancient times. In this book, justifiability is linked to being a result of a reliable process, a process that generally produces true beliefs. (Aven 2014, pp. 64-65)

It is easy to sympathize with this view of Aven. For one thing, risks relate to the future. They are non-realized possibilities, belonging to the sphere of potentialities (Solberg & Njå 2012). Insofar as truth-claims are associated with documenting a belief-to-fact match, demonstrating such a match is conceptually forbidding in the risk domain since risks are by nature non-factual (Rigakos & Law 2009). Moreover, as he rightfully stresses, risks are always someone’s risk. Facts in the risk domain is a rather fluent and perspective-ridden term. In effect, this also makes risk perspectival. As Nicholas Nasim Taleb brings home the point, whereas the plan of a terrorist attack poses a risk for the possible victims of an attack, it does not do so for the planners and the executors (Taleb 2010). To summarize, risks are complex, uncertain as well as ambiguous (Renn 2003). Jointly, these factors undermine the sensibility of opting for truth in the risk field.

## 4. The problem of circularity

Although the distinguishing features of risks may favour a separation of knowledge from truth, from a propositionally knowledge perspective it is a challenging move. Jonathan Kvanvig offers a prewarning of the problem in his exclamation that, the proposition of justification without truth “...ought to strike us as an utterly mysterious one” (Kvanvig, 2008(1998), p. 496). Disconnecting

justification from truth is bound to make justification senseless.

In the following passage, Laurence Bonjour explains more fully why justification cannot be separated from truth. As he emphasizes:

It is only if we have some reason for thinking that epistemic justification constitutes a path to truth that we as cognitive beings have any motive for preferring epistemically justified beliefs to epistemically unjustified ones. Epistemic justification is therefore in the final analysis only an instrumental value, not an intrinsic one. (Bonjour 1985, 8)

The source of the problem of disconnecting justification from truth is that justification is instrumentally rather than intrinsically valuable. We do not value justification for its own sake. Rather, we value justification as a mean to an end. Hence, what rationalize our preference for the best justified belief, is that it helps bringing us on the right track in our search for what we are searching for. What we are searching for in our quest for knowledge, is truth. The epistemic value of justification derives from it to be truth-tracking.

Resultingly, the chief difficulty of dismissing truth is that justification becomes epistemic vacuous. If there is no end to which justification is a mean, we are now longer positioned to rationalize the value of justification? The effect of dismissing truth is that it also nullifies the value of justification so that there is nothing more to knowledge than mere belief. We are here hinting at a problem which affects generation of knowledge in general. If you are presupposing what you claim to know, you have only been moving in a circle without successfully validated your claim (Nagel 1987)? Arguably, this kind of circle-reasoning is precisely what is triggered when trying to rationalize the value of justification when there is nothing more to knowledge than justified beliefs.

Proponents of a justified belief perspective will presumably disagree. The ambition of them is not to debunk the value of justification but to promote

its truth-independency. The guiding thesis of them will be that a justified belief view on knowledge is self-sustaining. It is possible to eliminate truth without putting justification at risk. Here, however, a looming threat of circularity is emerging. How to legitimate preferences for the best justified belief if there is nothing more to knowledge than justified belief so that the only option available is to emphasize the cogency of preferring the best justified beliefs? When adopting a two-partite justified belief conception of knowledge then, we seem to be caught in a circle. The only possible route of legitimizing the value of justification is to restate its value. The viability of a justified belief view on knowledge in the risk domain then, therefore, crucially depends on the prospect of effectively countering the justifying threat of circularity. Somehow, it must be possible to demonstrate the epistemic value of justification without assuming its value a priori. In what follows, three possible strategies for countering the threat of circularity will briefly be reviewed.

## **5. Denial of circularity**

The first strategy will be to deny the existence of circularity. Arguing that the best justified belief is epistemic preferable because of its justifying merits, does not slip into question-begging. The argument does not presuppose what it intends to prove.

The crux of the matter is that Aven's conceptualization of knowledge as justified beliefs, involves a specification of what it means to be epistemic justified. In his various expositions of the issue, he adopts the view of Sven O. Hansson of justification to amount to the best reliable produced beliefs (Hansson 2013; Hansson & Aven 2014). When stating that knowledge is justified belief, the essence of the statement is that knowledge equals the best justified beliefs in terms of being most reliably produced. Resultingly, when legitimating the epistemic value of the best justified belief, the legitimation involves something more than just restating the value of being best justified. The beliefs are best justified because of being most reliably produced.

The key question here is whether this response to the problem of circularity suffices to bring the

problem of circularity to an end? Arguably, it fails to do so. The reason for that being so is that reliability, as already indicated, is not substantially different from justification. If there is a difference at all, it is rather a type-to-token difference. Reliability is just an individual instance (token) of the class-type of being justified.

Epistemologists have for a long time been discussing what it means to be epistemic justified, ranging from foundationalism (Chisholm 1982), coherentism (Lehrer 2000), infinitism (Klein 1999), fallibilism (Popper 1980) or verificationism (Carnap 1934/1995) for just to mention a few prominent positions. Reliabilism is just another member in the class. When appealing to the reliability of a belief, we are not introducing something new that license any claim of circularity to be non-existent. We are still trapped by the fact that we are only repeating what we already have accepted when arguing that empirically justified beliefs are epistemically preferable since they have been reliably produced.

## 6. Denial of the viciousness of circularity

The second strategy will be to deny the viciousness of circularity. As opposed to the first strategy, justifying epistemic preferences in terms of justifying merits, is accepted to be a kind of reasoning that is unmistakably circular. Circularity, however, is not always a vice.

The essence of the argument here, is that we need to differentiate between two kinds of circularity; premise based and rule-based circularity.

Premise based circularity, in which the conclusion restates what is already stated in the premises, is clearly epistemically illegitimate. Rule circularity, in contrast, may not be so. The distinguishing feature of rule circularity is that the conclusion restates the inferences that are utilized in the argument rather than its premises. The trick is that if the validity of the inferences is not taken for granted, there is nothing in the argument assuming what it intends to prove. What materializes is an argument that are both circular and sound (van Cleve 1984; Papineau 1993).

The supposed virtuousness of rule circularity has primarily been advanced for legitimizing practices of induction. This line of reasoning, however, is clearly transferable to our theme of discussion. If it is possible to show that the

circularity for justifying preferences for the best justified beliefs is only benignly rule circular, circularity stops being a problem.

Precisely here, however, lies the problem. It is extremely hard to see how it is possible to substantiate a two-partite justified belief account of knowledge in terms of an inferential rule of selecting the best-justified without the rule being anticipatory. The very characteristic of the rule suggests otherwise. Preferring the best justified beliefs is a rule characteristic reflecting a prior acceptance of the rule. To bring home the point, it might be enlightening to ask contrariwise. How to make sense of a claim of knowledge to amount to justified beliefs if not being supported by an inferential rule precisely prescribing selection of the best-justified beliefs? Consequently, even if we concur with those claiming circularity not to be premise-based, it is still vicious. When utilizing an inferential rule of selecting the best justified beliefs, we do so because we a priori consider it to be the only sensible rule for becoming knowledgeable.

## 7. Transcending the circularity

The third strategy will be to transcend the problems of circularity. Arguments in favor of the best justified beliefs are supposed to be viciously circular irrespective of whether the circularity is supposed to be premise-based or rule based.

The main point here is that a truth-free risk epistemology can be interpreted differently. It may implicate that there is nothing more to knowledge than justified beliefs. Or, alternatively, it may simply implicate that knowledge involves no commitment to truth.

So far, the problem of circularity has been addressed according to the first interpretation. The justified-belief formula has been assumed to be exhaustive. However, that may not be the case. If asserting knowledge to be disconnected from truth, the assertion could implicate a sweeping claim that there is nothing more to knowledge than justified belief as well as a more modest claim that knowledge is simply de-linked from truth.

According to the latter, more modest interpretation, the situation significantly changes. The two-partite account of knowledge is no longer supposed to be exhaustive. We may introduce alternative goals to truth if alternatives



are to find. Two alternative candidates introduced are empirical adequacy (Laudan 1977) and problem-solving capacity (van Fraassen 1980). Justification amounts to documenting the problem-solving capacity of the beliefs or to document their empirical adequacy.

We may wonder whether these alternative goals are applicable and appropriate. Arguably, a difficulty of focusing on problem-solving capacity is that it signals a shift from knowing-that to knowing how-knowledge. Beliefs are accepted according to their pragmatical value in how to solve different problems rather than their capacity to describe what is the case. As opposed to this, a redefinition from a truth based towards an empirical adequacy-based risk epistemology, does not challenge the underlying propositional structure. The problem here is the devaluation of what it means to become knowledgeable. Knowledge is no longer linked to the ultimate epistemic prize of truth. It is linked to the possible realization of some lesser epistemic good, in which the epistemic adequacy of a belief does not justify a corresponding presumption of the belief also to be true.

These differences notwithstanding, adopting a restricted truth-negating perspective has its merits. According to such an interpretation, adopting a justified- belief concept allows for a two-partite as well as a wider three- or four-partite view on knowledge. Moreover, if adopting the latter perspective, the problem of circularity disappears. We no longer have to struggle with how to make the instrumental value of justification intrinsically valuable.

Admittedly, interpreting a justified belief account only to be truth-negating, comes with the cost of depreciating the distinctiveness of the claim of risk knowledge to be two-partite. All the same, it is a perspective having the merits of allowing for a scalable perspective of what knowledge could possibly mean in a risk context.

## **8. Two other problems**

Before wrapping up the discussion, two further problems of adopting a justified belief view on knowledge, need to be addressed.

The first problem relates to the very labelling "propositional". A proposition is generally considered to be a statement to which it is possible to assign a truth-value (Grayling 1997). When

disconnecting truth from knowledge within a frame of appraisal generally assumed to be truth-related, the conceptual premise for the use of the term is transcended. Knowledge is defined differently from what the label "propositional" indicates.

Admittedly, this line of criticism should be formulated with care. For one thing, Aven in his exposition does not explicitly define his proposal as propositional. Moreover, as noted in the preceding section, there exists rivaling views on knowledge that can be properly labelled propositional nevertheless being truth-denying. Noticing this, a second and more serious problem is how justification in the proposal of Aven is defined in terms of reliability. The point of reference for his definition is the formulation of Sven O. Hansson according to which

Science (in the broad sense) is the practice that provides us with the most reliable (i.e., epistemically most warranted) statements that can be made, at the time being, on subject matter covered by the community of knowledge disciplines (i.e., on nature, ourselves as human beings, our societies, our physical constructions, and our thought constructions).  
Hansson, 2013 p. 70.

The difficulty of advancing a reliable construal of justification within a knowledge-concept adamantly claimed to be truth-dismissive, is that it runs counter to the philosophical underpinnings of reliabilism.

What distinguishes reliabilism is the thesis of epistemic justification to be extrinsic and impersonal rather than intrinsic and personal. Since the working of our minds can lead us astray, our cognitive apparatus is badly suited to ensure a proper belief-to-world connection. Instead of being guided by inner-mental mechanisms, a far better approach will therefore be to take an outward-looking stance on the issue, thus being guided by processes directly attuned to the world. A most obvious candidate for doing so is to align our beliefs to what has proved itself to be the most reliable thing to believe. By doing so, the reality of the world will speak for itself, without distorting views and frames that would otherwise

have led us to believe falsely. In brief, the tenet of reliabilism is that it provides a recipe for being better positioned to believe truly about things and topics in the world (Goldman 1999, 2009).

Hence, a primary motivation for reliabilism is to strengthen rather than to eliminate the tie between knowledge and truth (Becker, 2025). The purpose is to shore up the foundation for making truth-claims, not to negate the relevance of truth. Accordingly, a difficulty of relating reliability to a truth-negating risk epistemology, is that it conflicts with the basic tenet of reliabilism. Reliability is assigned a role contrary to the role it was designed to serve.

Clearly, the fact that reliability is generally described to be extrinsic and truth fixated, does not automatically illegitimize alternative interpretation of reliabilism. Quite the opposite, syncretisation of conflicting views and perspectives can sometimes be highly enlightening, thus being what is needed for progress and invention. Nevertheless, when linking reliability to a truth-negating epistemology, it necessarily follows that the linkage becomes more awkward and challenging. Some works need to be done to clarify how reliability fits into a risk epistemology fundamentally differing from the standard epistemological portrayal of reliability as truth-conducive.

## 9. Concluding remarks

The risk field of research is still in its infancy. A vital part for it to mature, is the evolvement of a suitable epistemic platform in which the distinctive features of the field become appropriately aligned to basic epistemic desiderata. Introducing an epistemic-propositional view on risk represents a much-needed step in the erection of such a platform.

The point of reference for this discussion has been the proposition of knowledge about risk to be disconnected from an ambition of becoming truthful about risk. Clearly, the perspectival and the non-occurrent features of the risks, make searches for truth about risk challenging. All the same, dismissing truth is also beset with costs, in

which the most serious obstacle facing a truth-free risk epistemology is that justification is only instrumentally valuable. When rejecting truth, it also threatens the epistemic cogency of justification by triggering a threatening circularity where the only possible way to legitimate the value of justification is to repeatedly emphasize its value.

Three different strategies for countering the problem of circularity have been outlined and examined. Among the strategies introduced, the proposal of transcendence where a justified belief view on knowledge only is assumed to be strictly truth-negating without being strictly two-partite, seems to have most to offer. As opposed to the two other strategies, it raises the promise of a dissolution of the problem of circularity. Moreover, it represents a view on knowledge allowing for the introduction of different epistemic prizes adjustable to variances in the scientific maturity of the risk field.

In his landmark article *Metatheoretical foundations for post-normal risk*, Eugene A. Rosa makes a case for epistemic epistemological hierarchicalism reflecting the fact that although all knowledge claims are fallible, they are not equally fallible. As he points out: "Knowledge claims, while always short of absolute truth, admit to degrees of approximation to what is true" (Rosa 1998: 34). The suggestion here is to extend the notion of epistemological hierarchicalism to also to include goals of enquiry. Sometimes we should allow for the replacement of truth with some other epistemic good reflecting the scientific maturity of the specific field of question.

Arguably, the merits of such a suggestion hinge on the evolvement of alternative goals of enquiry. At the same time, the suggestion also serves as an invitation. It pinpoints two lines for future research particularly worth pursuing for the evolvement of a risk epistemology. The first line is to identify suitable alternative goals of enquiry. The second line is to explore their interconnections. Jointly, these clarifications could prepare the ground for a propositional view on risk knowledge obeying to the principle of justification only to be instrumental valuable without necessarily assuming justification to be connected to truth.

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