Can Religious and Secular Belief Be Rationally Combined?[*]

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Abstract

[299] Sometimes the cognitive part of the human mind is modelled in a simplified way by degrees of belief. E.g., in philosophy of science and in formal epistemology agents are often identified by their credences in a set of claims. This line of dealing with the individual mind is currently expanded to groups by attempts of finding adequate ways of pooling individual degrees of belief into an overall group credence or, more abstractly speaking, into a collective mind.

In this paper, we model religious people's minds as such a collective mind. Religious people are therein identified with a set of degrees of beliefs containing religious and secular credences. E.g., within a religious context a person may be sure that some statement is true, whereas the same person lacks non-religious support for such a credence and hence may doubt the truth of that statement within a secular context. We will also present two results on the adequacy of this model.

Keywords: religious mind, rationality, applied dutch book argument, the problem of evil, opinion pooling, Wittgensteinian tradition

1 Introduction

The aim of this paper is simply to introduce a model of religious mind by identifying it with two credences – a religious and a secular one – that are pooled by some credence aggregation method. The idea of this model can be traced back to Joseph M. Bocheński, who tried to provide in *The Logic of Religion* (cf. Bocheński 1965) some preliminary thoughts for connecting religious and secular belief (of [300] course the idea of combining religious and

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secular belief in investigations of rational epistemic attitudes is much older, but Bocheński was to our knowledge the first who tried to make some technical sense of it). Bocheński's approach is a qualitative one insofar as he discusses statements of two- and n-valued logic, whereas the approach presented here is a quantitative one because we discuss credences and by this probability statements. Also one has to say that Bocheński's approach failed according to many critiques – two of the sharpest are G. D. Duthie and Wilfrid Hodges in (Duthie 1967) respectively (Hodges 1968) – because of its generality (Duthie writes, e.g.: "At best some sections of the book are little more than a clear statement of things which the average reader either knows already or could easily work out for himself."); we hope that our approach doesn't suffer a similar problem because of being too rudimentary.

There is another approach within philosophy of religion that tries to argue for the rationality of religious belief and is relevant to be mentioned here: It is the so-called 'Wittgensteinian tradition' (cf. Pihlstroem 2007, p.4). In the following section we will shortly present the Wittgensteinian tradition in philosophy of religion and highlight similarities to our approach (section 2). Afterwards we introduce our model (section 3). In the subsequent sections we will try to discuss the adequacy of this model. A first adequacy result for the identification of religious mind with collective mind is provided in section 4 with the help of a re-interpretation of the so-called *Dutch Book argument*, stating that one's degrees of belief should satisfy the axioms of probability theory. A feature of the given re-interpretation is its acceptability from a religious point of view. Another adequacy result is provided in section 5 by arguing for the thesis that a person having two different credences can nevertheless be rational in her epistemic attitudes insofar as she may combine them by adequate opinion pooling methods. The view that aggregations of different beliefs can be adequately dealt with is now common in social epistemology.

Since the main argumentation of this paper makes use of concepts, results, and problems from different areas of philosophy of science and epistemology, these notions, results and problems will be introduced in length and detail in order to make the argumentation as explicit and comprehensible as necessary.

2   The Wittgensteinian Tradition

As mentioned in the introduction, there is an approach within philosophy of religion that also tries to argue for the rationality of religious belief and is relevant for our investigation: It is the so-called 'Wittgensteinian tradition' (cf. Pihlstroem 2007, p.4). This approach tries to argue for the rationality of religious belief with reference to Wittgenstein's work on language-games

(for a detailed description of the latter cf. Hintikka 1977). Since we try to address the problem of rational religious belief by logical and social episte-mological means, there is no direct connection to this tradition – e.g., we do not try to spell out language-game constraints by formal means. However, the basic ideas of both approaches seem to be along the same line, and so we want to utilise the Wittgensteinian tradition for less formal, but more illustrative reason.

[301] Very roughly put, Wittgensteinian philosophers of religion confine their task to the description of religious ways of using language, so-called rules of "religious language-games." Wittgenstein himself never explicitly applied the concept 'language-game' systematically to religion (cf. Pihlstroem 2007, p.4). However, philosophers of religion as, e.g., Dewi Z. Phillips, think that Wittgenstein's consideration of ethics in the context of language-games also directly applies to the consideration of religion in the context of language-games. The idea is that the rules of religious language-games put forward different constraints than the rules of, e.g., a secular or scientific language-game. Rationality constraints are considered to be given by the rules of a language game (rule-following is rational; breaking a rule is irrational).

According to some followers of this tradition, many conflicts of belief can be solved by referring to different language-games. Phillips argues that a fundamental dispute between believers and non-believers is not really possible, since they are not part of one and the same language-game:

1. "Wittgenstein raised the question whether, in relation to religion, the non-believer contradicts the believer when he says that he does not believe what the believer believes. If one man contradicts another, they can be said to share a common understanding, to be playing the same game."   (cf. Phillips 1993, p.62)

2. "What are we to say about the man who believes in God and the man who does not? Are they contradicting each other [are they within one and the same language-game]?"   (cf. Phillips 1993, p.62)

3. "They are not. The main reason for the difference is that God's reality is not one of a kind; He is not a being among beings. [. . .] It is meaningless to speak of God's ceasing to exist [in the religious language-game]."   (cf. Phillips 1993, p.62)

4. "Beliefs, such as belief in [God], are not testable hypotheses, but absolutes for believers in so far as they predominate in and determine much of their thinking. The absolute beliefs are the criteria, not the object of assessment. [I.e.: to believe in God is a characteristic rule of religious language-games and by this one needs no evidence if one is

within such a language-game ...] As Wittgenstein says: 'The point is that if there were evidence, this would in fact destroy the whole business'." (cf. Phillips 1993, p.65)

As Phillips argues, in principle one could think that reducing religious rationality to rule-following of a religious game might trivialise the point: Religious rationality would coincide with internal or rule consistency:

"A believer can commit blunders within his religion. But this observation might not satisfy the critics, since they might argue that a set of pointless rules could have an internal consistency. People can follow, and therefore fail to follow, pointless rules. [...] To argue, therefore, that religious beliefs are distinctive language-games with rules which their adherents may follow or fail to follow does not, of itself, show that the rules have any point. (cf. Phillips 1993, p.67)

[302] However, as Phillips points out, there is a solution to this problem of too easily achieving rationality: Religious people do not play only one language game (a religious one), but several, also secular ones. Since situations and contexts of playing both games might overlap, there must also be some relation between their playing these games:

"Religion must take the world seriously. I have argued that religious reactions to various situations cannot be assessed according to some external criteria of adequacy. On the other hand, the connections between religious beliefs and such situations must not be fantastic. [...] For example, some religious believers may try to explain away the reality of suffering, [but ...] the religious responses are fantastic because they ignore or distort what we already know." (cf. Phillips 1993, p.70)

We will come back to the point of view regarding the problem of evil soon (section 4). Momentarily the following illustrative purpose suffices: According to Phillips, religious people are involved in several language-games. They are involved in at least a religious one (e.g. regarding believing in God), and also in a secular one (e.g. regarding the problem of evil). Both language-games have their internal criteria of rationality, i.e. the rules of the language-games, but there is also a relation between them – one might interpret this as a relation within an overarching language-game with the religious and the secular language-games as sub-games.

This characterisation of the Wittgensteinian tradition already suffices to draw an analogy to the model we will present in the following sections of the paper: The religious language-game might be characterised via religious credences; the secular one via secular credences. The overarching language-game might be considered to be the aggregation of both of them. Let us come to the details now.

3   Two credences, alas, dwell in my head…

As indicated before, we think that religious people's epistemic attitudes can be modelled in an idealised way as twofold attitudes: from a religious point of view one may believe a specific statement about God, but disbelieve it from a scientific or secular point of view and one may accept in secular contexts, e.g., claims about the undirected evolution of life, but refute such claims within a religious context. Note, that here our model will fall apart from the Wittgensteinian tradition inasmuch as we consider, e.g., beliefs and disbeliefs in God as being part of one and the same situation/language-game. The epistemic attitudes we are interested in are credences in propositions. Such credences can – as Bayesians do and as we will later argue – be expressed by probability functions. So, an adequate framework for modelling religious people's beliefs seems to be probability theory, the basics of which will be introduced now.

Let us think of an artificial language $\mathcal{L}$ containing atomic and by negation ($\sim$), adjunction ($\vee$) and conjunction (&) built up complex propositions. Then one can define the notion of absolute probability by three conditions: [303]

Definition 1. p is an absolute subjective probability function if and only if (iff) $p : \mathcal{L} \longrightarrow [0, 1]$ and for all $A \in \mathcal{L}, B \in \mathcal{L}$ the following three conditions hold:

   Pr1 (Non-negativity) $p(A) \geq 0$

   Pr2 (Normalisation) If A is logically true, then $p(A) = 1$

   Pr3 (Additivity) If A and B are incompatible (that is: $A\&B$ is logically false), then $p(A \vee B) = p(A) + p(B)$.

For short expression we will name the set containing all such probability functions '$\mathscr{P}$':

Definition 2. $\mathscr{P} = \{p : \ p \text{ is an absolute subjective probability function}\}$

Some absolute subjective probability functions are qualitative in the sense that they are intended for an interpretation of cases in which people strictly believe or disbelieve. It is easy to see that valuation functions of propositional logic can be adequately defined as such qualitative absolute subjective probability functions – of course we then have to take 'logically true' and 'logically false' as primitives in definition 1 (a, in general simpler, but for our purposes more complex way would be to start from Popper functions):

Definition 3. p is a propositional or qualitative valuation function iff $p \in \mathscr{P}$ and $p : \mathcal{L} \longrightarrow \{0, 1\}$.

With the help of absolute subjective probability functions one can also define subjective probabilities that are seen in the light of assumptions etc. by the following equivalence:

Definition 4. p_2 is a (partial) conditional subjective probability function based on p_1 iff p_1 is an absolute subjective probability function and for all $A \in \mathcal{L}, B \in \mathcal{L}$ it holds that $p_2(B, A) = \frac{p_1(B \& A)}{p_1(A)}$ in the case that $p_1(A) > 0$.

And with this definition at hand we can easily express what people sometimes mean when they say that two statements (e.g., premises) are independent: assume that one's credence in a claim B in the light of a claim A equals one's credence in B without consideration of A, that is: $p(B, A) = p(B)$. Then we would intuitively say that belief in or knowledge about A does not influence belief in or knowledge about B and in this way we would call A independent of B. With the definition above this equation can be restated as $\frac{p(B \& A)}{p(A)} = p(B)$ and so one can define probabilistic independence in a usual way by the notion of absolute subjective probabilities:

Definition 5. A and B are probabilistically independent with respect to an absolute subjective probability function p iff $p(A \& B) = p(A) \cdot p(B)$.

Bayesians have much more to say about subjective probabilities – they closely consider update methods that epistemic agents may use if they achieve new information –, but for our investigation it is enough to introduce just one more notion of Bayesian social epistemology, the notion of opinion pooling: [304]

Definition 6. $aggr$ is an opinion pooling method iff $aggr : \mathscr{P}^n \longrightarrow \mathscr{P}$ for some n.

Opinion pooling methods are described here quite generally: they are just methods that have as input a set of opinions or epistemic attitudes and that generate as output an overall opinion or epistemic attitude. By this definition, the one and only strong constraint is the assumption that opinion pooling methods aggregate in a functional way: the same input produces the same output. Of course this is not all there is to say about opinion pooling. We therefore will give some specific characterisations of different kinds of opinion pooling methods later on. To finish our simplified model of religious people's minds this abstract description is absolutely sufficient:

Claim 1. Religious people's mind can be rationally modelled as a sequence of two absolute subjective probability functions π and ρ (where the first one is relevant within secular and the second one is relevant within religious contexts) and a set of opinion pooling methods ($\subseteq \{aggr : aggr$ is an opinion pooling method$\}$).

To show that scientific or secular belief (π) can be modelled as a normative ideal by subjective probability functions is one of the main tasks of philosophy of science and will be taken for granted here. That the same holds also for religious belief (ρ) will be argued for in the next section. The main challenge in modelling religious mind, namely that π and ρ can be pooled by some *aggr* in a coherent and rational way will be discussed in the subsequent section.

4   Religious belief as credence?

One of the most common interpretations of credences is an interpretation linked with betting quotients. There are several other strategies to argue for the formal structure of credences as presented in the preceding section as, e.g., so-called accuracy arguments etc. Nevertheless we will concentrate on an interpretation with help of betting quotients, since this allows for an easy traditional interpretation of ρ as probability function.

It is usual to operationalise an agent i's credence in a claim A by i's betting behaviour or principal willingness to bet on or against A. If someone swears by A, but is principally not willing to bet on A – perhaps even worse she may be principally willing to bet on $\sim A$ – then we seem to be justified in doubting i's credence in A. In general one seems to be justified in claiming that one's credence in A increases with an increase of one's principal willingness to bet on A.

Betting behaviour can be modelled as follows (cf., e.g., Hájek 2005, pp.140ff): there is a stake for a bet on A, that is $stake(A)$£, and there is one's principally willingness to bet on A, $p_i(A) \cdot stake(A)$£. First of all we assume some technically relevant features of i's credence in A:

DBC1 i assigns credences to the non-empty set of sentences $\mathcal{L}$, which is assumed to be closed under negation, disjunction, and conjunction building rules.

DBC2 i's credence is sharp (that is: p_i is a function into $\mathbb{R}$ and not, e.g., into intervals of $\mathbb{R}$).

[305] The first condition is relevant with respect to overall coherence (cf. an analogon for qualitative belief within groups in List and Pettit 2002, p.107): if i assigns a high religious credence to A but no religious credence to $A \vee B$ and i assigns a low secular credence to $A \vee B$ but no secular credence to A, then i may aggregate both types without problems but ends up with an incoherent credence: she has high overall credence in A but low overall credence in $A \vee B$. The second condition is just for simplification of the model.

The next condition is in favour of the rationality of betting: first, no one is rational in paying more for a lot ($p_i(A) \cdot stake(A)$£) than one can possibly win in the lot; second, betting is only relevant if there is something at stake:

DBC3 $0 \leq p_i(A) \cdot stake(A) \leq stake(A)$ and $stake(A) > 0$

The first part of the condition is redundant with respect to the following conditions but simplifies our demonstration. The second part of the condition is much more relaxed ($stake(A) \in \mathbb{R}$) in usual versions of the Dutch Book argument. We presuppose it for the cost of an extra differentiation of betting on A and betting against A, but by the gain that the choice of $stake(A)$£ lies in more cases in i's (and not in the opponent bookie's) hands – e.g., in cases where only Pr1 and Pr2 are relevant.

One of the most important condition is the following one:

DBC4 i is principally willing to bet on A (that is: to buy a bet) for $\leq p_i(A) \cdot stake(A)$£ for any stake satisfying DBC3.

This condition models the foregoing generalised claim that one's credence in A increases with an increase in one's principal willingness to bet on A. So, the more i is principally willing to bet on A, that is: the higher the possible costs for betting on A are for i, the higher is the credence of i in A. A rational agent would not only accept bets on A in this way, but would also accept bets against A in the way of selling a lot on A:

DBC5 i is principally willing to bet against A (that is: to sell a bet) for $\geq p_i(A) \cdot stake(A)$£ for any stake satisfying DBC3.

The payoffs for i in both modes of betting are as follows: if i bets on A, then i ends up with the stake minus her costs for the bet if A is true. If A is false, then i ends up with her costs only. On the other hand, if i bets against A, then i ends up with the price someone (j) paid for the bet to i minus the stake i has to pay to j if A is true. If A is false, then i ends up with an income of the price j payed for the bet:

DBC6 If i bets on A, then i's payoff, depending on the outcome of A, is:

outcome	payoff
A is true	$stake(A) - p_i(A) \cdot stake(A)$£
A is false	$-p_i(A) \cdot stake(A)$£

DBC7 If i bets against A, then i's payoff, depending on the outcome of A, is:

outcome	payoff
A is true	$-stake(A) + p_i(A) \cdot stake(A)$£
A is false	$p_i(A) \cdot stake(A)$£

[306] The core of the betting model lies in the condition that no rational agent i would, in principle, agree with bets on or against A that generate a net loss for i, regardless of the outcome of A:

DBC8 An agent i is rational only if i's principally willingness to bet on or against A provides her from ever being dutch-booked, that is: there is no set of bets on or against A (or propositional components of A) that i is principally willing to accept, but that generates a net loss for i, regardless of the possible outcomes of A (or propositional components of A).

With this framework at hand, one can easily demonstrate that a violation of one of the probability axioms Pr1–Pr3 in the credence of an agent i makes the agent vulnerable to being dutch booked (for details cf., e.g., Talbott 2008, supplement on sect.3):

A violation of Pr1 leads directly to a statement of irrationality about i because from DBC3 we get $0 \leq p_i(A) \leq 1$ which is to say that it is irrational to pay more for a bet than one gets in the most positive outcome.

A violation of Pr2 can be twofold. First, one may overestimate the value of logical truths in betting and hold a credence on a logical truth A greater than one: $p_i(A) > 1$. In this case i can be directly judged as irrational by the anterior result. Second: One may underestimate the value of logical truths for betting and hold $p_i(A) < 1$, where A is logically true. In this case one just has to offer i the amount of $p_i(A) \cdot stake(A))$£ for a bet against A (DBC5) and i's payoff is a loss, since the only possible outcome of A is true and the payoff is $-stake(A) + p_i(A) \cdot stake(A)$£ (DBC7) and since $p_i(A)$ is by assumption lower than 1 this amount is negative.

A violation of Pr3, again, can be twofold. First: $p_i(A \vee B) < p_i(A) + p_i(B)$ assuming A and B are incompatible. Then one just has to offer i a bet on A for $p_i(A) \cdot stake(A)$£ (DBC4) and a bet on B for $p_i(B) \cdot stake(B)$£ (DBC4) and a bet against $A \vee B$ for $p_i(A \vee B) \cdot stake(A \vee B)$£ (DBC5). The stake for all bets is assumed to be equal, that is: $stake(A) = stake(B) = stake(A \vee B)$. Since A and B are incompatible, either A or B or both are false – these are the three possible outcomes. The net payoffs for i regarding the three bets in the three possible outcomes are as follows (DBC6 and DBC7): [307]

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outcome	net payoff regarding the three bets	bets
A is true B is false	$stake(A) - p_i(A) \cdot stake(A)$£	(bet on A)
	$+$	
	$-p_i(B) \cdot stake(B)$£	(bet on B)
	$+$	
	$-stake(A \vee B) + p_i(A \vee B) \cdot stake(A \vee B)$£	(bet against $A \vee B$)
A is false B is true	$-p_i(A) \cdot stake(A)$£	(bet on A)
	$+$	
	$stake(B) - p_i(B) \cdot stake(B)$£	(bet on B)
	$+$	
	$-stake(A \vee B) + p_i(A \vee B) \cdot stake(A \vee B)$£	(bet against $A \vee B$)
A is false B is false	$-p_i(A) \cdot stake(A)$£	(bet on A)
	$+$	
	$-p_i(B) \cdot stake(B)$£	(bet on B)
	$+$	
	$p_i(A \vee B) \cdot stake(A \vee B)$£	(bet against $A \vee B$)

Since $p_i(A \vee B) < p_i(A) + p_i(B)$, the net payoff is negative in all three cases.

Second, one can violate Pr3 by assigning credences in such a way that $p_i(A \vee B) > p_i(A) + p_i(B)$. Here one only has to offer i bets in the reverse direction: a bet against A one against B, and one on $A \vee B$ for the minimal prices that i agrees with. A table calculating the net payoff in this case shows that the result is negative. Hence, by violating one of the axioms of probability theory, one is vulnerable to being dutch booked.

By the so-called *converse Dutch Book theorem* one can show that the situation is no dilemma: if one's credences satisfy the axioms of probability theory Pr1–Pr3, then one is not vulnerable to being dutch booked (cf. Hájek 2005, p.141). N.B.: the assumption that an agent buys a bet on A for $\leq p_i(A) \cdot stake(A)$£ and conversely in the case of selling a bet on A is strong enough to rule out the so-called *Good Book argument*, which states – in strengthened form – that a violation and only a violation of at least one of the axioms of probability theory guarantees the possibility of a Good Book, that is: a set of bets whose net payoff is positive, regardless of the outcome (cf. the distinction of 'fair' and 'fair-or-favourable' in Hájek 2005, sect.3 and pp.146ff). So, the intermediate conclusion one may arrive at is to avoid the vulnerability of being dutch booked by building up one's credences in accordance with these axioms (DBC8).

So far so good for credences linkable with betting situations. Now, what about religious belief? Can someone's claim about her incontestable belief in the existence of God be operationalised by buying or offering bets on 'God exists.'? Of course such an opinion is open for many objections, be it

on emotional (religious feelings) or on any other reasons. One objection is in accordance with that of Richard C. Jeffrey insofar as he thinks that betting on or against the truth of some [308] statements would not be rational, although we may have some credence on the statement:

> "[In 1965, Jeffrey wrote about his] dissatisfaction with the identification of subjective probability with betting ratios. For example, no matter what one's degree of belief in the proposition that all human life will be destroyed within the next ten years, it would not be rational to offer or to buy a bet on its truth." (cf. Talbott 2008, sect.3)

Similarly, one may argue that betting on or against 'God exists.' is irrational, although we may have some credence on it, because there is no outcome within the time frame we could make use of any stake or betting income.

Although we agree with this line of argumentation we think that one can nevertheless make use of the Dutch Book argument for supporting the thesis that religious credence can be modelled with the help of probability functions. This is due to the fact that the structure of the argument is abstract and general enough to be conclusive under adequate re-interpretation.

As DBC1 and DBC2 are just for formal reasons and for simplification of the model, we think that they are acceptable without re-interpretation. For the other conditions of the Dutch Book argument we suggest the following re-interpretation:

Re-Int1 '£' re-interpreted as: 'units of religious values'

Re-Int2 '$stake(A)$' re-interpreted as:
'religious value to which belief in A leads' (negative: 'religious value from which non-belief in A alienates')

Re-Int3 'i is principally willing to bet on A for $\leq p_i(A) \cdot stake(A)$£' re-interpreted as:
'i is principally willing to suffer for her belief in A by $\leq p_i(A) \cdot stake(A)$£ to achieve $stake(A)$'

Re-Int4 'i is principally willing to bet against A for $\geq p_i(A) \cdot stake(A)$£' re-interpreted as:
'i is principally willing to expose herself to $-stake(A)$£ for her belief in A by getting $\geq p_i(A) \cdot stake(A)$£'

The first part of condition DBC3 reads under this interpretation: no one should suffer more than is necessary for achieving religious values. We think that this condition is usually accepted by religious people, e.g., in

claiming that for every evil that makes people suffer there is a morally sufficient reason for letting people suffer this evil, namely the sufficient reason to achieve a higher religious good (that seems to be the quintessence, e.g., of the defense provided by Eleonore Stump in (Stump 2010)). Also the second part seems to be acceptable under this interpretation as it reads: religious values are positive (on a scale of positive and negative values). This claim also seems to be supported by religious traditions (cf., e.g., the scale of religious values according to Thomas Aquinas, discussed in Stump 2010, pp.386ff).

The re-formulation of condition DBC4 and DBC5 are directly given in Re-Int3 and Re-Int4. Re-Int3 seems to be acceptable because of the connection between suffering, believing and "earning" in many religions. In principle it holds that the more one believes in religious statements (and perhaps also acts according to this [309] belief), the closer she is to religious goods, e.g., heaven. In some cases, e.g., in the case of sanctification, believing is operationalised with the help of suffering: the more one is willing to suffer for claiming or believing *A*, the more she is seen as a believer in *A*. So, e.g., take the story of Abraham:

> "Abraham [...] is traditionally considered the father of faith, and on that view he becomes the father of faith because of his willingness to sacrifice his beloved son [...]." (cf. Stump 2010, p.259)

Besides this traditional point of view in favour of the adequacy of Re-Int3, there also seems to be some empirical data that makes Re-Int3 adequate and hence the re-interpretation of DBC4 acceptable from a religious sociological point of view: the psychologists Kurt Gray and Daniel M. Wegner found that, in the U.S., residents of states that suffer the most disease and harm, as measured by the United Health Foundation *health index*, are also the states with the strongest belief in God, measured by other indicators for believing (cf. Gray and Wegner 2010, pp.6f). In short, one may claim that *suffering heightens or correlates with belief in God* and one might expect that the more a population suffers in general, the more religious it should be (cf. Gray and Wegner 2010, p.11).

The re-interpretation of condition DBC5 by Re-Int4 can be seen the other way around: one seems to disbelieve religious statements more, the more one is willing to accept alienation of religious values. E.g., one may be alienated from the religious value of charity by exploiting people and thereby indicating that there is no high credence in the validity of the commandment to love one's neighbour.

Re-interpreted in this way, also a re-interpretation of the payoff tables should be acceptable. In favour of this we give a prototypic, but of course very simplified, example:

DBC6′ Let *A* be a religious statement to believe in which leads
to an ultimate religious good:

outcome	payoff
A is true	heaven − costs: earthly disadv. of a religious life
A is false	earthly disadvantages of a religious life

DBC7′ Let *A* be a religious statement to believe in which leads
to ultimate alienation of religious goods:

outcome	payoff
A is true	−heaven (=hell) + earthly adv. of a non-religious life
A is false	earthly advantages of a non-religious life

[310] One now sees that at least, e.g., Blaise Pascal (Pascal's wager) would agree with such a re-interpretation and hence would accept DBC6′ and DBC7′.

The final condition DBC8 has to be restated in the following way:

DBC8′ An agent *i* is rational only if *i*'s principal willingness to suffer or expose herself for her belief in *A* provides her from being ever dutch booked in the sense that there is no set of agreements for suffering or exposing for *A* that *i* is principally willing to accept, but that generates a net loss (that is: needless suffering) for *i*, regardless of the possible outcomes of *A*.

We think that the most contestable part within this re-interpreted condition is that of generating a net loss for *i*. Perhaps one also accepts net losses as rational insofar as an agent *i* may suffer needlessly for her, but necessarily for some other agent *j*. Such an assumption is, however, by no means generally accepted and surely not traditional:

> "[…] God would allow a human person to suffer only if through that suffering alone God can provide an outweighing benefit that goes […] to the sufferer." (cf. Aquinas' benefit to the sufferer principle discussed in Stump 2010, p.384)

With this interpretation at hand one can exercise the argumentation given above step by step for the re-interpreted conditions. One will end up with the claim that religious credence should be in accordance with the axioms Pr1–Pr3 of probability theory.

Note that our re-interpretation deviates from the Wittgensteinian tradition as presented in section 2. According to some followers of the tradition regarding evil and suffering, a truly religious person does not aim

at a theodicy of justifying God's ways to humans but simply trusts God, whatever His will brings about in the world (cf. Phillips 1993, p.70) (cf. Pihlstroem 2007, p.5 and p.7). They claim that the problem of evil is to be considered within a secular language-game, because considering it within a religious language-game may alienate one from natural reaction to the existence of suffering, namely evolving empathy. Furthermore, within this tradition investigating theodicy is simply breaking rules of the religious language-game, since it questions what is taken for granted.

Since our interpretation of exposing oneself to suffering is borrowed from the discussion of the problem of evil, the mentioned followers of the Wittgensteinian tradition would probably not accept the re-interpreted conditions of the Dutch Book argument. A remaining task to convince them would be to find an interpretation within the religious language-game that satisfies the formal structure of the Dutch Book argument.

Apart from that restriction, our first result regarding claim 1 is that both π and ρ, taken to be subjective probability functions, seem to be an adequate way of modelling secular and religious credences. But what about combining them? This question will be addressed in the following section. [311]

5 Two credences and yet one rationality?

Given the Bayesian interpretation of religious and secular belief, one satisfies a minimum of rationality conditions argued for in the foregoing section. But of course this is not all there is to say about the rationality of beliefs. There are many problems related to this topic, e.g., the questions of active agenthood or belief change, asking how one should update her credences in the light of new information and data (prior-posterior-probability update). Or there are, e.g., the so-called questions of group agency, asking how a group decision should be made, how an overall group credence should be constructed in the light of the individual's credences? What does it mean that a whole group has rational belief attitudes? Discussions of these problems have in common that they try to solve the question of how to interrelate at least two credences in an adequate way – abstractly seen this is also the problem we are dealing with. In this section we will focus our investigation on a discussion of the latter mentioned one, namely on group agency.

One main complaint against the adequacy of our model may be seen in the fact that aggregation of secular and religious belief by some opinion pooling methods *aggr* is deemed to be not rational, whereas a condition of adequacy for modelling religious belief is to end up with rational beliefs (for this condition cf., e.g., Bocheński 1965, II.16, III and IV.35). The main claim that such aggregations are not rational stems from the view that such

aggregations are cherry picking: people aggregate π and ρ according to different purposes. One may decide to pool one's secular evolutionary belief about the origin of man and one's religious belief about man's origin clearly for the secular one, whereas at the same time she decides to pool secular and religious belief about some ethical topics for her religious belief. Since in the case of cherry picking one can easily construct examples of irrational belief as discussed above (cf. the discussion of DBC1–DBC2), this way of opinion pooling seems to be deemed not rational and by this the model would be obviously inadequate.

There are at least two strategies to reply to this complaint and supporting the claim that in case of a single-agent setting with multiple beliefs one can model religious mind adequately with rational opinion pooling methods. First, one can give new applications of results of group agency for such cases. That is to try to take over some results regarding the way a group can be seen to be rational, to a way a single agent with different credences on one and the same set of sentences may be seen as rational.

Of course not all important results in research of group agency would be of significance or relevance for that purpose. E.g., perhaps the most famous result about group agency is the so-called *Condorcet jury theorem*, which was first stated by the Marquis de Condorcet in 1785 and by which it is claimed, roughly speaking, that within a competent and independent group the truth tracking reliability of the group with a majority voting method increases with an increasing amount of group members. But this result does not touch that purpose. This holds since the lesson one can draw from it regarding group agency and organisational design, namely to try to increase the amount of competent and independent group members is of no use to [312] pool an agent's different degrees of belief: it does not seem to be a good idea for an agent to increase her truth tracking reliability by increasing the different credences she has on one and the same statement. Nevertheless there seem to be many other results about organisational design that are very relevant for an application in single-agent multi-belief settings. One of these results seems to be the treatment of the so-called *discursive dilemma*, respectively, *doctrinal paradox* which will be introduced later on.

Second, one can try to undermine the criticism that usual opinion pooling of secular and religious belief ($aggr(\pi, \rho)$) is an irrational "cherry picking technique" by showing that in clear rational opinion pooling cases a similar technique is applied. In this paper we will go along the line of the second strategy, which is a kind of parity argumentation. We will try to show that the mentioned discursive dilemma drives rationality requirements in group agency discussions also to a kind of "cherry picking technique". Before we discuss this dilemma, we must first unfold our terminology on opinion pooling.

Usually opinion pooling methods are supposed to satisfy some stan-

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dards to be acceptable as real pooling methods. For example, a method that disqualifies some specific epistemic attitudes from being relevant within the pooling process seems to not be very good in mirroring the group members' opinions. Or a method that favours exactly one opinion vis-a-vis all other opinions within a group can hardly be accepted as really pooling the group members' opinion. Or a method for pooling the group members' opinions on a statement A that regards also independent opinions of the group on other statements as relevant for pooling seems to really be pooling the group members' opinions exactly on A (and not on A and the other statements). These implicit desiderata can be stated more explicitly by the following catalogue of conditions that should be satisfied by an adequate opinion pooling method:

Definition 7. *aggr* satisfies the standard conditions for opinion pooling iff the following three conditions hold (cf. List and Pettit 2002, Appendix) and (Pivato 2008, pp.3f):

Op1 (Universality) There is an n such that $aggr : \mathscr{P}^n \longrightarrow \mathscr{P}$

Op2 (Anonymity) For all $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ it holds that $aggr(p_1, \ldots, p_n) = aggr(\sigma(p_1), \ldots, \sigma(p_n))$ for any permutation σ on $\{p_1, \ldots, p_n\}$

Op3 (Systematicity) There is a function $f : [0,1]^n \longrightarrow [0,1]$ such that for all $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ and $A \in \mathscr{L}$ it holds that $aggr(p_1, \ldots, p_n)(A) = f(p_1(A), \ldots, p_n(A))$

The condition of universality (according to definition 6 it is the condition for any method to be an opinion pooling method) states that no specific epistemic attitudes are to be disqualified from being relevant in opinion pooling – one may compare with this requirement the first part of the national motto of France: *Liberté* (to one's opinion). The condition of anonymity states that all individual's opinions are of the same weight within the opinion pooling process – compare herewith the second part of the national motto: *Égalité* (in opinion pooling). And the condition of systematicity states that the overall opinion of a group about a specific statement [313] is determined by the individual's opinion about exactly that statement – here social epistemologists replace the third and social part of the national motto *Fraternité* (in your acting) with the (for analytic philosophers in general highly relevant) technical part *Systematicité* and not cherry picking in opinion pooling. So, one may use as mnemonic for the standard in opinion pooling *Liberté, Égalité, Systematicité*.

Beside these desiderata in the discussion of opinion pooling some other plausible desiderata are also investigated. E.g., some people think that opinion pooling methods, if they are to be counted as real pooling methods, preserve probability independence in the sense that if every member

of a group thinks that two statements A and B are probabilistically independent, then according to the pooled opinions these statements have to be counted as independent (cf. the discussion in Pivato 2008, pp.5ff):

Definition 8. *aggr* satisfies the condition of probability independence preservation iff:

> Op4 (Independence Preservation) For all $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ and $A \in \mathcal{L}, B \in \mathcal{L}$ it holds that: if $p_i(A\&B) = p_i(A) \cdot p_i(B)$ for $1 \leq i \leq n$, then $aggr(p_1, \ldots, p_n)(A\&B) = aggr(p_1, \ldots, p_n)(A) \cdot aggr(p_1, \ldots, p_n)(B)$

Or one may think that opinion pooling is only adequate, if it is probability degree preservative in the sense that if all group members' subjective probability of a statement A is n, then the pooled probability of A is also n (cf., e.g., the so-called 'zero preservation property' which is a special instance of this case):

Definition 9. *aggr* satisfies the condition of probability degree preservation iff:

> Op5 (Degree Preservation) For all m, $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ and $A \in \mathcal{L}$ it holds that: if $p_i(A) = m$ for $1 \leq i \leq n$, then $aggr(p_1, \ldots, p_n)(A) = m$

There are lots of other preservation properties that are relevant for a discussion of opinion pooling. In general it seems to be plausible to assume that the more properties preserved during opinion pooling, the more adequate the opinion pooling method is. Since we are interested here mainly in the discursive dilemma and since for a discussion of this dilemma only Op1– Op5 are relevant, these desiderata should be kept in mind for the further discussion.

Our abstract characterisation of opinion pooling methods can be unfolded a little bit more by distinction of mathematical properties of these methods. One, for a distinction very relevant, property is the degree of the polynomial respectively Taylor-polynomial form of these methods. Since from a technical point of view one can use the whole functional repertoire of mathematics for opinion pooling, one could try to aggregate an agent i's and an agent j's belief on A adequately by $aggr(p_i, p_j)(A) = sin(p_i(A)) \cdot cos(p_j(A))$. According to categorisation of opinion pooling methods by the degree of the polynomial or Taylor-polynomial form of the method this method is a ∞-degree opinion pooling method, whereas, e.g., $aggr(p_i, p_j)(A) = p_i(A)^2 \cdot p_j(A)$ is a 2-degree or quadratic opinion pooling method, [314] etc. Again we can restrict our terminology since for our discussion only 1-degree or linear opinion pooling methods are relevant:

Definition 10. *aggr* is a linear opinion pooling method iff for all $p_1 \in \mathscr{P}, \ldots,$ $p_n \in \mathscr{P}$ there are weighting constants $c_1 \geq 0, \ldots, c_n \geq 0$ such that for all $A \in \mathcal{L}$ it holds:

$$1 \geq aggr(p_1, \ldots, p_n)(A) = \sum_{i=1}^{n} c_i \cdot p_i(A)$$

It is easy to see that the range of linear opinion pooling methods is the set of all absolute subjective probability functions $\mathscr{P}$, so Op1 is satisfied by every linear opinion pooling method.

Linear opinion pooling methods, again, can be unfolded into well-known aggregating procedures. There is, e.g., the dictatorian aggregation procedure:

Definition 11. *aggr* is a dictatorian opinion pooling method iff *aggr* is a linear opinion pooling method whose weight constants are as follows: For some n: $c_j = 1$ and $c_i = 0$ for some $j : 1 \leq j \leq n$ and all $i: 1 \leq i \leq n$ and $i \neq j$

There are also two forms of majority aggregation: the quantitative one (which is a continuation of (Feldman 2007)):

Definition 12. *aggr* is a quantitative majority opinion pooling method iff *aggr* is a linear opinion pooling method whose weighting constants are equal:
For some n: $\qquad\qquad\qquad c_1 = \cdots = c_n = \frac{1}{n}$

And the qualitative majority aggregation method:

Definition 13. *aggr* is a qualitative majority opinion pooling method iff there is a quantitative majority opinion pooling method $aggr'$ such that for all $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ (where n is odd and $p_1, \ldots, p_n$ are propositional valuation functions) and for all $A \in \mathcal{L}$ it holds:

- $aggr(p_1, \ldots, p_n)(A) = 1$ in case that $aggr'(p_1, \ldots, p_n)(A) > 0.5$ and

- $aggr(p_1, \ldots, p_n)(A) = 0$ in case that $aggr'(p_1, \ldots, p_n)(A) < 0.5$

Note that cases where n is even or where the individual opinions $p_1, \ldots, p_n$ are not qualitative valuation functions are not ruled by this definition.

There are also two forms of unanimity aggregation. First, again, a quantitative form which coincidences with opinion pooling methods that have the probability degree preservation property:

Definition 14. *aggr* is a quantitative unanimity opinion pooling method iff *aggr* is a linear opinion pooling method that satisfies the condition of probability degree preservation Op5.

There is also a qualitative version of unanimity aggregation: [315]

Definition 15. *aggr* is a qualitative unanimity opinion pooling method iff there is a quantitative unanimity opinion pooling method *aggr'* such that for all $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ (where $p_1, \ldots, p_n$ are propositional valuation functions) and for all $A \in \mathcal{L}$ it holds:

- $aggr(p_1, \ldots, p_n)(A) = 1$ in case that $aggr'(p_1, \ldots, p_n)(A) = 1$ and

- $aggr(p_1, \ldots, p_n)(A) = 0$ otherwise

Note again that cases where the individual opinions $p_1, \ldots, p_n$ are not qualitative valuation functions are not ruled by this definition. With this unfolding at hand we can now state and discuss the *discursive dilemma* and its application in modelling the religious mind in detail.

Let us begin with a prototypic example of qualitative cases with multiple agents each of which having only one credence function. Suppose that there are three agents *i*, *j* and *k* with qualitative beliefs about the propositions *A*, *B* and *C* as given in the following table, where *C* is a logical consequence of $\{A, B\}$ but neither one of $\{A\}$ nor one of $\{B\}$:

#	C1	C2	C3
R1	$p_i(A) = 0$	$p_i(B) = 1$	$p_i(C) = 0$
R2	$p_j(A) = 1$	$p_j(B) = 0$	$p_j(C) = 0$
R3	$p_k(A) = 1$	$p_k(B) = 1$	$p_k(C) = 1$

As one immediately recognises, all agent's beliefs about *A*, *B* and *C* are logically correct, that is to say that p_i, p_j and p_k are in fact absolute subjective probability functions. Now suppose that these three agents build up a jury to get an overall decision about the propositions by the method of majority voting. Their result will be as follows, where each aggregation (*aggr*) is done by the majority voting method:

#	C1	C2	C3
R4	$aggr(p_i, p_j, p_k)(A) = 1$	$aggr(p_i, p_j, p_k)(B) = 1$	$aggr(p_i, p_j, p_k)(C) = 0$

One easily sees that the overall decision of the group is logically incorrect insofar as *C*, which is a logical consequence of $\{A, B\}$, is disbelieved whereas both *A* and *B* are believed. Since $aggr(p_i, p_j, p_k)$ is by this fact no absolute subjective probability function, it is also not an opinion pooling method. The, at first glance, paradoxical part of this example lies in the fact that all members of the group have logically correct beliefs whereas the belief of the majority of the group, seen as group agent, is logically incorrect. Thus one may try to adopt the group's decision making method. So, one may use the qualitative unanimity method for making a group decision. Or one may apply the majority$^+$ voting method which runs exactly as the qualitative majority voting method except in tie cases (*n* is even)

where the majority$^+$ method decides to believe instead of disbelieve. But here the dilemma [316] comes into play: let *aggr* be a possible qualitative decision making method that satisfies the formal standard Op1–Op3 (*Liberté, Égalité, Systematicité*). Then one can show that for this method there are always some $p_1 \in \mathscr{P}, \ldots, p_n \in \mathscr{P}$ such that $aggr(p_1, \ldots, p_n)$ is logically incorrect (cf. List and Pettit 2002, Appendix pp.108ff). So, the dilemma is that we want, on the one hand, *aggr* to satisfy Op1–Op3, but on the other hand *aggr* will be logically incorrect in at least some decisional cases. We cannot have both, satisfaction of Op1–Op3 and logical correctness in all decisions. The majority$^+$ method runs logically incorrectly in consideration of the two-agent scenario R1,R2, where *aggr* represents the majority$^+$ voting method:

#	C1	C2	C3
R5	$aggr(p_i, p_j)(A) = 1$	$aggr(p_i, p_j)(B) = 1$	$aggr(p_i, p_j)(C) = 0$

The qualitative unanimity rule runs logically incorrectly in the *coalition vs. individual scenario* R5,R3 (note that $p_i.p_j$ is the aggregation of p_i with p_j according to the majority$^+$ voting method in R5), where *aggr* represents the qualitative unanimity voting method:

#	C1	C2	C3
R6	$aggr(p_i.p_j, p_k)(A) = 1$	$aggr(p_i.p_j, p_k)(B) = 1$	$aggr(p_i.p_j, p_k)(C) = 0$

Christian List and Philip Pettit have shown for the qualitative case that there is no (qualitative) opinion pooling method that satisfies Op1–Op3 (cf. List and Pettit 2002, Appendix).

But what about the quantitative case? As one may plausibly suppose, in this case it is much easier to find pooling methods that satisfy the conditions Op1–Op3 and nevertheless guarantee logical correctness. Take the example above, that is, a jury built up of *i*, *j* and *k* and now apply not the qualitative, but the quantitative majority voting method for generating a group decision. Then one ends up with the scenario:

#	C1	C2	C3
R7	$aggr(p_i, p_j, p_k)(A) = \frac{2}{3}$	$aggr(p_i, p_j, p_k)(B) = \frac{2}{3}$	$aggr(p_i, p_j, p_k)(C) = \frac{1}{3}$

Note that there is no logical incorrectness in this result since $aggr(p_i, p_j.p_k)$ is a (logically correct) absolute probability function. And things do not change even if we suppose that A and B are independent from *i*'s, *j*'s and *k*'s perspective. By this assumption we can calculate the credences of the individual agents in the conjunction of the premisses $(A\&B)$ just by simply multiplying their beliefs in the single premisses ($p_i(A\&B) = 0$, $p_j(A\&B) = 0$ and $p_k(A\&B) = 1$). Since with Op1–Op3 [317] alone independence

preservation is not postulated, we are not determined to estimate the aggregated credence in the conjunction of the premises the same way – it is possible that $aggr(p_i, p_j, p_k)(A\&B) \neq aggr(p_i, p_j, p_k)(A) \cdot aggr(p_i, p_j, p_k)(B)$.

Nevertheless there is a problematic situation for the quantitative case too, if one also assumes Op4. In this case we would be determined to $aggr(p_i, p_j, p_k)(A\&B) = aggr(p_i, p_j, p_k)(A) \cdot aggr(p_i, p_j, p_k)(B)$ and so $aggr$ in the scenario R7 wouldn't be logically correct, since $aggr(p_i, p_j, p_k)(A\&B) = \frac{4}{9}$ whereas $aggr(p_i, p_j, p_k)(C) = \frac{3}{9}$. But according to the consequence theorem of probability theory, in order to be a (logically correct) absolute probability function, for $aggr(p_i, p_j, p_k)$ it had to be the case that $aggr(p_i, p_j, p_k)(C) \geq aggr(p_i, p_j, p_k)(A\&B)$.

Here also a more general result has been proven (cf. for an overview and references Pivato 2008, sect.1): there is no (quantitative) opinion pooling method that satisfies the conditions Op1–Op4 (although some quantitative opinion pooling methods satisfy Op1–Op3).

How do social epistemologists handle these dilemmas? One way is to weaken Op1–Op4. This strategy seems to be questionable since these conditions are a minimal formal requirement for opinion pooling (NB: even if one omits Op2, the *Égalité* condition, then one also gets the counterintuitive result that the only opinion pooling methods that are in accordance with Op1, Op3 and Op4 are dictatorian opinion pooling methods defined by definition 11 since Op1 and Op3 implies linearity as defined in definition 10 and since linearity and Op4 implies dictatorship).

The most promising way to handle these dilemmas seems to be giving up the idea that there is exactly one opinion pooling method that suffices for all purposes. In this direction goes the treatment of the qualitative dilemma in (List and Pettit 2011). They discuss the advantages of using different aggregation methods for different purposes. They show that to avoid condemnation of innocents, one should prefer the unanimity opinion pooling method (fewer false positives) against the majority voting method in very relevant judgements. In medicine, undetected diseases (false negatives) are much more dangerous than cases where a doctor seems to have detected a disease without there being any (false positives), since further tests will easily eliminate such cases. So, in the case of avoiding false negatives in medical judgements, an inverted unanimity method or a majority method of competent voters seems to be much more adequate than the unanimity method defined in definition 14.

Let us briefly discuss this quite abstract argument for the adequacy of the application of *aggr* in our model with help of a toy example. Recall the discussion of believing in God and the problem of evil from section 2. The main propositions in question are 'God exists.' and 'Evil exists.'. Now, religious people can in principle form the following credences:

- $\rho(\text{'God exists.'}) = 1.0$, $\pi(\text{'God exists.'}) =?$

- $\rho(\text{'Evil exists.'}) = ?$, $\pi(\text{'Evil exists.'}) = 1.0$

From a secular point of view, the existence of evil seems to be as hard a fact as from a religious point of view the existence of God is. Regarding the other points of view (?) there is much more space for dispute. The Wittgensteinian tradition, e.g., would [318] even suggest to leave them undefined, since 'God exists.' is no proposition relevant in a secular language-game, but in a religious one; and similarly for the problem of evil, namely being relevant only in a secular context, but not in a religious one (cf. Phillips 1993, p.70). For this reason it is also clear that for this tradition the relevant conditional credences should remain also undefined:

- $\rho(\text{'God exists.'}|\text{'Evil exists.'})$

- $\pi(\text{'God exists.'}|\text{'Evil exists.'})$

- $\rho(\text{'Evil exists.'}|\text{'God exists.'})$

- $\pi(\text{'Evil exists.'}|\text{'God exists.'})$

However, the situation differs if one can pick out, according to the rules of an overarching language-game depending on one's religious and secular purposes, opinions in a way that one ends up with an aggregated result. Then it absolutely makes sense to question the impact of the problem of evil to one's view of God:

- $aggr(\rho, \pi)(\text{'God exists.'}|\text{'Evil exists.'}) = ?$

We see this possibility of modelling the problem regarding the theodicy much more in the traditional line of philosophy of religion as in the Wittgensteinian tradition.

The quintessence one may draw from List and Pettit's discussion is that there is also very much pragmatic influence in choosing the right opinion pooling method in group agency and that here also a "technique of cherry picking" is applied. Nevertheless it is hardly implausible to regard group opinions, constructed based on rational individual opinions, as irrational. If further investigations show that the "cherry picking technique" applied in pooling secular and religious belief can also be discussed in a systematic way with respect to purposes etc., then pooling of π and ρ by some aggregation methods *aggr* can be seen as rational and by this our modelling of the religious mind (claim 1) can be regarded as adequate.

6 Conclusion

The main aim of our investigation was to introduce a rudimentary model of religious mind. If this model is adequate, then religious mind is justifiably

seen to be rational, although a religious person may believe and disbelieve one and the same statement (in different contexts). This is due to the fact that all "ingredients" of our model are similar to classical "ingredients" of models of rationality: in philosophy of science, e.g., probability functions are seen to be representants of rational epistemic attitudes and additionally in social epistemology opinion pooling is seen to be a rational method for forming a group's epistemic attitudes. Our model contains both and only both: probability functions π, ρ and opinion pooling methods $aggr$.

We provided two conditions of adequacy for our model. First: that religious belief is adequately represented by a probability function ρ was [319] argued for by a re-interpretation of the Dutch Book argument. The speciality of this re-interpretation seem to be its acceptability from a religious point of view. Second: that $aggr$ for pooling π and ρ can be seen as rationally pooling the religious people's belief was argued for indirectly by showing that it shares a very relevant property of rational opinion pooling methods of social epistemology. For both kinds of pooling methods it seems to be necessary to make use of pragmatic considerations in applying them. That this does not hinder one to consider the opinion pooling methods of social epistemology as rational was argued for very well by List and Pettit in (List and Pettit 2011). Whether this also directly applies for opinion pooling methods of religious people is of course a topic of further research.

Regarding the Wittgensteinian tradition in philosophy of religion there is a very nice illustration of our model: The rationality constraints for the religious language-game might be characterised via the constraints for religious credences ρ; the rationality constraints for the secular language-game via the constraints for secular credences π. The rationality constraints for an overarching language-game might be considered to be the aggregation of both of them: $aggr(\rho, \pi)$. In parallel with this tradition is the fact that the constraints for ρ and π might be considered directly as rules of the language-games, whereas the constraints for $aggr$ differ completely and, by this, fall apart from ρ and π similar as the rules of an overarching language-game fall apart from that of its sub-games. So, in a way, what Phillips' called a 'not fantastic' relation between religion and the world (cf. Phillips 1993, p.70) turns out to be much weaker than a classical rule of a language-game.

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