*Filozofia Nauki*
*Rok XXII, 2014, Nr 4(88)*

Tomasz A. Puczyłowski

# A Remark on Luminosity

## 1. LUMINOSITY

When I am cold or hungry, is it possible for me (assuming that I am well, sane, and focused on my sensations) not to notice? If I believe that I shall finish writing an article today, is it possible for me not to know of this belief? If I know that I was reading a book this morning, is it possible for me not to know that I know this?

As usual with such issues, our answers depend on how we decide to understand the questions and how we define knowledge. If we disregard the problems related to the traditional concept of knowledge, such as those identified in Edmund Gettier's famous work, and assume that knowledge is a true, justified belief, then the questions can be reformulated along familiar lines. When I am cold or hungry, is it possible for me not to have a true and justified belief that I am experiencing these sensations? If I believe that I shall finish writing an article today, is it possible for me not to have a true and justified belief that I have this belief? It seems that on our common understanding of the states I have mentioned — being hungry, being cold, believing something — an answer in the negative is in order: I cannot be hungry and not know it (in the sense specified above), I cannot feel cold and at the same time not be in a position to believe that I feel cold. Naturally, it is possible that I do not notice the feeling of hunger if it is not sufficiently acute or if something distracts me, but a person who is hungry (or cold) is always *able* to obtain such knowledge (or is in a position to know that) — all it takes is to focus on oneself. From the point of view of folk psychology at least, such states seem to be always discernible.

However, some philosophers do not share this belief. Perhaps the best known adversary of this view is Timothy Williamson. In his *Knowledge and Its Limits* Williamson argues that it is possible not to have sufficient grounds to assert we are

cold (even if we do focus our attention on our bodily sensations, where "focused" means that we are constantly reflecting upon whether we are cold or not). In some circumstances the mental or physical state we are currently in may not become the subject of our knowledge.

Williamson's argument is not only meant to undermine the luminosity of feeling cold but also to advocate the claim that no mental states are luminous. Williamson (2000: 13) defines this property thus:

> The condition (or mental state of a given subject) is luminous if and only if "whenever it obtains (and one is in a position to wonder whether it does), one is in a position to know that it obtains".

If we assume that *C* represents a sentence that describes the state subject *x* is in, the above thesis may be expressed as follows:

> If *C*, then *x* knows (or is able to know, or is in a position to know) that *C*.

If joy were a luminous state, then, while rejoicing, John would know (or is in a position to know) that he was experiencing joy.

Convinced of the accuracy and validity of extrapolating his argument against luminosity of the feeling of cold to other mental states, Williamson claims that "for virtually no mental state S is the condition that one is in S luminous" (Williamson 2000: 14).

On the one hand, the argument seems very elegant in its simplicity, on the other — it raises suspicion, as it resembles the sorites paradox, i.e. a paradigmatic fallacy. Wai-hung Wong (2008: 1) argues that the "argument is a sorites argument in disguise because it relies on the implicit premise that warming up is gradual". If the affinity between Williamson's argument and the line of thought that underlies the sorites paradox could be justified, we would have reason for considering the argument to be incorrect.[1] Or, as Wong puts it: "If Williamson's anti-luminosity argument is nothing but a sorites argument, we can understand it as merely presenting us with a paradox and do not have to reject (C) or (L)" (Wong 2008: 8).

What are (C) and (L) and what are their roles in the argument? And more importantly, if Williamson's argument fails, is there a different way of establishing the anti-luminosity of a given state? In the next paragraphs we provide answers to the questions and put forward a new argument for anti-luminosity.

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[1] At least as incorrect as the argument that attempts to prove that a heap of a thousand grains of sand can never cease to be a heap of sand no matter how many grains one removes from it: for, if a collection of a thousand grains of sand is a heap, then after removing only one grain of sand from it, it will still be a heap of sand; if a collection of 999 grains of sand is a heap then, after removing only one grain of sand from it, it will not cease to be a heap of sand, and so on.

## 2. WILLIAMSON'S ARGUMENT

Let us now present the core of Williamson's argument against the luminosity of feeling cold. It contains the assumptions that:

(W) At time $t_0$ (e.g. at dawn) a given subject is cold, whereas at some later time $t_n$ (e.g. at noon) the same subject is not cold.

(W*) Between $t_0$ and $t_n$ the subject gradually feels warmer, and the time between $t_0$ and $t_n$ may be divided into a finite number of milliseconds.

Williamson's argument is based on two further premises:

(C) If at time $t_i$ a subject may know (i.e. has sufficient grounds to assume) that she is cold, then within the next millisecond she is also cold.

(L) If a subject is cold at $t_i$, then she is in a position to know at $t_i$ that she is cold, given that the issue becomes the focus of their attention.

Obviously, thesis (L) pertains to luminosity/accessibility of the state of being cold.

Let us additionally suppose that (R) the given subject is constantly, i.e. from $t_0$ to $t_n$, considering whether she is cold. Assumption (R) allows us to disregard the difference between lack of knowledge and the lack of a possibility to obtain knowledge.

Although each of the premises may seem credible in its own right, it is easy to see that jointly they lead to a contradiction. If our subject is cold at $t_0$ and the feeling is the focus of her attention, then — on the basis of (L) — she also knows at $t_0$ that she is cold at $t_0$. However, since the subject is aware at $t_0$ that she is cold at $t_0$, then on the basis of (C) it must be assumed that in the next moment, $t_1$, the subject is also cold. Since the subject is cold at $t_1$, then, again on the basis of (L), the subject knows that she is cold at $t_1$ as well. Repeating these steps a sufficient number of times will finally lead to the conclusion that the subject knows that she is cold in the last moment under consideration, namely $t_n$. This conflicts with the initial premises. Since we have arrived at a contradiction, it is clear that either (i) at least one of the premises must be rejected, or (ii) the argumentation was based on fallible principles. In this case the latter cannot be true: the reasoning was based exclusively on the principle of *modus ponens*. This means that one of the initial premises must be eliminated.

Williamson decides to reject (L): the remaining (W), (W*), and (C) seem justified or less uncertain that the luminosity thesis as applied to feeling cold. Indeed, (W) (as well as (W*)) is more plausible than (L): the fact that sometimes our state changes from feeling cold to feeling warm is known to everyone from experience. Similarly, when that happens, we appear to be able to focus our attention for some time and consider whether we are still cold or not. Although our experience tells us that we are not always able to discern whether we are cold or warm with all certainty and without hesitation, this indecision does not play a significant role in the discussed argumentation. Even if we question our ability to focus our attention for a

longer period of time on feeling cold or warm, the argumentation would only change with regard to the premise that, at any given moment starting from $t_0$, the subject is capable of knowing whether she is cold.

Thus, if we accept the assumptions and consider the line of argument to be free of any formal fallacy, we have to eliminate at least one of the initial premises: either (C) or (L). Thesis (L) seems to be supported by folk psychology. What, then, is the justification for (C)? Is it really the case that when we have grounds to believe (or simply know) that we are cold in one millisecond, then we must automatically be cold in the next millisecond? This is what Williamson assumes, but how does he justify this supposition?

> Consider a time $t_i$ between $t_0$ and $t_n$, and suppose that at $t_i$ one knows that one feels cold. Thus one is at least reasonably confident that one feels cold, for otherwise one would not know. Moreover, this confidence must be reliably based, for otherwise one would still not *know* that one feels cold. Now at $t_{i+1}$ one is almost equally confident that one feels cold, by the description of the case. So if one does not feel cold at $t_{i+1}$, then one's confidence at $t_i$ that one feels cold is not reliably based, for one's almost equal confidence on a similar basis a millisecond later that one felt cold is mistaken. (Williamson 2000: 97)

Many papers have been devoted to a critical analysis of this passage. An evaluation of these critical analyses goes beyond the scope of the present article. I think that the dubious point in Williamson's argumentation is hidden somewhere else.

## 3. WONG'S PROBLEM

Wong (2008: 5) notes that (C) is a consequence of two theses:

(G) If a subject is cold at *t*, then the same subject is also cold in the following millisecond.

(F) If a subject knows (at *t*) that *p*, then *p*.

If we assume (G) and (F) to be true, then if a given subject knows in millisecond *t* that she is cold, then the subject is cold in the millisecond following *t*. Williamson mentions neither (G) nor (F) but substantiates (C) in a different way altogether (by correlating knowledge with the feeling of certainty, associating certainty with reliable grounds, and by making reliability a necessary condition for knowledge), yet Wong considers Williamson's approach to justifying (C) inconclusive. Instead, Wong points out that (i) (G) and (F) substantiate (C), but (ii) Williamson probably does not accept (G), since:

> it is questionable [i.e. that the process of warming up is gradual] whether he does accept this piece of commonsense. Williamson is known for his epistemic account of vagueness according to which vagueness is a type of ignorance, that is, vague predicates in fact have sharp boundaries, and we mistakenly think there are borderline cases simply because we do not know where those boundaries lie. (Wong 2008: 10)

Wong's point (i) allows him to notice a similarity between the argument against luminosity and the line of thought that constitutes the basis for the sorites paradox.[2] This well-known sophism also involves a premise similar to (G):

> If *x* is a heap of sand of *n* grains, then *n* – 1 grains is a heap of sand.

or:

> If *x* is not a heap of sand of *n* grains, then *n* + 1 grains is not a heap of sand.

So if one has to reject (C) or (L), and the argument for (C) is the sorites argument in disguise, then it is not obvious that one should rather reject (L) (cf. Wong 2008: 6-7).

This may suggest that the paradox in Williamson's reasoning does not stem from the fact that one of his premises is false, but from a faulty linguistic presentation of the thesis. The predicate "is cold" is as vague as "is a heap of sand" or "is bald". If this semantic property is indeed the source of the paradox, then the nature of the problem is verbal rather than material. It can therefore be argued that it is not the mental state that is not luminous, but that the concepts and terms that are used to describe these states are imprecise and vague, and, as such, they lead to difficulties like the one described above. As we know, this defect of language may stem from multiple causes, none of which are necessarily related to non-luminosity of the mental states involved.

The causes may very well be connected, for instance, to the economy of everyday communication. It is widely accepted that the use of vague predicates may lead to a number of problems — are these obstacles factual, objective, or only apparent? The answer, of course, depends on our understanding of the term "apparent problem". We know that in some circumstances using vague terms results in errors such as the sorites paradox. Does the paradox arise because predicates such as "is a heap of sand" and "is bald" reflect a state independent of the imperfections of human cognition? Or is a term whose scope is not strictly defined by the semantic rules of a language in no need of semantic clarification, since it is to be used in everyday communication, which ought to be effective rather than precise? These questions are too significant and too interesting to be dismissed with a simple answer. However, if we assume that the answer to the latter question is in the affirmative, then — by the same token — we must consider the argumentation in the sorites paradox as a verbal rather than material problem.

But if Wong is right and Williamson's argumentation against luminosity of mental states is indeed analogous to the line of reasoning in the sorites paradox, then Williamson's attempt to prove the non-luminosity of knowledge and other mental states is as unsuccessful as any attempt to justify the claim that a bald man may never

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[2] See also (Cohen 2010), where it is considered to what extent Williamson's reasoning is akin to the sorites paradox.

become non-bald. Wong's observations lead to a problem which may be expressed by the following question:

> Is it possible to prove the non-luminosity of some mental states without appeal to a reasoning analogous to the one underlying the sorites paradox?

I believe that Wong's problem may be resolved.

## 4. THE VALIDITY OF WONG'S OBSERVATION

What is the importance of Wong's remarks? In what circumstances will we be dealing with argumentation analogous to the sorites paradox? I am not certain whether the line of thought leading to the paradox may be derived from every single vague term. I shall, however, show how the form of Williamson's argumentation can be used to demonstrate that not only mental properties, but also other non-mental states and qualities ought to be regarded as non-luminous. Let us picture an individual looking at a burning candle. At $t_0$ the candle is tall. At a later time $t_n$ the candle burns low and finally goes out. Let us divide the time between these two moments into a finite number of milliseconds. Our subject is watching closely, focusing on whether the candle is tall or not. In such circumstances we may assume the following to be true:

(C) If at $t$ the subject knows that the candle is tall at $t$, then in the next millisecond the candle is tall.

(L) If at $t$ the candle is tall, then it is possible for the given subject to know at $t$ that the candle is tall at $t$.

The argumentation described in the previous section may be used to prove that a conjunction of these premises leads to a contradiction. Should we then conclude that the state of the candle — being tall — is not luminous? No, it is the predicate "is a tall candle" that is non-luminous, or, strictly speaking, vague — not epistemically, but simply semantically.

It should be noted that if we use a different term, for example "tall*", which is non-vague and refers to the quality of being taller than the half of the initial length (length at $t_0$), the solution to our contradiction will be different from the one Williamson suggests. Our example supplemented with the new term "tall*" may be presented as follows: at $t_0$ a subject looks at a tall* burning candle (which is also tall) and considers whether it is tall* until the moment the candle burns out. At $t_n$ the subject notices that the candle is not tall* (or tall), and additionally:

(C*) If at $t$ the subject knows that the candle is tall* (at $t$), then in the next millisecond the candle is tall*.

(L*) If the candle is tall* at $t$, then it is possible for the subject to know at $t$ that the candle is tall* at $t$.

Using the same line of argument, it is easy to prove that these premises lead to a contradiction. This time, however, there is no doubt as to the reason for this *aporia*: the premise that ought to be discarded is (C*). There comes a moment $t_k$ at which the candle stops being tall*: in the process of burning it becomes shorter than the half of its length at $t_0$.[3] A millisecond earlier a focused individual who has accurate cognitive tools at her disposal observes (and knows) that the candle is still tall*. However, in the following millisecond the candle stops being tall*, and a subject who can accurately assess the tallness* of the candle, possibly with the aid of some measuring apparatus, will notice that it is tall* no more. If our subject notices that the candle is no longer tall* at $t_{k+1}$, did she fail to know that the candle was tall* at $t_k$? If the subject was certain of the candle's tallness* at $t_k$, does this mean that this certainty was not based on sufficient grounds, only because in the next millisecond such a belief would not be justified, as it would already be untrue? Clearly not. Our subject had all the cognitive tools needed to confirm that the candle was still tall* at $t_k$. This state of affairs would not change even if the subject knew or could predict (at $t_k$) that in the following millisecond $t_{k+1}$ the candle would no longer be tall*.

If we are correct, and the contradiction in Williamson's argument is related to the fact that the premise contains a vague term, then it might be assumed that each vague predicate will express a property which is non-luminous, while non-vague predicates will designate luminous states and properties. How can this thesis be verified? Is there any mental predicate that would be free of such semantic faults? The language of folk psychology will most likely not provide a term like that. It is, however, possible to apply "semantic treatment" to some terms of this theory and make them more precise. For example, the concept of believing may be associated with the notion of subjective probability. This may be done in the following manner: subject $x$ believes* that $p$, if and only if $x$ considers $p$ as more likely than not, i.e. she considers that the probability of $p$ exceeds 0.5.[4]

Note that for the predicate so defined the following premise is false:

(G*) If $x$ believes* at $t_i$ that $p$, then $x$ believes* at $t_{i+1}$ that $p$.

For if there is a time earlier than $t_{i+1}$ at which the subject considers that the probability of $p$ exceeds 0.5, and there is a moment later than $t_i$ in which the subject does not

[3] Note that it is not the case that (G*) if at $t$ a candle is tall*, then in the next millisecond the candle is tall*.

[4] Alternatively, "$x$ believes* that $p$" could be defined as "person $x$ is firmly convinced that $p$, i.e. $x$ considers the proposition $p$ (or, equivalently, the state of affairs expressed by that proposition) as absolutely certain; in other words, $p$ has maximal likelihood or probability for $x$" (cf. Lenzen 2004).

accept that proposition as probable to an equal degree, then at some point a change in the subject's beliefs* must have occurred.

Does such a definition of the term "believe*" make it luminous? Is it the case that:

(L*) A subject who believes* that $p$ would be able to know that she believes* that $p$?

Or is it rather the case that:

(C*) If a subject knows at $t_i$ that she believes* that $p$, then the subject also believes* that $p$ at $t_{i+1}$?

Is it the case that for any given moment $t$ in which I know that I believe* that $p$, in the following moment (one millisecond later) I still believe* that $p$? Could I believe* at $t$ that I believe* that $p$ and lack the former belief* a moment later? Could I know at $t$ that in one millisecond I would know that I believe* that $p$ and in the next I would no longer have such a belief*? I am unable to provide a straightforward answer to these questions, and therefore I cannot give a conclusive argument against (C*). It seems, however, that belief* (or believing*) does not pass the test for luminosity which I shall present in the following section.

## 5. A POSSIBLE SOLUTION TO WONG'S PROBLEM

Following Wong's lead and rejecting Williamson's argumentation does not mean that we assume all mental states to be luminous (including those that consist in being in a certain epistemic relation to an opinion or situation). I would now like to present an alternative method of determining whether a given state is luminous or not. The test shall be fragmentary in the sense that it will allow us to identify non-luminous states only within the set of propositional attitudes that fulfil certain conditions. These conditions may be specified as follows ("C$p$" shall represent a sentence stating that at $t$ a subject stands in a certain epistemic relation to a situation which is described by the sentence represented by the variable $p$; "~$p$" means "it is not the case that $p$"; "K$p$" stands for "the subject knows at $t$ that $p$", and "B$p$" for "the subject believes that $p$"):

(CON) If C~$p$, then ~C$p$.

(SL) If ~C$p$, then K~C$p$.[5]

(EQ) If K$p$, and $p$ is logically equivalent to $q$, then K$q$.

(DC) If K$p$, and the subject knows that $q$ is a logical consequence of $p$, then K$q$.

[5] We propose to dub this condition *strong luminosity*. In some discussions it seems that luminosity is understood not only as (L) specifies but as (L) and (SL) taken together.

(DC*) The subject knows that ($p$ or $q$) is a logical consequence of $p$.

Are there any propositional attitude expressions which jointly satisfy the following conditions: (a) (CON) one cannot be in such a state with regard to logically contradictory propositions and (b) (SL) one knows that one is not in such a state? We believe so. The operator "C" can be read as "is convinced that", "is consciously convinced that", "is convinced* that", "actively believes that", "is worried that", for attitudes expressed by these predicates fulfil both conditions.

There may be some doubt regarding (EQ). This thesis may be replaced, without causing any alterations to the argumentation presented below, by a more plausible premise:

> If the subject $x$ knows that not-$p$ or $q$, then the subject knows that if $p$, then $q$.

Due to (SL), "C" cannot be read as "knows that". Finally, it is not certain whether "C" may be read as e.g. "regrets that", and this issue requires further investigation.

It is now possible to prove that:

> If C is luminous and (CON)-(DC*), then: $(\forall p)\ (\mathrm{K}(\mathrm{C}p \Rightarrow p)$ or $\mathrm{K}(p \Rightarrow \mathrm{C}p))$.

In other words, if a given state fulfils the conditions described and is luminous, then the subject either knows that if she has this attitude towards $p$, then $p$ is the case, or knows that she has this attitude towards $p$ if $p$ is — if we assume a different interpretation of $p$ — a true proposition.

A detailed proof of this fact is as follows:

| | | |
|---|---|---|
| 1. | $(\forall p)\ (\sim\mathrm{C}p \vee \mathrm{C}p)$ | a thesis of logic |
| 2. | $(\forall p)\ (\mathrm{K}\sim\mathrm{C}p \Rightarrow \sim\mathrm{C}p)$ | a thesis of epistemic logic |
| 3. | $(\forall p)\ (\sim\mathrm{C}p \Rightarrow \mathrm{K}\sim\mathrm{C}p)$ | (SL) |
| 4. | $(\forall p)\ (\mathrm{KC}p \Rightarrow \mathrm{C}p)$ | a thesis of epistemic logic |
| 5. | $(\forall p)\ (\mathrm{C}p \Rightarrow \mathrm{KC}p)$ | (L) |
| 6. | $(\forall p)\ (\mathrm{KC}p \Leftrightarrow \mathrm{C}p)$ | a consequence of 4, 5 |
| 7. | $(\forall p)\ (\mathrm{K}\sim\mathrm{C}p \Leftrightarrow \sim\mathrm{C}p)$ | a consequence of 2, 3 |
| 8. | $(\forall p)\ (\mathrm{K}\sim\mathrm{C}p \vee \mathrm{KC}p)$ | 1, 6, 7 |
| 9. | $(\forall p)\ (\mathrm{K}(\sim\mathrm{C}p \vee p) \vee \mathrm{K}(\mathrm{C}p \vee \sim p))$ | 8, DC*, and DC |
| 10. | $(\forall p)\ (\mathrm{K}(\mathrm{C}p \Rightarrow p) \vee \mathrm{K}(p \Rightarrow \mathrm{C}p))$ | 9, (EQ) |

But if "C" were to be read as "believe" (or "believe*"), there would be an argument against thesis 10. This is to say that:

$(\exists p)\ (\sim K(Bp \wedge \sim p) \wedge \sim K(\sim Bp \wedge p))$ is true.

To see that, notice that it is a common human experience that some of our beliefs turn out to be wrong and that certain facts are not objects of our beliefs — arguably at every moment we believe something false, and there are always some truths we do not believe. This is to say that for every agent it is reasonable to say that:

$(\exists p)\ (Bp \wedge \sim p) \wedge (\exists p)\ (\sim Bp \wedge p)$.

Now for the sake of argument let $p'$ be such that: $Bp' \wedge \sim p'$, and let $p''$ be such that: $\sim Bp'' \wedge p''$.[6] Now notice that $p^* = (p' \wedge p'')$ is neither true (since it is the case that $\sim p'$), nor is it believed (since if it were, the agent would believe $p''$, because it is true that: $B(\alpha \wedge \beta) \Rightarrow (B\alpha \wedge B\beta)$) (Hintikka 1977: 40). Since $p^*$ is not true, it cannot be known regardless of whether the agent believes that $p^*$ or not. So $(\sim Bp^* \wedge p^*)$ is false, and in consequence $\sim K(\sim Bp^* \wedge p^*)$ is true. Yet since $p^*$ is not believed by the agent, she cannot know it either (i.e. $\sim K(Bp^*)$). Thus if $Bp^*$ is false, then $(Bp^* \wedge \sim p^*)$ is false, and in consequence $\sim K(Bp^* \wedge \sim p^*)$ is true. Finally, since both $\sim K(\sim Bp^* \wedge p^*)$ and $\sim K(Bp^* \wedge \sim p^*)$ are true, we conclude that $(\exists p)\ (\sim K(Bp \wedge \sim p) \wedge \sim K(\sim Bp \wedge p))$ is true.

It follows that if it can be argued that believing (or believing*) fulfils conditions (CON)-(DC*), it can also be argued that the state of belief (belief*) is not luminous.

The non-luminosity of "believe" may therefore be proven without dabbling in the philosophically "dubious" line of argument used by Williamson. It may be claimed that some states expressed by non-vague predicates (e.g. "believes* that") may also be non-luminous. Concluding his article, Wong formulated the following problem: can non-luminosity of mental states be substantiated without appealing to an argument similar to the sorites paradox? I believe that the method presented in this article provides such a substantiation.

## 6. A NEW PROBLEM

However, this argumentation cannot be used to prove the non-luminosity of knowledge. As we know, the fact that $p$ is a logical consequence of the fact that someone knows that $p$. In consequence, it is not the case that $(\exists p)\ (Kp \wedge \sim p) \wedge (\exists p)\ (\sim Kp \wedge p)$. However, it could be demonstrated (see 4. of the following argument and Puczyłowski 2011) that the luminosity of knowledge is what the skeptic needs in order to justify premise (P1) of the famous Argument from Ignorance (AI) (Hickey 2005):

(P1) For any given $x$: if $x$ knows that $p$ (where $p$ represents any given non-analytically true sentence), then $x$ knows that the skeptical hypothesis is false (i.e. $x$ knows that not all of his beliefs are false).

[6] This is to say that $p'$ is a false proposition believed by an agent, and $p''$ is a true proposition not believed by her.

(P2) For any given $x$: $x$ does not know whether the skeptical hypothesis is false.

Therefore:

(SCP) For any given $x$: $x$ does not know whether $p$.

In order to justify (P1), one can put forward the following inference (if $\alpha$ is a thesis of an epistemic logic which a proponent of (AI) is expected to adopt, we put $\vdash\alpha$):

| | | |
|---|---|---|
| 1. | $Kp^*$ | |
| 2. | $\vdash Kp^* \Rightarrow p^*$ | factivity of knowledge |
| 3. | $\vdash Kp^* \Rightarrow Bp^*$ | knowledge is a belief state |
| 4. | $\vdash Kp^* \Rightarrow (Bp^* \wedge p^*)$ | from 2 and 3 |
| 5. | $\vdash Kp^* \Rightarrow KKp^*$ | luminosity of knowledge |
| 6. | $KKp^*$ | from 1 and 5 |
| 7. | $\vdash K(Kp^* \Rightarrow (Bp^* \wedge p^*))$ | rule: if $\vdash \alpha$, then $\vdash K\alpha$ |
| 8. | $\vdash K(Kp^* \Rightarrow (Bp^* \wedge p^*)) \Rightarrow (KKp^* \Rightarrow K(Bp^* \wedge p^*))$ | deductive closure |
| 9. | $K(Bp^* \wedge p^*)$ | from 6, 7, 8 |
| 10. | $K\,(\exists p)\,(Bp \wedge p)$ | rule: if $K\alpha^*$, then $K\,(\exists\alpha)\,\alpha$ |

It may be worth noting that in order to substantiate (P1), one can also adopt the thesis that knowledge is a type of belief (see 3. of the above argument), which is to say: if $x$ knows that $p$, then $x$ believes that $p$. So one may be tempted to insist that if knowledge is a belief and beliefs are not luminous, then knowledge is not luminous either. However, judging knowledge to be non-luminous only on the basis of such an argument would be a fallacy of composition.

It is nevertheless possible that the following is true:

(H) For any given states $S_1$ and $S_2$: if it is the case that if $S_1$, then $S_2$, then if $S_1$ is luminous, then $S_2$ is luminous.

If this thesis could be substantiated, it would be possible to prove that knowledge ($S_1$) is not a luminous state on the grounds that belief ($S_2$) is not. This in turn would provide a powerful argument against global skepticism (i.e. for a theory where (SCP) is held). Luminosity of knowledge seems essential for substantiating the Argument from Ignorance. Does the relation specified in (H) hold? That is the question.

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