

# On the Principle of Sufficient Reason \*

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**Abstract.** The aim of this paper is to defend the ontological Principle of Sufficient Reason (PSR-O). I analyse various versions of this principle and various ways of justifying it. Then I attempt to challenge some counterexamples allegedly refuting a universal application of the PSR-O. There are standard and non-standard versions of the PSR-O. The PSR-*O<sub>stand</sub>* can only be valid if there are no chains of contingent reasons and outcomes with first modules, i.e. all chains are actually infinite. However, there are serious arguments against this possibility. The necessary condition of the PSR-*O<sub>non-stand</sub>* is the existence of a necessary substance: that substance would be a direct reason of certain contingent states of affairs obtaining in its domain, and those states of affairs would then be indirect reasons for all other contingent states of affairs and things. There are two advantages of the PSR-*O<sub>non-stand</sub>*: a nomological unity of the world and explanatory simplicity.

An outstanding Polish philosopher, J. Perzanowski, wrote:

At the basis of every great philosophy there lie certain basic presuppositions. They are like a lighthouse—they do not shine, but rather show the way. The most important of Leibniz's pre-philosophical presuppositions is radically rational: *Nothing happens without a reason*. It is expressed by the *Principle of Reason*: Nothing without a reason—*Nihil sine ratione* (1994, p. 258).

The aim of this paper is to defend the Principle of Reason or—speaking more precisely—the Principle of Sufficient Reason (the PSR). I will first analyse the various versions of this principle and the various ways of justifying it. I will then present and attempt to challenge some counterexamples allegedly refuting a universal application of the PSR.

## 1. Some versions of the PSR

### 1.1. FORMULATIONS

Various formulations of the PSR are easy to find, especially in the works of G.W. Leibniz. Here is one of them:

[...] there can be no fact real or existing, no statement true, unless there be a sufficient reason, why it should be so and not otherwise,

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although these reasons usually cannot be known by us (*Monadology* §32; cf. Stróżewski 2004, pp. 23, 32, 274, 282).

In the above formulation one can find two versions of the PSR: ontological (concerning facts or states of affairs) and epistemological or logical (concerning statements, judgments or propositions). Ch. Wolff maintained this distinction (cf. Bissinger 1970, p. 134) and in addition clearly stressed that each principle of being (*Seinsprinzip*) concerns either possibilities (possible states of affairs), or actualities (obtaining states of affairs, i.e. facts).

The ontological and epistemological versions of the PSR (PSR-O and PSR-E) should be differentiated from its methodological version (PSR-M)—the rule stating that “[...] we should always do our utmost to find sensible explanations of phenomena so long as any hope of doing so remains” (Rescher 1984, p. 9).

I propose the following formulations of these versions:

**PSR-O:** For each state of affairs there is a sufficient reason for its obtaining.

**PSR-E:** For each true proposition there is a direct or indirect justification, i.e. each true proposition can be derived from other true propositions or one can prove its truth on the basis of experience, language convention or intellectual evidence.

**PSR-M:** For each state of affairs there exists an intellectual duty to search for a sufficient reason for the obtaining of that state of affairs, and for each known true proposition—to search for its justification.

My further analysis will concern only the PSR-O which has the following structure:

$$\forall x \exists y (yRx).$$

The relation  $yRx$  is here a relation of being a (sufficient) reason between  $y$ —which is a reason for something, and  $x$ —which has that reason. Depending on the understanding of the nature of this relation ( $R$ ) and its terms ( $x, y$ ) we can distinguish various interpretations of the PSR-O.

## 1.2. THE RANGE OF THE VARIABLE $x$

As far as the range of  $x$  in the PSR-O is concerned, it is commonly accepted that objects belonging to that range are states of affairs.<sup>1</sup> However, there is a problem—we have different kinds of states of affairs, so we do not know if that range encompasses *all* states of affairs or only *certain types* of them. I presuppose that the PSR-O concerns

<sup>1</sup> Although J.F. Post (1987, p. 95) writes about an existing thing  $x$ , what he probably means by it is a state of affairs consisting of the existence of a thing  $x$ .

states of affairs which are: (i) of the first order (counterparts of sentences/propositions stating something about things and not about states of affairs), (ii) both existential and non-existential, (iii) positive, (iv) simple, (v) non-quantified, (vi) not expressible in metalanguage, (vii) actual (and not only possible), (viii) contingent (and not necessary). These conditions are met by, for example, states of affairs corresponding to sentences/propositions such as: “John exists” or “John is sick”, but they are not met by such sentences as “The fact that John is sick is sad for his environment”, or “John is sick and the weather is nice”, or “Something exists”. The PSR-O understood in this way I will call the standard PSR-O (PSR- $O_{stand}$ ). I claim that many counterexamples for the PSR-O do not refute the standard PSR-O but only its extensions to other (e.g. quantified) states of affairs (cf. footnote 14 below).

Let us indicate here already the possibility of formulating one particular non-standard PSR-O (cf. Nozick 1981, p. 142):

**PSR- $O_{non-stand1}$** : for each state of affairs there is a sufficient reason for its occurrence, or a reason for the lack of this reason.<sup>2</sup>

The principle presented above is non-standard because it admits the existence of reasons also (at least) for states of affairs (i) of higher order and (iii) negative.

### 1.3. THE CHARACTER OF THE RELATION $R$

What character does the relation  $R$ —the relation of being a (sufficient) reason—have in the PSR- $O_{stand}$ ? It is assumed (cf. Nozick 1981, p. 116) that this relation is irreflexive (no state of affairs stands in this relation to itself), asymmetrical (for any two states of affairs, if one is a reason for the other, then the second is not a reason for the first) and transitive (for any three states of affairs, if the first is a reason for the second, and the second for the third, the first is a reason for the third). Since  $R$  is asymmetrical and transitive, states of affairs are arranged in chains of reasons and outcomes (at least a partial ordering of respective sets of states of affairs). For a given state of affairs in those chains one can distinguish a (nontransitive) direct reason and (on the basis of the transitivity of  $R$  as being a direct or indirect reason) indirect reasons. It is accepted that for a certain state of affairs there exists exactly one direct reason for it; that reason can be simple or composed of many partial reasons.

Additionally, one imposes on  $R$  the following condition (W):

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<sup>2</sup> R. Nozick shows the possibility of further weakening this principle: a reason for the lack of a reason for the lack a reason, etc.

**W:** If  $y$  obtains and  $y$  is a sufficient reason for  $x$  ( $yRx$  obtains),  $x$  obtains as well.<sup>3</sup>

It is debated whether the implication included in (W) describes an ontic relation or an epistemic one. In other words, whether truth of the antecedent entails (necessarily or contingently) the truth of the consequent, or rather whether knowledge that the antecedent is true entails (absolutely or with a certain probability) knowledge that the consequent is true as well. The most common understanding of the PSR- $O_{stand}$  is that this relation has an ontical and contingent character. However, this principle so understood could not be applied to a world ruled by probability laws, and therefore it should be extended so as to allow an epistemic-probabilistic interpretation of the relation mentioned above (cf. 2.2 below).

What types of explanation are compatible with the PSR- $O_{stand}$ ? These will surely be scientific and personal explanations—giving efficient causes (of a certain state of affairs) working in accordance to the laws of nature or to somebody's intentions and powers (cf. R. Swinburne 1987, pp. 22–35). Other kinds of explanation (e.g. finalistic) would probably entail a change either of  $R$ 's formal properties mentioned above or of the condition (W).<sup>4</sup>

Here is an example of a certain, quite popular, non-standard PSR- $O$ , probably adopted by St. Thomas Aquinas:

Every existing thing has a reason for its existence either in the necessity of its own nature or in the causal efficacy of some other beings (Leftow 2003, p. 270).

B. Leftow reconstructs (after N. Kretzmann) this principle and then presents difficulties connected with it (cf. especially Leftow 2003, pp. 271–275, 282–284). Without going into details I shall indicate only that this principle is non-standard. Let us formulate it in the following way:

**PSR- $O_{non-stand2}$ :** for each state of affairs (and especially for a state of affairs consisting in the existence of a certain thing) there is a sufficient reason for its obtaining which is identical either with the efficient

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<sup>3</sup> In the precise sense states of affairs (predicative or relational, simple or composed) *obtain*, but things (substances) *exist*. However, even if only because of style, we will not always maintain this distinction. The verb “obtain” can occur in (W) in any grammatical tense, e.g.  $y$  obtained,  $yRx$  is obtaining and  $x$  will obtain. Let us note that the expression (W) mentioned above in the precise sense concerns only  $x$ 's direct sufficient reason. In the case of  $x$ 's indirect reason, apart from  $y$  and  $yRx$ , in the antecedent of (W) one also needs to take into account that indirect elements (reasons) obtain between  $y$  and  $x$ . In what follows we will consider (W) as a simplified formulation of the two situations.

<sup>4</sup> It is debatable whether one would consider here an explanation which consists in giving a (non-causal) sufficient reason, e.g. being a woman (of Anna) as a reason (sufficient condition) for being a human (of Anna) (cf. Jadacki 1998, pp. 140–141).

cause of that state of affairs, or with the nature (or a component of that nature) of a thing constituting that state of affairs.

The first part of the above alternative makes the PSR- $O_{stand}$  more precise; the other goes beyond it—not only because it allows the identity of reasons and natures (components of nature), but also because it *de facto* violates the formal properties of the relation  $R$  mentioned above. To see this let us substitute  $x$  in the condition (W) with the state of affairs: God exists or the existence of God<sup>5</sup> (later: ⟨God exists⟩) and  $y$  with the state of affairs: God's nature contains His existence (later: ⟨God's nature contains His existence⟩). As a result of this operation one will get the following statement (W'):

**W'**: If ⟨God's nature contains His existence⟩ obtains and if ⟨God's nature contains His existence⟩ is a sufficient reason for ⟨God exists⟩ then ⟨God exists⟩ obtains.

In this case:

either: when the existence of God is understood as a constitutive part or a necessary condition of God's nature—the relation  $R$  is symmetrical (not asymmetrical), because ⟨God's nature contains His existence⟩ is a sufficient reason for ⟨God exists⟩ (according to W') and ⟨God exists⟩ is a sufficient reason for ⟨God's nature contains His existence⟩ (for the second state cannot obtain without the first);

or: when the existence of God is understood as identical with His nature—the relation  $R$  is reflexive (not irreflexive), because the reason for the fact that God exists is identical with the reason for the fact that God's nature contains His existence;

or: when the existence of God is understood as the exemplification of the ideal nature of God—there obtains a split between God himself and his ideal nature (divinity) under which God is subsumed.

The first two possibilities change the formal properties of the relation  $R$ , the last one is incompatible with a typical theistic understanding of God; and moreover, the first two possibilities reappear when divinity and its existence are analysed. Similar possibilities occur when, for example, we substitute  $x$  with ⟨a triangle has three sides⟩, and  $y$ —with ⟨a triangle's nature contains three-sidedness⟩: either the second state of affairs is a reason for the first and *vice versa*; or three-sidedness is identical with the nature of a triangle and there occurs self-explanation; or one needs to accept the split between ideal triangularity and triangles concretising it (then the problem returns with an analysis of triangularity itself).

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<sup>5</sup> If this state of affairs is necessary, the principle under discussion is also non-standard in the sense that it concerns a necessary state of affairs.

Let us observe that the abandoning of the  $\text{PSR-O}_{non-stand2}$  does not disturb the coherence of theistic metaphysics. According to the  $\text{PSR-O}_{stand}$  necessary states of affairs (or more broadly: necessary beings or the necessary being) do not need reasons, for the principle of reason concerns only contingent states (beings). Maybe some difficulties would be eliminated if one treated the  $\text{PSR-O}_{non-stand2}$  together with  $\text{PSR-O}_{non-stand3}$  (see next point) and replaced in it the expression “the nature (or component of nature) of a thing constituting this state of affairs” with the expression “the thing itself bearing a given state of affairs, grasped under the aspect of its own nature”.

#### 1.4. THE RANGE OF THE VARIABLE $y$

In order to make the  $\text{PSR-O}_{stand}$  fully precise we still need to define the range of the variable  $y$ , i.e. to indicate objects which might constitute sufficient reasons for something. It seems that—analogically to objects that can stand for  $x$ —those objects are states of affairs, at best states of affairs which fulfil the same conditions as do states which have (standard) reasons (first order states, existential or non-existential, positive, simple, non-quantified, non-metalanguage, actual, contingent). In short, on both sides of  $R$  there stand objects of the same ontical status. Let us assume for the moment that this is the case, for this allows us to retain the homogeneity of the  $\text{PSR-O}_{stand}$ . According to the analysis in 1.3 one needs to allow for an exception connected to composed states of affairs, as a sufficient reason can be a composed reason—composed of partial reasons.

Accepting the assumptions presented above, however, we need to note that in the Aristotelian-Thomistic tradition, for example, by reasons-causes of certain states of affairs one does not understand states of affairs but things themselves (substances), or their components. In order to avoid excluding this possibility one needs to modify the analysed principle as follows:

**PSR-O<sub>non-stand3</sub>**: for each state of affairs (and especially for one consisting in the existence of a certain thing) there is a sufficient reason for its obtaining, identical with the efficient cause of that state of affairs; that reason itself is either a state of affairs or a thing (substance or its component).

Let us stress that the  $\text{PSR-O}_{non-stand3}$  does not describe the ontical status of those causes-things. So it allows not only contingent things (substances) but also necessary things (substances) to be among them. Maybe in order to preserve the homogeneity of the  $\text{PSR-O}_{non-stand3}$  one should allow that reasons—apart from states of affairs—could be possessed by things themselves and that the status of necessity could

also be given to causes-states of affairs. However, allowing necessary objects among objects/beings (things and states of affairs) which have reasons would lead to difficulties similar to those presented in 1.3.

### 1.5. SUMMARY

Above I have presented what the PSR- $O_{stand}$  consists in. This principle states that for each state of affairs there is a sufficient reason for its obtaining. According to this principle the relation  $R$  (being a sufficient reason) must be irreflexive, asymmetrical and transitive, and it has to fulfil the condition (W). The terms of this relation must be states of affairs possessing the features described above. Modifications of this principle lead to formulations of non-standard versions of the PSR-O. In particular, they can consist in allowing—among the terms of  $R$ —certain specific states of affairs, e.g. negative (cf. PSR- $O_{non-stand1}$ ), or things (their natures or components)—instead of states of affairs (cf. PSR- $O_{non-stand3}$ , alternatively PSR- $O_{non-stand2}$ ). The PSR- $O_{non-stand2}$  (understood literally, without any particular modification) additionally leads to formal changes in the properties of  $R$  and in consequence—in the condition (W).

## 2. Justifications for the PSR-O

### 2.1. DEDUCTIVE INDIRECT JUSTIFICATION

An attempt to provide a deductive justification for the PSR-O (probably in the standard version) was suggested by Wolff:

Either there would be nothing without a sufficient reason for why it exists rather than not, or there might be something without a sufficient reason for why it exists rather than not.

Let us assume that  $A$  is without a sufficient reason [ $A$  does not have a sufficient reason] why it exists rather than not.

Thus, one cannot accept anything on the basis of which one might recognize why  $A$  exists.  $A$  is then accepted as existing, for anything is accepted that exists. But this is an absurdity, for—as it was shown in a preceding paragraph—*posito nihilo, non ponitur aliquid* (one cannot accept anything if nothing has been assumed) (Bissinger 1970, p. 139).

The reasoning presented above can be summarized in the following way: either the PSR-O works or not; the second clause of this alternative leads to an absurdity (so one can negate it), so the first clause obtains. This reasoning is captured by the following formula (scheme):

$$\frac{p \vee \neg p}{\frac{\neg \neg p}{p}}$$

We are dealing here with a trivial formula which for its formal validity does not even need the first premise. One just needs to presuppose—as a presupposition for indirect proof—the negation of the PSR-O and to show that this negation leads to a contradiction or an absurdity. However, the whole problem lies in the question of on what basis one accepted that the sentence “*A* is without a sufficient reason” leads to an absurdity. In the works of Wolff, his commentators (cf. Bissinger 1970, pp. 139–144), and other philosophers one can find the following interpretations:

- (1) An absurdity occurs, because of *posito nihilo, non ponitur aliquid*. However, this principle presupposes the PSR-O or a version of it. Thus, using this principle in a proof for the PSR-O would lead to a vicious circle.
- (2) An absurdity occurs, because the sentence “*A* is without a sufficient reason” is equivalent to the sentence “Nothing is a sufficient reason for *A*”. In this case a contradiction would arise, for at the same time *A* would have a reason (in nothing) and would not have one (because nothing does not exist). However, this is only a delusive play on words based on an incorrect use of *nothing* as a name (cf. Banaszkiwicz 2001).
- (3) An absurdity occurs, because the sentence “*A* is without a sufficient reason” is equivalent to the sentence “that thanks to which *A* (or the existence of *A*) differs from  $\neg A$  (or from the non-existence of *A*) does not exist”. In this case *A* (or the existence of *A*) would not differ from  $\neg A$  (or the non-existence of *A*) (cf. Stępień 2001, p. 180). Yet from the fact that there is no reason which would “cause” *A* (or the existence of *A*) to differ from  $\neg A$  (or from the non-existence of *A*) it does not follow that this difference does not obtain. The obtaining (or not obtaining) of such a difference is a matter of fact, and the existence of a reason for that difference is then to be proved.
- (4) An absurdity occurs, because there is nothing “on the basis of which one can recognize why *A* is”; more precisely: if there is no reason for *A*, it is impossible to predict (justifiably) either the obtaining *A* or the obtaining  $\neg A$ .

The last point needs additional consideration. According to it, if (at least in some parts of reality) the PSR-O (PSR-O<sub>stand</sub>) is not in force, one (at least with regard to those parts of reality) could not develop science with its prognostic function. Moreover—as A.B. Stępień (2001, p. 181), in consonance with Wolff, suggests—with regard to those parts of reality the explanatory function of science would be excluded, for some questions of the type “why?” would have false pre-suppositions. One would also have problems with differentiating truth from falsity (illusion): to confirm the data of any perception we could only call upon other perceptions (for those data could not be derived from the content of previously accepted perceptions!); however, the object of those perceptions could (without any reason!) undergo rapid changes, so we could never find out if the first perception informed us truly or was only an illusion. One cannot say that this difficulty concerns only the so-called exotic or surprising data, because where the PSR-O is not in force “everything that is not internally contradictory can come into existence anywhere and at any time”, so “one should expect anything”, thus “one should treat all data—as data—with the same attention” (Stępień 2001, p. 181).

It should be noted that the last—and most reliable—way of *reductio ad absurdum* presupposes a realistic conception of science (and knowledge). However, if we subscribe to an idealistic, instrumentalistic or statistic conception, the objections presented above lose their power. This is because one can predict, explain, differentiate truth from falsity, etc.—even if the PSR-O is not in force—under the condition that the relevant science-creating activities are projections of the mind of a cognizing person, a tool for his actions, or a statistic registration of data and the connections between pieces of data. Let us notice that even if we—guided by common sense—subscribe to the realistic conception of science (knowledge), we could not exclude the possibility that special “places” exist in reality (analogically to the “initial singularity” or “black holes” in the Universe), which are not subject to the PSR-O—“places” which exceed our cognitive abilities and where predicting, explaining etc, is not possible, because in those places “anything can happen”.

However, an advocate of the PSR-O may add that it is hard to expect its refutation, for in order to refute the PSR-O one would need an example of a state of affairs which does not have a reason. Yet to show the existence of that state of affairs one would be required to prove that *in fact* it does not have a reason, not that one was not able to recognize that reason. In other words: in order to refute the PSR-O we would need to prove that some types of states of affairs

have no reason, but that proof would need to include a reason for not possessing a reason by those states of affairs. As Stępień claims,

If there is a reason for not having a reason, then this view [of the PSR-O opponent] is false. For if there is no reason of not having a reason, then one cannot differentiate the absence of a reason from not recognizing a reason. One will also never have a basis for recognizing if one is experiencing illusions or dealing with a case of ontological anarchy (2001, p. 181–182).

Therefore, one can conclude that either the refutation of the PSR-O is self-refuting, or it is ineffective (indistinguishable from the non-recognizing of a reason).

Analysing the argument presented above for the impossibility of refuting the PSR-O, one needs to stress that, according to the distinctions accepted in 1.2, this argument *de facto* says: the refutation of the PSR- $O_{stand}$  assumes truth of the PSR- $O_{non-stand1}$ . So the PSR- $O_{non-stand1}$  is non-refutable at least in the sense that it conditions the possibility of refuting the PSR- $O_{stand}$ .

## 2.2. INDUCTIVE JUSTIFICATION

A justification of the PSR- $O_{stand}$ —much simpler than the indirect deductive justification with which we dealt above—consists in deriving this principle from the conjunction of many propositions, each of which states (on the basis of experience) that there exists a sufficient reason for a given state of affairs. This reasoning is captured by the formula:

$$\frac{bRa \wedge cRb \wedge \dots \wedge kRj}{\forall x \exists y (yRx)}$$

This reasoning does not guarantee the truth of the conclusion unless one adds a claim that in the premises the states of affairs indicated by the right side of the relation exhaust the set of states of affairs considered. In any other case we are dealing with incomplete induction. This refers also to all other versions of the PSR-O introduced here: we do not know all states of affairs (of a certain kind), therefore we cannot know if each of them has its own reason. But if so far nobody has found a state of affairs without a reason and there is no serious reason to suppose that somebody will find it in the future, then one can conclude that the relevant versions of the PSR-O are highly probable.

Is it true that so far nobody has found cases falsifying the PSR- $O_{stand}$ ? The cases most frequently cited are taken from quantum physics. Here is one of them:

For example, consider a beta particle created at a particular instant during the spontaneous decay process within the nucleus of a uranium

atom. Quantum theory, under its usual interpretation, assures us that the existence of *this* beta particle at *this* instant is *not* necessitated by what is going on in the nucleus. It is necessary that some beta particle or other would be created over a period of time but not that any would be created at the instant of the beta particle in question (Post 1991, p. 65).<sup>6</sup>

The above quotation suggests that the process of uranium nucleus decay cannot be a sufficient reason for a given beta particle's coming into existence at a given moment, for the fact that the first state of affairs (the process) obtains does not entail the fact that the second also obtains.<sup>7</sup> It is a correct conclusion as long as we interpret condition (W) as possessing an ontological and necessary character. However, if we accept—what is allowed in 1.3—its epistemological-probabilistic interpretation, then we may say that the relation of being a sufficient reason obtains, because the sentence “the process of nucleus decay of uranium occurs” makes the sentence “at the moment  $m$  a certain beta particle  $b$  will come into existence” more probable. Moreover, the first of those sentences entails (maybe even by necessity and in the ontological sense) the sentence “during the period  $p$  (the half-life period) a number  $n$  of beta particles will come into existence” or “in the alternative of moments  $m$  exhausting the period  $p$  a beta particle  $b$  will come into existence”. So we can then say that on the level of microphysics condition (W) can be fulfilled (at least) in two ways: probabilistically and necessarily—depending on the accuracy of time and space determination of the state of affairs for which we seek a sufficient reason (when the accuracy is greater we only deal with probability, when smaller—even with necessity).<sup>8</sup>

<sup>6</sup> The example presented by Post greatly oversimplifies scientific results. However, this does not have a significant influence on the problem itself.

<sup>7</sup> Here we accept that the contemporary theory in physics constitutes adequate and unchangeable knowledge about the world, so that beside the mentioned process there is no other candidate for a sufficient reason of the beta particle's occurrence; moreover, this theory gives “a proof” of the lack (impossibility) of a reason for coming into existence of that particle. However, it is possible that the development of physics will show the possibility of such a reason, and will find a right candidate for that reason (which will not lead to the difficulties discussed above). So even if Post's example is correct (something that I will attempt to challenge later), it does not prove that the PSR-O is simply false, but that either it is false or that so far we have not found a sufficient reason for the occurrence of that specific beta particle at that specific moment (cf. Rowe 1975, p. 88–89).

<sup>8</sup> Those, who do not accept the probabilistic interpretation of condition (W) will agree to reverse it. In other words: instead of the claim “if  $y$  and  $yRx$  obtain,  $x$  obtains (will obtain) as well” we may assume that “if  $x$  obtains then  $y$  and  $yRx$  obtains (obtained) as well” (e.g. “if at a certain moment a certain beta particle came into existence so the process of uranium nucleus decay obtained and this process is the reason for the coming into existence of that particle” ) or “if  $y$  does not obtain or

Other examples (allegedly) falsifying the PSR-O do not have an empirical character. They are constituted by alternative states of affairs of which at least one obtains, and none of which (if obtained) could have a sufficient reason. I will analyse this case in detail in part 3.

### 2.3. ANALYTICAL AND INTUITIVE JUSTIFICATION

An analytical justification for the PSR- $O_{stand}$  consists in deriving it from the definitions of certain expressions, especially from the definitions of the terms “state of affairs” and “sufficient reason” (e.g. by showing on the basis of the respective definitions that the expression “state of affairs without a sufficient reason” is nonsense). Although some authors (e.g. G.E.M. Anscombe, cf. Davis 1982, pp. 44–46) claim that the concept of a state of affairs without a reason does not fit into our conceptual scheme, this thesis is *de facto* limited to conceptual schemes of certain languages, the users of which have adopted certain terminological conventions.<sup>9</sup>

In this case a better justification would be one that appeals to an intellectual intuition stating the objectual evidence for the PSR- $O_{stand}$  or its non-standard versions. If that justification is reliable then the PSR-O would state (hardly quantified) a state of affairs which could not fail to obtain, and the understanding of this principle itself would be sufficient to affirm its truth. Thus the PSR-O would have the same status as e.g. the statement “everything that is coloured is at the same time extended”.

In philosophical research this intuitive justification does not amount only to some kind of intellectual “insight” into the nature of the relationship between certain qualities or states of affairs. It is based on specific activities showing that it is ontically impossible for something to obtain without being in a certain relation (here: for a state of affairs to obtain without having a sufficient reason). As a criterion of that ontical impossibility one usually considers a conceptual impossibility, i.e. the impossibility of thinking about something without something else. And even if this criterion is unreliable, we do not have a better one.

What is the result of applying the above criterion to the PSR-O? With regard to this issue opinions are divided: some (like Hume)

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if  $yRx$  does not obtain then  $x$  does (will) not obtain”. But then we would be dealing with the principle of necessary reason (necessary condition) rather than with that of sufficient reason.

<sup>9</sup> Rowe (1975, p. 83)—following Kant—observes that the sentence “each effect has a cause” is analytically true, but not the sentence “each state of affairs has a reason (cause)”. For in the first sentence, in contrast to the second, the respective names are intercorrelated in meaning.

claim that one can think of something (a state of affairs) without a sufficient reason, others (like Leibniz) claim that this is impossible. So the former allows for the ontical possibility of cases without reasons; the latter stigmatises those examples as absurd, and hence impossible. In order to solve the dispute and at the same time to evaluate the intuitive justification of the PSR-O, one needs to find counterexamples for this principle—certain imagined states of affairs which could not have reasons (cf. part 3).

Here one should note that some philosophers present arguments—which one can describe as analytical or intuitive—against the PSR-O. According to them, the explanatory techniques which we in fact use are such that in any typical theory certain states of affairs are left without (sufficient) reasons. For example, in the so-called non-egalitarian theories (cf. Nozick 1981, p. 121) one can find states of affairs which in explanation are primary (“natural”, “privileged”): these states are not explained but serve as “means” to explain all other states. Moreover, as A. Flew (1984, p. 77) claims, the concept of explanation itself assumes something unexplained: if we understand what an explanation is, we should agree to something unexplained. Thus, it is claimed that the case of a “state of affairs with no reasons” is implied by the concept itself, or by the nature of explanation, or by the structure of the scientific theory itself.

Let us, however, note that the above argumentation concerns only an explanation/reason in respect of a certain theory. The fact that in a certain theory a given state of affairs  $x$  does not have a sufficient reason does not imply that this state of affairs does not have any reason *at all*. The reason for the state of affairs being considered can be found in another theory—already formulated or not yet formulated. Indeed, a theory which identifies the reason for  $x$  might not identify the reason for  $y$ . Yet science develops—researchers constantly ask the question “why?” and try to construct more and more general theories which explain more and more states of affairs. In order to prove—as advocates of the argumentation presented above want—the impossibility of the PSR-O working, one would need to present an adequate “theory of everything”, into which states of affairs without reasons would be included; or—if presenting such a theory is beyond our capacity—to justify that the structure of such a theory could not make do without such states of affairs. In other words: one needs to indicate such states of affairs (more precisely: alternative states of affairs, of which at least one obtains) which cannot have reasons. I will analyse this issue in part 3.

## 2.4. SUMMARY

From the above review of justifications given for the PSR-O (and especially for the PSR- $O_{stand}$ ) one can conclude that we do not have any full justification for this principle. However, the considerations presented above allow us to claim that this principle is useful in cognition and acting, and that it has often been confirmed in scientific research (cf. 2.2), and if it did not work (even locally) this would lead to serious cognitive distortions (cf. 2.1). It is even hard to think that this principle would not work (cf. 2.3). Moreover, attempts to refute it are either unsuccessful (2.3), or can be eliminated (e.g. by allowing its probabilistic version—2.2), or they presuppose some non-standard version of the PSR-O (PSR- $O_{non-stand1}$ —2.1).

## 3. Essential counterexamples for the PSR-O

### 3.1. DISTINCTIONS

The credibility of the PSR-O should increase if we were able to deal with all counterexamples formulated against it. The counterexamples against the (standard) PSR-O are divided into essential and minor. The latter are states of affairs found in experience or scientific theories which allegedly do not have any sufficient reason, e.g. a certain beta particle coming into existence at a certain moment (c.f. 2.2). Such counterexamples are not essential, for it is difficult to state unquestionably whether those states of affairs do not in fact have any reason, whether we are simply not able to find one. Moreover, the falsifiers indicated in those examples have a contingent character—they are not determined by the nature of reality or the nature of being a reason (so they are not determined by any ultimate and unchangeable laws of ontology), so those cases might not have existed if, for example, the laws of physics had been different.

Necessary falsifiers, in contrast to contingent ones, are determined by the nature of reality or the nature of being a reason, so they must obtain. Those necessary falsifiers are used in essential counterexamples, and so in counterexamples based not only on experience or scientific theories alone, but also on some ontological analysis of the structure of reality. Using this kind of counterexample involves a proof of the impossibility that a reason obtains (which is assumed in the PSR- $O_{non-stand1}$ ).

In practice the procedure for constructing essential counterexamples consists in enumerating alternative states of affairs, of which at least one obtains and none of which (if obtained) could have a sufficient

reason. Let us construct all possible scenarios of relations obtaining between states of affairs under the aspect of sufficient reason in order to find out if it is possible to hold the PSR-O in any of them.

### 3.2. POSSIBLE SCENARIOS

Let us assume that the world is the set of all states of affairs and only of states of affairs (specified in 1.2)—a countable set, i.e. a set which is finite or equal-numbered with the set of natural numbers. According to the PSR- $O_{stand}$  this set of states of affairs is ordered (linearly or partially) by the relation  $R$ . There is:

- (1) exactly one (branched or not) chain of states of affairs ordered by  $R$ , or
- (2) many (more than one) chains of states of affairs.

If (1) obtains, then:

- (a) the chain has (or all its branches or segments have) the first module (so-called the minimal or the smallest element) in common—the reason (direct or indirect) of the rest of the modules, or
- (b) it does not have (its branches do not have) such a common first module, but it has (have) a common row of reasons (and outcomes) extending into (countable) infinity.

If (2) is the case, then one and only one of the following possibilities occurs:

- (a) all chains have their own first modules;
- (b) none of the chains has its first module, and so all extend into infinity;
- (c) some of the chains have their first modules, and some do not.

Let us recall that the irreflexibility of the relation  $R$  precludes the existence of states of affairs which are reasons for themselves, and the asymmetry of this relation precludes a situation where for some two (different) states of affairs the first is a (direct or indirect) reason for the second, and the second is a reason for the first. The transitivity of  $R$  ensures “uniformity” and order—under the aspect of reason and outcomes—for each chain.

Taking the above results into account, let us note that if we assume the homogeneity of the PSR- $O_{stand}$  (cf. point 1.4) then only cases (1 b)

and (2 b) are allowed. For only in those cases does each state of affairs have its own reason:  $\forall x\exists y(yRx)$ . In all other cases there are states of affairs without reasons—these are the first modules of chains. In this situation, in order to refute the PSR- $O_{stand}$  it would be sufficient to exclude the existence of (infinite) chains without first-module reasons.

As we suggested in 1.4 one can weaken the homogeneity of the PSR- $O_{stand}$  by accepting that among the reasons of contingent states of affairs there can be necessary states of affairs or things (PSR- $O_{non-stand3}$ ). Cases (1 a), (2 a) and (2 c) would then also be allowed, as the first module of each chain—a contingent state of affairs which is a (direct or indirect) reason for the rest of the contingent states—would have a reason in some necessary being (which would be outside the range of the variable  $x$ , i.e. which needs no reason). Such a necessary being which would be a direct reason for the first module of a certain chain would at the same time be an indirect reason for the rest of the modules.<sup>10</sup> In other words, something would be a reason for all contingent states of affairs— $\exists y\forall x(yRx)$ , from which it follows that each contingent state of affairs would have its own reason:  $\forall x\exists y(yRx)$ .

If we agree to make the above modification, then in order to refute the PSR-O so interpreted it would not be enough to exclude the existence of (infinite) chains without the first modules-reasons. For one would need to exclude the existence of necessary beings or to prove that even their existence cannot be reconciled with in the PSR-O being generally in force. Below I will discuss some attempts to show that the existence of an infinite chain of reasons is precluded (3.3) and that the existence of any kind of a necessary being is inconsistent with the PSR-O (3.4).<sup>11</sup>

### 3.3. THE PROBLEM OF AN INFINITE CHAIN

According to the results of the above analysis, in order to preclude cases (1 b), (2 b) (which can be the only realization of the PSR- $O_{stand}$ )

<sup>10</sup> One could identify the first module of a chain with a necessary being. However, if we talk about chains in the world—chains of contingent states—we need to treat a necessary being (beings) as an external reason (reasons) for modules of those chains. Thus, one cannot also treat a necessary being as a direct reason for each module of a chain. For in this case the PSR-O would not have any empirical confirmation, and therefore should be treated as merely speculative. A remaining problem is the number of necessary beings. Although this will not have any importance for further considerations, let us presuppose (in accordance with the arguments accepted in the European philosophical tradition) that there can be many necessary states of affairs, but only one necessary thing (substance).

<sup>11</sup> I will not discuss here attempts to preclude (to prove the impossibility of) the existence of a necessary being (in the style of J.N. Findlay), because they are generally recognized as rather unsuccessful (c.f. van Inwagen 1993, pp. 93–98).

and (2 c) it is enough to prove that in the real world (infinite) chains without first module-reasons cannot exist. Below I shall present some arguments for the non-existence (or for the impossibility of the real existence) of such chains (cf. e.g. Plantinga 1998). I claim that these arguments are serious, although debatable. In the next section after each argument I mention certain difficulties which should be taken into account in any final consideration of the validity of those arguments.

Here are the arguments:

(1) If the Universe is temporary and/or spatially finite, i.e. if it has a finite number of indivisible moments and/or places (places-in-moments), then the chains of reasons and outcomes (respecting the PSR-O) occurring in it cannot be infinite (because in a finite number of moments and/or places or places-in-moments there cannot be an infinite number of states of affairs). In the light of some contemporary cosmological theories (especially the Standard Model of the Universe that supposes a first event), it is reasonable to adopt the antecedent of the above implication in the aspect of time—in this case it is reasonable to accept also the consequent.

Contemporary science does not, however, use the intuitive concept of time and space (space-time continuum)—so the acceptance of their (its) non-continuity (non-density, discreteness, granularity) requires a separate justification. Such a separate justification is required also for the silent assumption that in one place-in-time there cannot obtain an infinite number of states of affairs (it is so when “elementary” objects of the Universe cannot have an infinite number of properties or cannot be in an infinite number of relations with other objects).

(2) If a chain of reasons and outcomes does not have a first module then that chain is actually infinite. Actual infinity—in contrast to potential infinity—consists not in the possibility of adding (continuously) new elements, but in the simultaneous occurrence of an infinite number of elements. Let us assume that the chain of reasons and outcomes is actually infinite and the number of its modules is equal to the power of the set of natural numbers. In this case, any actual appearing of new outcomes in that chain (as consequences of certain reasons) does not “increase” the number of modules—this number will always be equal to the power of the set of natural numbers (even if the number of new outcomes will also be equal to the power of the set of natural numbers). So a paradox or a singularity occurs: one adds new elements but their total number does not “increase”.

One needs to remember that within set theory this “paradox” is a law. Thus, one needs to prove that set theory (at least in the part that is contrary to common sense) is adequate for ideal or intentional beings, but not for real beings. Apart from that—as W.L. Rowe notes (1999,

p. 332)—although after new outcomes have been added the number of modules in a chain does not “increase”, the set of the elements belonging to the old chain (the chain without new outcomes) becomes a subset of the set of the elements of the new chain (the chain with new elements). Let us add that the chain described can be (at least under the aspect of the search for a reason—although not the existence of a reason) interpreted as potentially, and not actually, infinite: for each of its modules one can find its direct reason.

(3) If a chain of reasons and outcomes is infinite (does not have the first module), then all reasons occurring in it are contingent beings (that chain can only be composed of contingent beings), and as contingent they are conditioned. This means that any module of that chain can work as a reason only when it itself has a reason. Thus, for any state of affairs—the module of an infinite chain—it is true that it obtains and fulfils its role as a reason only when it has a reason of its obtaining and being a reason (for something else). Each separately considered module of such a chain fulfils the condition of being a (sufficient) reason, but only because it itself has a reason. It is hard to imagine how it is possible that all reasons have such a character—the character of being only conditioned reasons. If it were so, then in all cases talking about a sufficient reason would always be only conditional (under the condition of having a reason);<sup>12</sup> the whole infinite chain of conditioned reasons (or the infinite part of such a chain) does not at all constitute an unconditioned reason.

However, the PSR-O alone does not preclude the existence of only unconditioned reasons; nor does it state that there is an unconditioned reason. Of course, one can ask why there is any (conditioned) reason at all (why something is or can be a reason at all)—then the answer is that the reason for such a state of affairs can only be an (unconditioned) necessary being. Yet, this question makes sense only when we extend the standard PSR-O to include (at least) quantified states of affairs. For the existence of any (unconditioned) reason is a quantified state, not standard (cf. 1.2). So in order to refute the claim that there exist only (an infinite chain of ) conditioned reasons, the PSR-O<sub>stand</sub> alone is not sufficient; and the principle itself allows for the existence of (infinite) chains of (contingent, unconditioned) reasons without reason(s).

(4) If the result of an act of giving a reason constitutes an explanation, and an explanation is correlated with justification, then the existence of an infinite chain of reasons would imply the existence of an infinite chain of explanations and justifications. However, according

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<sup>12</sup> As St. Thomas Aquinas says in his “Five ways”: if there is no first module, there is neither a second nor a third one etc., or—as his commentators say: how can a train composed of an infinite number of wagons but without a locomotive move?

to Post (1987, pp. 84–92), the existence of an infinite “parade” of justifications, i.e. such in which at least one justifying premise would need justifying premises which go into infinity, would lead to a situation in which one can formulate a schema of justification for any (logically unnecessary) sentence (proposition): for  $p$  as well as for  $\neg p$ .<sup>13</sup> In this case any (contingent) state of affairs would have its own reason:  $p$  as well as  $\neg p$ .

It is in fact the case that there is a correlation between the justification of a certain sentence (proposition)  $p$  and a reason of a respective (contingent) state of affairs, yet only under the condition of reducing justifications of (logically unnecessary) sentences to indirect justifications (certain sequences of sentences). However, the PSR-E (cf. 1.1) allows for the justification of logically unnecessary sentences (propositions) about extra-linguistic facts with (only) reference to data of experience. The presupposition of Post’s theorem is that justification based on experience does not constitute sufficient justification (if, e.g., experience is unreliable, but inference formulas are not). This presupposition could maybe make a foundation for (Leibniz’s) ideal science, but it is not accepted in research practice. Let us also add that Post’s argument allows for reasons for negative states of affairs, which is incompatible with the PSR- $O_{stand}$ . It is possible that some limitations imposed on an infinite parade of justifications (e.g. excluding negative sentences as justifications) would allow us to avoid the contradiction occurring in this parade.

(5) Accepting Post’s strategy as presented, it is easy to show a more obvious feature of the infinite parade of justifications: if one accepts such a parade, none of the operations of full justification (as well as of explanation) done by a finite cognising subject can be completed—therefore, justification is ineffective. So if we are not able to give a full (up to the ultimate premise) justification of any (logically unnecessary) claim, we would have to be satisfied with a partial justification (with certain unjustified premises)—so we would not have knowledge in the proper sense of that term.

Apart from the difficulty presented in (4), there is another objection to this argument. If we wanted the argument to be complete we would

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<sup>13</sup> It seems that—in order to avoid self-justification and any vicious circle in justification (on the basis of the irreflexibility and asymmetry of  $R$ )—one needs to presuppose that in this parade there is an infinite number of various (logically unnecessary) sentences/propositions (which is highly improbable, if language has only finite lexical resources of vocabulary and “closed” principles of generating sentences, unless there are propositions inexpressible in our language). In this case any of those sentences will be justified by previous sentences. The limitation of this parade to sentences of a certain type—as suggested below—can preclude contradiction, but not a situation where any sentence of a certain type will be justified in such a parade.

need to prove that we really possess knowledge—that our operations of justification are in fact, not only allegedly, effective.

### 3.4. A NECESSARY BEING AND THE PSR-O

If *de facto* one precludes the existence of infinite chains of reasons (chains without first reasons), then only cases (1 a) and (2 a) remain to be examined, the cases where a direct reason of the first module of a chain or first modules of chains (and an indirect reason for the rest of modules) would be a necessary being—the same for all chains or distinct for each one (the first possibility seems more credible also because of the simplicity of the explanation: there is no need to multiply reasons).

In the history of metaphysics many philosophers thought that the PSR-O (esp. the PSR-O<sub>non-stand3</sub>) is obvious and its necessary condition was the existence of a necessary being (a negation of its existence would lead to the negation of the principle). The above considerations challenged the first of these theses (the principle is not obvious, although—if we do not find an important counterexample—it is credible), but confirmed the second (without the existence of a necessary being this principle is not true, cf. Post 1987, p. 96f). However, there are other philosophers who question the second thesis as well, or more broadly, they question the relation between the existence of a necessary being and the (general) validity of the PSR-O. According to them, even a necessary being does not “rescue” the principle: if it existed then the PSR-O could not be in force. Here is a simple counterargument (cf. van Inwagen 1993, pp. 210–211, footnote 4; Rowe 1999, p. 335):

Let us assume (and simplify) that contingent states of affairs, such as the coming into existence of particular people, e.g. John Local, have their own reasons in some other (contingent) states of affairs, such as the procreational acts of other people (e.g. of John’s parents). Let us also assume that those acts have their own indirect reasons (at least partial) in previous procreational acts of other people (e.g. of John’s grandparents), etc. The chain (chains) of contingent reasons of John’s coming into existence cannot go *ad infinitum* (cf. 3.3). If we stop on any contingent state, such as the coming into existence of Adam (or Eve) or of the first ape, or of the first atom, or the occurrence of the Big Bang etc., and we find no reason for it then we violate the PSR-O. Thus, in this case in order to explain the first module (and indirectly the rest of the modules) of the considered chain (whatever it is) we have to appeal to a necessary state of affairs, e.g. the Divine Act of Creation (DAC). However, if the DAC is a necessary state, then, as the reason for the first contingent state, it implies that contingent state

necessarily. The first contingent state caused by a necessary state must occur—so it is a necessary, not contingent, state. So because of the transitivity of the relation  $R$ , the property of necessity is inherited by the rest of states belonging to that chain: each of those states turns out to be necessary, and not contingent—which is inconsistent with the facts. It is true that one can treat the DAC as a contingent state—but if so, then it requires reasons: the series of its reasons can go to infinity (we already refuted this possibility), end with a contingent state (what violates the PSR-O), or end with a necessary state—e.g. the Divine Act of Volition (DAV). However, if the DAV obtains as a necessary state, so also do all other states, for which it is a direct or indirect reason. Neither the DAC nor the DAV will rescue us from general determinism and necessitarianism—unless we abandon the PSR-O.

According to some philosophers (Gerisson, Losonsky 1998, pp. 188–189) the above counterargument leads not only to the refutation of the PSR-O, but also to the refutation of one of the main arguments for theism: if the existence of God (a necessary being—the necessary substance) is not a necessary condition of the PSR-O’s being in force, then even accepting God’s existence (a necessary being) does not “rescue” this principle (speaking more precisely, in order to refute theism one would need to consider the existence of God as a sufficient and not only a necessary condition of the PSR-O’s being in force). In what follows we will concentrate on the problem of whether the counterexample provided really refutes the PSR-O (if not, then the objection against theistic argumentation loses its power).<sup>14</sup>

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<sup>14</sup> There are also other (“secular”) counterexamples, cf. Rowe (1975, pp. 99-111), P. van Inwagen (1993, pp. 104-107) and J. Wojtysiak (2002, pp. 265-267). The starting point of the above reasoning can be such states of affairs as: the existence of any contingent state of affairs or of any positive contingent state of affairs, the conjunction of all (actual) contingent states of affairs (i.e. states of affairs which constitute our world). Let us observe that those three states of affairs do not fall under the PSR- $O_{stand}$  and PSR- $O_{non-stand}$ : the first two are quantified states, the third—composed. For certain reasons Swinburne (1987, pp. 72-77), a declared theist, would accept those counterarguments, differentiating between the ultimate and the absolute explanation: the former is a complete explanation which appeals to factors whose existence and working do not have any further explanation—they are “ultimate brute facts”; the latter is a complete explanation which appeals to factors whose existence and working is self-explanatory or logically necessary. Swinburne does not accept the absolute explanation, because an explanation cannot be reflexive and because “one cannot deduce something logically contingent from something logically necessary” (1987, p. 76). In any reliable explanation we always have to end with something contingent (at least logically), for otherwise we commit the “completeness fallacy”. The ultimate personal theistic explanation (which appeals to the unexplained decision of one being—God—who is necessary, but not logically necessary) is simpler than the ultimate scientific explanation (which appeals to many

So what is the structure of the reasoning of those who advocate the considered counterargument? According to them, if a certain state of affairs is necessary (so it must obtain) and, by necessity, it is a reason for another state (so it must entail that other state), then that state will be necessary as well. In other words, they present their counterargument by preceding each element of the condition (W) with a functor (operator) of necessity. As a result we have ( $W_n$ ):

$W_n$ : If  $y$  necessarily obtains and  $yRx$  necessarily obtains, then  $x$  necessarily obtains.

So accepting  $W_n$  and knowing that its antecedent is fulfilled (because, e.g. the DAC necessarily obtains and by necessity it is a reason of Adam's coming into existence), one can accept the consequent (here: Adam's coming into existence occurred necessarily). The above reasoning has its analogy in a following formula of modal logic:

$$Np \wedge N(p \rightarrow q) \rightarrow Nq.$$

This formula is a theorem of standard modal propositional calculi (T, S4, S5) on the basis of the axiom:  $N(p \rightarrow q) \rightarrow (Np \rightarrow Nq)$  and the rule of detachment for material implication. So the reasoning is correct. However, the problem is whether in the counterargument the sufficient reason is an ordinary (contingent) reason or a necessary reason—e.g. whether it is simply the case (even if it did not have to be) that the DAC is the reason for Adam's coming into existence or it is necessarily so (and could not be otherwise) that the DAC is the reason for Adam's coming into existence. Certainly the DAC of Adam would not have to be the direct reason for Adam's coming into existence, because his coming into existence would not have to be the first state of a chain. Moreover, if the PSR-O were not in force, then Adam's coming into existence might have no reason at all. And if—instead of God—there was another necessary substance, then the (direct or indirect) reason for Adam's coming into existence would be another necessary state different from the DAC, for example, the necessary partition of pre-matter or the necessary emanation of the pre-unity. And it is acceptable to presuppose that an absolutely independent and almighty God could make a being other than a (necessary) DAC the reason for Adam's (or anything else's) coming into existence. All of this allows us to doubt if the supporters of the counterexample properly described the situation assumed by it. It is probable that we are dealing with an ordinary

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“ultimate objects” and laws—which are hard to reduce to an unexplained “first” event in the universe and its most general law). Moreover, physical phenomena can be explained in a way appealing to a person, but personal phenomena cannot be explained scientifically (by means of the natural sciences). Therefore, one should opt for theism.

(contingent) reason, so the reasoning should not be based on the law of modal logic quoted here.

Taking into account the above remarks, one would need to remove the functor (operator) of necessity preceding “ $yRx$ ” in  $W_n$ . In result we get ( $W'_n$ ):

$W'_n$ : If  $y$  necessarily obtains and  $yRx$  obtains, then  $x$  necessarily obtains (will obtain, has obtained).

In this case the presented reasoning would find an analogy in the following formula of modal logic:

$$Np \wedge (p \rightarrow q) \rightarrow Nq.$$

One cannot derive this formula from the axioms of systems T, S4 or S5, so it is not a theorem of those systems. So, using this formula in an ontological reasoning is at least risky. In this situation, the counterargument does not refute the PSR-O in the version described in 3.2.

There is another way of refuting the counterexample considered. In 1.4 and 3.2 we observed that—according to the PSR- $O_{non-stand3}$ —reasons can be not only (contingent or necessary) states of affairs, but also (contingent or necessary) things (substances). So one can assume that a necessary substance would be (in a free way) the reason for certain contingent states of affairs obtaining within its domain, which in turn would be the reasons for all other contingent states of affairs and things. In this understanding, the reason for the existence of various contingent parts of the world would be the DAC, and the reason for the DAC would be the DAV, and the reason for the DAV—would be God himself as a necessary substance with free will. God would here be only a necessary and not a sufficient reason for the DAV (without Him the DAV could not obtain at all, although the existence of God would not entail that the DAV obtains) or a probabilistic reason (the existence of God—who is good by nature—makes the obtaining of the DAV highly probable). In this case, the necessity of God’s existence would not be transmitted to other things or states of affairs.

### 3.5. CONCLUSIONS

The analysis of all possible chains of reasons and outcomes leads to the conclusion that the PSR- $O_{stand}$  can be valid only if there are no chains of reasons and outcomes with first modules, i.e. all chains are actually infinite. However, there are serious (though debatable) arguments against the possibility of such an infinity. In short, if the world were composed of an infinite number of reasons and outcomes,

then the ratio between objects cognised by us and all objects in the Universe would not be small, but it would not be calculable at all.

A necessary condition of the PSR- $O_{non-stand3}$ 's universal application is the existence of a necessary substance (thing): that substance would be the (free) reason for certain contingent states of affairs obtaining in its domain, and those states of affairs would then be reasons for all other contingent state of affairs and things. (The principle does not require a necessary substance to have its own reason). Limiting the chain of reasons to contingent states of affairs beginning with a necessary state (if this state is a reason by necessity) could lead to the paradox of universal necessitarianism. Although directly formulated paradoxes (counterexamples) against the PSR-O presuppose the formula of modal logic which is not its thesis.

Let us also add that the ontological "cost" of holding the PSR-O in the version PSR- $O_{non-stand3}$  is the postulate of the existence of the necessary substance, i.e. God. This violates the qualitative simplicity of the Universe in which, apart from contingent beings, one needs to accept a new kind of being; moreover, that being—as supra-natural—would not be cognitively accessible. However, there are serious advantages of the view which accepts that the PSR-O (in the version PSR- $O_{non-stand3}$ ) is generally valid: the nomological unity of the world and explanatory simplicity. The unity would consist in the fact that all contingent beings without exception would be governed by one principle—the principle of reason. Explanatory simplicity would in turn consist in the possibility of (indirect) explanation of all contingent beings by means of one explanans—the necessary substance.

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