Forms of The PSR

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In this set of notes I discuss the origins of the PSR in Greek Antiquity, its development by Aquinas, and applications of it by Descartes. A central aim is to show different senses of the principle as well as its roots in explanation and theory generation.

Contents

1 The PSR Schema

The moniker "principle of sufficient reason" comes from Leibniz. For example, as he puts it in the late work, the *Monadology*,

> 1. Our reasonings are based on two great principles, that of contradiction, in virtue of which we judge that which involves a contradiction to be false, and that which is opposed or contradictory to the false to be true.
> 2. And that of sufficient reason, by virtue of which we consider that we can find no true or existent fact, no true assertion, without there being a sufficient reason why it is thus and not otherwise, although most of the time these reasons cannot be known to us. (GVI:612; (Leibniz 1969, 646))

The term "reason" in English is from the Latin "*ratio*", and is usually expressed in German as "*Grund*" or "ground". The original Greek equivalents are "*aitia*", which is usually reserved for notions of causation or explanation, and "*logos*". The diversity here reflects the diversity present in forms of the PSR, as there are many different senses or applications of the notion of "ground" (used in the German and prior sense and not our contemporary Anglophone sense). There are epistemic grounds, ontological grounds, and explanatory grounds.

From this we can conclude that there is no single "principle of sufficient reason" that may be found in the otherwise similar work of thinkers across time. Instead we see a variety of different principles (where "principle" here means, at least, something like "true universal statement/proposition"), all of which fit the following schema:

The Principle of Sufficient Reason/Ground Schema: $\forall(x)\exists(y)(yGx)$

There are many issues left open by the schema. The three most important concern scope, the nature of the relata, and the nature of the relation. Depending on how one specifies the scope, relata, and nature of the relation, different forms of the principle will be generated.

1.1 Versions of the PSR

Ontic PSR: For any being there is a sufficient ground for its existence

Alethic PSR: For any truth there is a sufficient ground (truthmaker) of that truth

Epistemological PSR: For anything known, there is a sufficient ground (justification?) for that knowledge

Explanatory PSR For any being or state of affairs, there is an explanation as to why the being exists or state of affairs obtains

Fact/State of Affairs PSR For any fact/soa there is a ground of that fact/soa's existence/obtaining

There are also more determinate versions or implications of PSR.

***Ex Nihilo* Principle:** Nothing can come from nothing

Causal Reality Principle: There must be at least as much reality in the cause as in its effect

The ex nihilo principle is really just a way of stating the $\text{PSR}_{\text{ontic}}$. The same goes for the casual reality principle (though we shouldn't confuse the concept of `<reality>` with that of `<existence>`).

While the various principles articulated above specify the relevant relata and scope of the principle, they leave open how we should understand the relevant relation. Views of the

relation can be quite controversial. For example, according to the PSR_{ontic} there is a sufficient ground for everything that exists. But this raises a question about necessarily existing beings, such as God. Is there a sufficient ground for God's existence? If there is it must be God himself. But that would mean that some existential grounds are reflexive and symmetric. One might therefore reject the position that God grounds his own existence, because such a relation must irreflexive and asymmetric.

Given the difficulty of resolving such disputes, we need to ask on what basis one might endorse one or more versions of these principles, and especially how one might decide between different conceptions of the grounding relation at issue. Thinking about answers to these questions will be one of the aims of this course.

2 Greek Antiquity

The phrase "principle of sufficient reason" never appears in Greek antiquity. But a variety of different figures discuss or endorse versions of it, and its influence in the rest of Europe is indicated by its prominence in the work of figures in the Aristotelian tradition, such as Aquinas.

The basic principle, which all seem to endorse, is that everything that exists or ceases to exist has an explanation or "cause" (*aitia*) in the broadest sense of that term.

We can see precisely this sort of reasoning at work in Parmenides' fragment:

> for what coming-to-be of [being] will you seek? In what way, whence, did [it] grow? Neither from what-is-not shall I allow You to say or think; for it is not to be said or thought That [if] is not. And what need could have impelled it to grow Later or sooner, if it began from nothing? Thus [it] must either be completely or not at all.

Paremenides here argues that what is—being or what exists—cannot come from nothing. One of the arguments is that if it did there would have been no explanation of why it came to be at a specific time, as opposed to earlier or later. Parmenides thus seems to reject the position that coming to be at some time could just be a brute fact without further ground or explanation.

We can also plainly see an emphasis on explanation and intelligibility in Plato's various statements from his later dialogues.

> **Socrates**: Well, Cebes, [Socrates] said, when I was young I became incredibly eager for the sort of wisdom that they call research into nature. That used to strike me as quite sublime: to know the causes of each thing, why each one comes to be, why it perishes, and why it is. (*Phaedo* 96a-b)
> **Socrates**. Now we said earlier that besides these three there was a fourth class to be examined, and you must help me. So tell me, do you think that in all cases of a thing coming to be something there must be something responsible for its becoming that thing? **Protarchus**: I do. How else could it become anything? Soc. What produces and what is responsible for something, I take it, differ in name only? We are justified in identifying what produces something and what is responsible for it? (*Philebus* 26e)
> **Timaeus**: Now, anything created is necessarily created by some cause, because nothing can possibly come to be without there being something that is responsible for its coming to be. (*Timaeus* 28a)

Plato thus appears to endorse the claim that there is an explanation, or cause, for the coming-to-be, existence, and perishing of any thing. These explanations are all related to (non)existence, and Plato seems to endorse the claim both for properties of a thing (i.e. a things coming-to-be a particular way) and for the things themselves (coming-to-be per se).

Why would Plato hold this view? The accounts in all three dialogues suggest a commitment to the in-principle intelligibility of all things – the "sort of wisdom they call research into nature" or *science* (*episteme*; *scientia*). Of course, that everything have a cause or explanation does not make everything even in principle intelligible, since every similar thing's having *a* cause is very different from having *similar* causes across cases. So the appeal to intelligibility is quite weak, basically saying only that there are linkages between existing things. But why even adopt this as a *necessary* condition on intelligibility?

Perhaps Plato's position relies on another principle – "from nothing, nothing comes" – which is often expressed in scholastic latin as "*ex nihilo nihi fit*". According to this principle, for any coming to be or existence there must be some existence from whence it comes. The *ex nihilo* principle does not, however, secure the position that ceasing to be must also have a cause or explanation. So perhaps it is better to think of the *ex nihilo* principle as a *consequence* of Plato's version of the PSR. The explanation of why something cannot come from nothing is that it would violate the PSR; it would be an instance of a coming-to-be that has no *logos* or *aitia*, i.e. no ground, cause, or explanation.

Aristotle largely codifies this position in his *Posterior Analytics*, *Metaphysics*, and *Physics*. In these places he argues that a genuine science is one that requires "grasping the why" of

things (e.g. *Physics* 194b16-18). As *Physics* II.3 makes clear, grasping the why of things is equivalent to understanding the "primary causes" of things.

In the *Posterior Analytics* Aristotle contends that understanding (*episteme*) depends on knowledge of causes.

> We think we understand something *simpliciter* (and not in the sophistical way, incidentally) when we think we know of the cause [aitia] because of which the object holds that it is its cause, and also that it is not possible for it to be otherwise. It is plain, then, that to understand is something of this sort. (71b10-13)

Aristotle here points to two features of the objects of understanding. They have an explanation or a cause, and that explanation or cause *necessitates*.[1] The presentation of this relationship between existences in nature is called "demonstration" (*apodeixis*). Demonstrations proceed from truths that are known (either demonstratively or via *nous*) to truths that they necessitate, in the sense of being sufficient for the truth of that which they ground (i.e. the conclusion of a demonstrative argument). Importantly though, Aristotle denies that all forms of understanding require a demonstration. At least some forms (*nous*) lack any demonstration, though they may nevertheless possess a ground of some kind or another, such as a definition.[2]

3 Aquinas

Aquinas endorses what seem to be causal versions of the PSR in his discussion of God's causal role in *Summa Contra Gentiles* (cf. *Summa Theologiae* Ia 2.3).[3] The numbers below indicate paragraphs from Book II, chapter 15.

[1] For discussion of Aristotle's notion of causation as explanatory see (Lear 1988; Ruben 1990; Peramatzis 2011; Bronstein 2016; Raven 2020, chaps. 1-2).

[2] See (Bronstein 2016, 58).

[3] Note that there is ambiguity in the Latin between the proper name "God", and the common noun "a god". Insofar as demonstration provides us with knowledge of the existence of "god" it is in the common noun sense rather than the proper name sense. The god that Aquinas takes himself to demonstrate the existence of is not a god that is know to satisfy all of the divine attributes as enumerated in scripture. The being referred to by "God" is ultimately known through revelation. I'll skirt over this ambiguity in what follows. For discussion of the role of revelation in Aquinas's philosophy see (Davies 1993, chap. 2) and the introduction to (Stump 2003).

> [4] the order of causes necessarily corresponds to the order of effects, since effects are commensurate with their causes. Hence, just as effects are referred to their appropriate causes, so that which is common in such effects must be reduced to a common cause. … Now, being is common to everything that is. Above all causes, then, there must be a cause whose proper action is to give being. But we have already shown in Book I that God is the first cause. Everything that is must, therefore, be from God.

The opening statement in (4) expresses what looks like a, perhaps tacit, commitment to the *Ex Nihilo* principle. Aquinas uses this idea to argue for the existence of a being (God) that is necessary (and thus does not come to be) and from which all other being is derived as a proportionate effect (i.e. as an effect whose reality does not exceed that of its cause). We'll see this argument at work in Descartes's work as well.

> [5] Moreover, the cause of everything [causa omnium] said to be such and such by way of participation is that which is said to be so by virtue of its essence. Thus, fire is the cause of all hot things as such. But God is being by His own essence, because He is the very act of being. Every other being, however, is a being by participation. For that being which is its own act of being can be one only, as was shown in Book I. God, therefore, is the cause of being to all other things.

Aquinas speaks of 'causation' here but it seems clear he means something more like *formal causation*, since "participation" (*participationem*) as used here is not something like *efficient* causation – fire does not make all fires start, but rather all fires, as fires, "participate" in some sense (e.g. share the form of) fire *per se*. This puts Aquinas more squarely in the camp of using causal talk in an explicitly explanatory way, as is unsurprising given his Aristotelianism.

> [6] Again, everything that can be and not-be has a cause; for considered in itself it is indifferent to either, so that something else must exist which determines it to one. Since, then, it is impossible to go on to infinity, there must exist a necessary being which is the cause of all things that can be and not-be. Now, there is a certain kind of necessary being whose necessity is caused. But in this order of things, also, progression to infinity is impossible; so that we must conclude to the existence of something which is of itself necessary being. There can be but one such being, as we proved

> in Book I. And this being is God. Everything other than God, therefore, must be referred to Him as the cause of its being.

Aquinas construes contingent existence in terms of not having being/existence as part of one's essence. A contingent entity considered "in itself" (*in se*) is one that is indifferent to existence or non-existence. So there must be something that explains the existence of any contingent being. This seems to be a clear endorsement of the PSR_{ontic}. Aquinas moreover rejects the position that there could be an infinite regress of contingent beings. Is this because such a regress would violate one or another version of the PSR? What one. Aquinas notes that there are necessary beings that are themselves caused, but that this cannot be true of all necessary beings, again on pain of infinite regress. So there must be a necessarily existing being that is not caused by anything else—God.

Besides the issue of infinite regress, another important question raised by this argument is whether God should be understood as *self-caused* or as *uncaused*. This is important because it is part of how we understand a causal relation – e.g. as symmetric, reflexive, etc. Aquinas considers God to be *uncaused*. God is pure actuality (as opposed to potentiality) and does not come to be. Hence, for Aquinas, God has no need of (causal) explanation. Does this mean that we should think of God as unexplained? Or simply as *uncaused* but (perhaps) self-explanatory?

Here there is an important analogue to Aristotle's conception of that form of understanding (*episteme*) that cannot be achieved through demonstration—viz. *nous*. Nous of God can be acquired because of the fact that we know God's essence to include existence (though, according to Aquinas, we are in a position to know this only because of revelation). God's existence is self-explanatory in the sense that it is self-evident – it's denial entails a contradiction. God's existence is thus self-explanatory in the sense that it follows from God's essence, without thereby being a case of self-causation.[4]

4 Descartes

4.1 The Causal Containment Axiom

In the Third Meditation Descartes argues in two ways for the claim that God – a perfectly knowledgeable, benevolent, and powerful being – exists. The first of these arguments makes extensive use of what has been called Descartes's "causal principle" or "containment axiom", which he states in the following passage.

[4] For discussion see (Kretzmann and Stump 1993, chap. 5; Stump 2003, chaps. 3,7).

> it is manifest by the natural light that there must be at least as much [reality] in the efficient and total cause as in the effect of that cause. For where, I ask, could the effect get its reality from, if not from the cause? And how could the cause give it to the effect unless it possessed it? It follows from this both that something cannot arise from nothing, and also that what is more perfect - that is, contains in itself more reality - cannot arise from what is less perfect. And this is transparently true not only in the case of effects which possess [what the school philosophers call] actual or formal reality, but also in the case of ideas, where one is considering only [what they call] objective reality (7:40-1).

When put in terms of Descartes's views on the hierarchy of reality (stated immediately prior to the above), something with a lesser degree of reality cannot be the cause of something with a greater degree; the reality of the (efficient and total) cause must be equal to or exceed the reality of the effect. When applied to the objective reality of an idea, it means that the cause of the objective reality of an idea is one whose reality is at least as great as the reality of that which is 'depicted' by the idea. So, for example, when one has an idea as of a horse (a finite substance) then the objective reality of this idea (i.e. the representational content as of a horse) must have been caused by something that has at least the reality of a finite substance. This doesn't mean that it has to have been caused by an actual horse. But, according to the principle, it cannot be the case that an idea whose objective content is that of a finite substance could be caused by a mere mode. More succinctly,

Causal Containment Axiom: Whatever reality or perfection there is in a thing is present either formally or eminently in its first and adequate cause (7:165)

Descartes's claim that there must be at least as much reality in the effect as in the cause will be familiar to any who have read Aquinas. And Descartes's justification for this principle is similar in that violation of the causal principle would be a violation of the *Ex Nihilo* principle, since its violation would mean that there would be a degree of reality present in the effect that does not come from anything/anywhere.

What justifies the acceptance of these various principles? Descartes says that it is "manifest" to the "natural light" (i.e. the intellect or reason) that these principles hold. This gives us at least some basis for thinking that Descartes considers there to be an intelligible or explanatory aspect to the causal principle, which places it more closely with a version of the PSR rather than something more like "mere" causality.

In sum, Descartes's appeal to a containment condition on causation is based in the *Ex Nihilo* principle, which is itself derived from the PSR_{ontic}. Furthermore, Descartes explicitly links these causal notions to what follows from the "natural light" of the intellect, which indicates that he links causality and intelligibility or explanation.

4.2 Causality & the PSR

Further evidence that the causal containment principle is itself rooted in a deeper commitment to some version of the PSR is provided by Descartes's remarks in the various objections and replies to the *Meditations*. For example, in his repy to Caterus he says,

> the light of nature does establish that if anything exists we may always ask why it exists; that is, we may inquire into its efficient cause, or, if it does not have one, we may demand why it does not need one. (First Reply, 7:108)

> What does seem to me self-evident is that whatever exists either derives its existence from a cause or derives its existence from itself as from a cause. For since we understand not only what is meant by existence but also what is meant by its negation, it is impossible for us to imagine anything deriving existence from itself without there being some reason why it should exist rather than not exist. (First Reply, 7:112)

These texts seem to provide a pretty clear endorsement of PSR_{ontic}. We also here have a clear connection between "cause" and "reason". In the second set of replies Descartes makes the connection between intelligibility or explanation and causation even more explicit when he says,

> Concerning every existing thing it is possible to ask what is the cause of its existence. This question may even be asked concerning God, not because he needs any cause in order to exist, but because the immensity of his nature is the cause or reason why he needs no cause in order to exist. (7:164-5)

Asking why something exists is tantamount, for Descartes, to asking what caused it to exist, and this question concerns not only contingently existing things but also necessary ones, such as God himself. In a sense that is *analogous* to efficient causation, Descartes argues (7:108-11), God causes himself to exist by virtue of his own perfection, power, or immensity.

In Descartes's reply to Arnauld we see him again revisit this issue of how to understand causation with respect to God's existence. Here again we see him emphasize that we can raise the question of efficient causation with respect to any existing thing, including God. Descartes rejects the position that the concept of efficient causation requires any sort of *temporal* priority, but he accepts that efficient causation is irreflexive, such that nothing can be the efficient cause of itself (7:240). Still, Descartes contends, there is a sense in which God is the cause of his own existence.

> I think it is necessary to show that, in between 'efficient cause' in the strict sense and 'no cause at all', there is a third possibility, namely 'the positive essence of a thing', to which the concept of an efficient cause can be extended. (7:239)

Descartes reiterates that when seeking an explanation for the existence of something, we always appeal to an explanation "from itself or from something else" (7:238). In the case of God we cannot appeal to anything else.

> what derives its existence 'from another' will be taken to derive its existence from that thing as an efficient cause, while what derives its existence 'from itself' will be taken to derive its existence from itself as a formal cause - that is, because it has the kind of essence which entails that it does not require an efficient cause. (7:238)

Hence Descartes largely retains a conception of the explanation of God's existence present in the classical scholastic philosophy of Aquinas, namely that God's existence is explained by God's nature, while the existence of finite things is explained by appeal to external (efficient) causes.

This also means that we can see Descartes as consistently endorsing a version of the PSR_{ontic} where, "sufficient reason for existence" can be taken in one of two ways. On the one hand the sufficient reason is an efficient causal one, concerning the generative power (or "degree of reality") contained in the cause that produces its effect. On the other hand there is formal causation, concerning the sense in which the sufficient reason for existence is contained in the essence of that which exists. The former notion applies to all finite or contingently existing things. The latter applies only to God. But in neither case is there a basis for rejecting the PSR_{ontic}.

4.3 God's Power & Intelligibility

Despite the fact that Descartes appears to adopt a version of the PSR, and even applies it to God, he does not, in fact, adopt a broader attitude concerning the ultimate intelligibility of all things. This is because Descartes also holds an extreme sort of voluntarism concerning God's will – God may do whatever God wants, including making 2+2=5 or creating a boulder too heavy to lift and then lifting it. God's power (in which Descartes grounds God's existence) is "immense".

> It is self-contradictory to suppose that the will of God was not indifferent from eternity with respect to everything … because it is impossible to imagine that anything is thought of in the divine intellect as good or true, or worthy or belief or action or omission, prior to the decision of the divine will to make it so. (7:431-432)

God's will is "indifferent" to all of (possible) creation. This is to say that there is nothing that constrains or moves God to create in one way rather than another other than God's (inscrutable) will itself. The "eternal truths" that would otherwise seem necessary (such as that 2+2=4, etc.), are in fact the product of God's entirely undetermined, voluntaristically free, will.[5]

While there is much to say about Descartes view concerning the creation of the eternal truths, I want to focus on just one issue – that of intelligibility. Descartes has, I've argued, a view of causation that is heavily related to that of reason or explanation, and he asserts a version of the PSR_{ontic} that applies even to God himself. This might suggest that Descartes considers all of reality to be basically intelligible, since God is the basis of all reality and God himself is basically intelligible (at least with respect to his existence).

But what Descartes's commitment to the creation doctrine reveals is a view according to which the absolute basis of reality is unintelligible to us, since the basis of reality determines what eternal truths there are and this basis (God's will) is arbitrary—i.e. acts *for no reason*. Hence, though there is an intelligible structure to the existence of all things, there is not an extension of this intelligible structure to why things exist as they do and not otherwise. Thus, Descartes's embrace of the PSR is quite limited, especially for one who is considered the arch "rationalist" of the Early Modern period.

[5] For some discussion of puzzles raised by this see (Frankfurt 1977; Curley 1984; Croix 1984; Alanen 1985; Osler 1985; Brink 1993; Kaufman 2003).

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