A Novel Argument For The Principle Of Sufficient Reason

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1 Formulating 'the' Principle

> 31. Our reasonings are based on two great principles, that of contradiction (...);
>
> 32. And that of sufficient reason, by virtue of which we consider that we can find no true or existent fact [fait], no true assertion [énonciation véritable], 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. [Leibniz *Monadologie*, 1714.]
>
> Nothing exists of which it cannot be asked, what is the cause (or reason) [causa (sive ratio)], why it exists.
> [Spinoza: *The Principles of Descartes' Philosophy*, 1663, I, Axiom 11.]
>
> Nothing is without a sufficient reason why it is rather than is not; that is, if something is posited, something must also be posited from which it can be understood/ it becomes intelligible (intelligitur) why it is rather than is not. [Wolff. *Philosophia Prima Sive Ontologia*. 1736, §70.]
>
> (...) we cannot compel our mind to admit anything without a sufficient reason—that is, without a reason that makes us understand why this thing is thus rather than altogether otherwise. (...) there must be in everything that exists something through which one can understand why what is has been able to exist; and this is what is called a sufficient reason. [Du Châtelet. *Institutions de physique*, 1740, §§ 8-9.]
>
> Nothing is true without a determining reason. (...) No contingent existent can be without an antecedent reason that determines its existence.

[Kant. *Nova Dilucidatio*. 1755, Prop. V; VIII.]

Three main questions: 1. **Relata**? 2. **Scope**? 3. Relation to **cognate notions** (explanation, causation, understanding, modality)?

1. Propositional 'entities'; regimentation by means of 'because'
2. Contingent truths
3. Explanation

- EPISTEMIC: The Smiths are home *because* their lights are on.
- OBJECTIVE: The Smiths are home *because* they are expecting a delivery.

- PARTIAL: Pippi Langstrumpf's socks are multi-coloured *because* (in part) they are yellow;
- FULL: Pippi Langstrumpf's socks are multi-coloured *because* they are black and yellow.

- CAUSAL: Socrates died *because* he drank the hemlock;
- NON-CAUSAL: Xanthippes became a widow *because* Socrates died.

Our focus:[1,2]

> *Necessarily, every contingent truth has a reason why it obtains.*
> PSR$_\Box$: $\Box\forall p(\mathcal{C}p \rightarrow \neg\mathcal{F}p)$

'because': *full*, *objective*, *causal-and-non-causal* explanations.

2 The Premisses

• ***First premiss.*** *Necessarily, fundamentality is a contingent feature of contingent propositions.*

[1] Where:
$\mathcal{C}p \leftrightarrow_{df} p \wedge \Diamond\neg p$; and
$\mathcal{F}p \leftrightarrow_{df} \neg\exists q(p \text{ because } q)$.

[2] I employ quantification into sentence position for simplicity. For present purposes, one might translate this in first-order terms (assuming there are propositions): '$\forall p\ \varphi p$' would then read '$\forall x(x \text{ is a proposition } \rightarrow\ \varphi' x)$', and '$\exists p\ \varphi p$' would read '$\exists x(x \text{ is a proposition} \wedge \varphi' x)$'; where '$\varphi'$' is a formula corresponding to 'φ' in a suitable way. (I set aside the details of this correspondence here; the rough idea is that the two should be materially equivalent, given a comprehension principle for propositions.)

P_1. $\Box\forall p(\mathcal{C}p \to (\mathcal{F}p \to \Diamond(p \wedge \neg\mathcal{F}p)))$.

Support:

- '*Tractarian*' Argument;
- best candidates for contingent fundamental truths come from physics; but metaphysical modality is broad enough to include a possible reason why for each of them.

• ***Second premiss.*** *If grounding obtains between possible truths, then necessarily, whenever the latter obtain, grounding obtains between them as well.*

P_2. $\Box\forall p\forall q(q \text{ because } p \to \Box((p \wedge q) \to q \text{ because } p))$

Support: Argument from essence.

• ***Third premiss.***

MULTI-GROUNDED TRUTHS:	Allow for further possible determination (multiple 'ways of obtaining') (e.g. determinables, disjunctions, existential generalisations)
SINGLY-GROUNDED TRUTHS:	Do not allow for further possible determination (one way of obtaining) (e.g. conjunctions, truth-ascriptions, set-existence)

Necessarily, fundamental truths are necessarily determinate, or singly grounded—that is, whenever they are grounded, they necessitate their possible (immediate) grounds.[3]

P_3. $\Box\forall p(\mathcal{F}p \to \Box\forall q((p \text{ because}_I q) \to \Box(p \to q)))$

Support: Considerations on determinacy and fundamentality.

3 The Argument

(A) $\Diamond\exists p(\mathcal{C}p \wedge \mathcal{F}p)$ (Assumption for Reductio)
(P_1) $\Box\forall p(\mathcal{C}p \to \Diamond(p \wedge \neg\mathcal{F}p))$
(P_2) $\Box\forall p\forall q(p \text{ because } q \to \Box((p \wedge q) \to p \text{ because } q))$
(P_3) $\Box\forall p(\mathcal{F}p \to \Box\forall q((q \text{ because}_I p) \to \Box(p \to q)))$

[3] Where: $p \text{ because}_I q \leftrightarrow_{df} p \text{ because } q \wedge \neg\exists r(p \text{ because } r \wedge r \text{ because } q)$. We suppose, as standard, that any case of mediate ground entails a case of immediate ground.

(C_1)	$\Diamond\exists p(\mathcal{C}p \wedge \mathcal{F}p \wedge \Diamond\exists q(p \text{ because } q))$	(A, P_1)
(C_2)	$\Diamond(\mathcal{C}\mathbf{p} \wedge \mathcal{F}\mathbf{p} \wedge \Diamond(\mathbf{p} \text{ because } \mathbf{q}))$	$(C_1, \exists$-Instantiation$)$[4]
(C_3)	$\Box(\mathbf{p} \rightarrow \mathbf{q})$	(C_2, P_3)
(C_4)	$\Diamond(\mathcal{C}\mathbf{p} \wedge \mathcal{F}\mathbf{p} \wedge \mathbf{q})$	(C_2, C_3)
(C_5)	$\Diamond(\mathcal{C}\mathbf{p} \wedge \mathcal{F}\mathbf{p} \wedge \mathbf{p} \text{ because } \mathbf{q})$	(C_4, P_2)
(C_6)	Contradiction.	$(C_5$, definition of $\mathcal{F})$
(C_7)	PSR$_\Box$: $\Box\forall p(\mathcal{C}p \rightarrow \neg\mathcal{F}p)$	$(C_6, A$, Reductio$)$

4 The logic of 'because': Now and then

Contemporary Logics of Ground	**Rationalists' Logics of Ground**
Factivity: $\forall p\forall q\,(p \text{ because } q \rightarrow (p \wedge q))$	
Irreflexivity $\forall p\,\neg(p \text{ because } p)$	Non-Irreflexivity $\exists p\,(p \text{ because } p)$
Asymmetry $\forall p\forall q\,(p \text{ because } q \rightarrow \neg(q \text{ because } p))$	Anti-symmetry $\forall p\forall q\,((p \not\equiv q \wedge p \text{ because } q) \rightarrow \neg(q \text{ because } p))$
Transitivity: $\forall p\forall q\forall r\,((p \text{ because } q \wedge q \text{ because } r) \rightarrow p \text{ because } r)$	
Necessitarianism: $\forall p\forall q\,(p \text{ because } q \rightarrow \Box(q \rightarrow p))$ Internality: $\forall p\forall q\,(p \text{ because } q \rightarrow \Box((p \wedge q) \rightarrow p \text{ because } q))$	
	Back-Necessitarianism (?) $\forall p\forall q\,(p \text{ because } q \rightarrow \Box(p \rightarrow q))$

5 *Zurück zu den RationalistInnen*?

- The argument does not depend on these divergences; we indeed get 'the' PSR;
- Valid; Sound? May we ever *know*? (*Zurück –noch einmal – zu...Kant?*)

Thank you!

[4] Bold letters indicate specific instances; in C_2, $\mathbf{p}$ and $\mathbf{q}$ instantiate p and q in the consequent of P_3, respectively.