# Disambiguating Permission: A contribution from Mīmāṃsā

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Mīmāṃsā

Mīmāṃsā is one of the main schools of **Sanskrit philosophy**, and the only one focusing on the analysis of norms. Mīmāṃsā authors devised a system of rules called nyāyas, meant to be applicable to any deontic text. Mīmāṃsā authors agree that the Veda, the sacred texts of what is now called Hinduism, is a consistent corpus of rules, and that what might look like a conflict can be explained away by applying the correct nyāyas.

Introduction

GOAL: Develop a deontic logic formalization based on the nyāyas.
HOW:
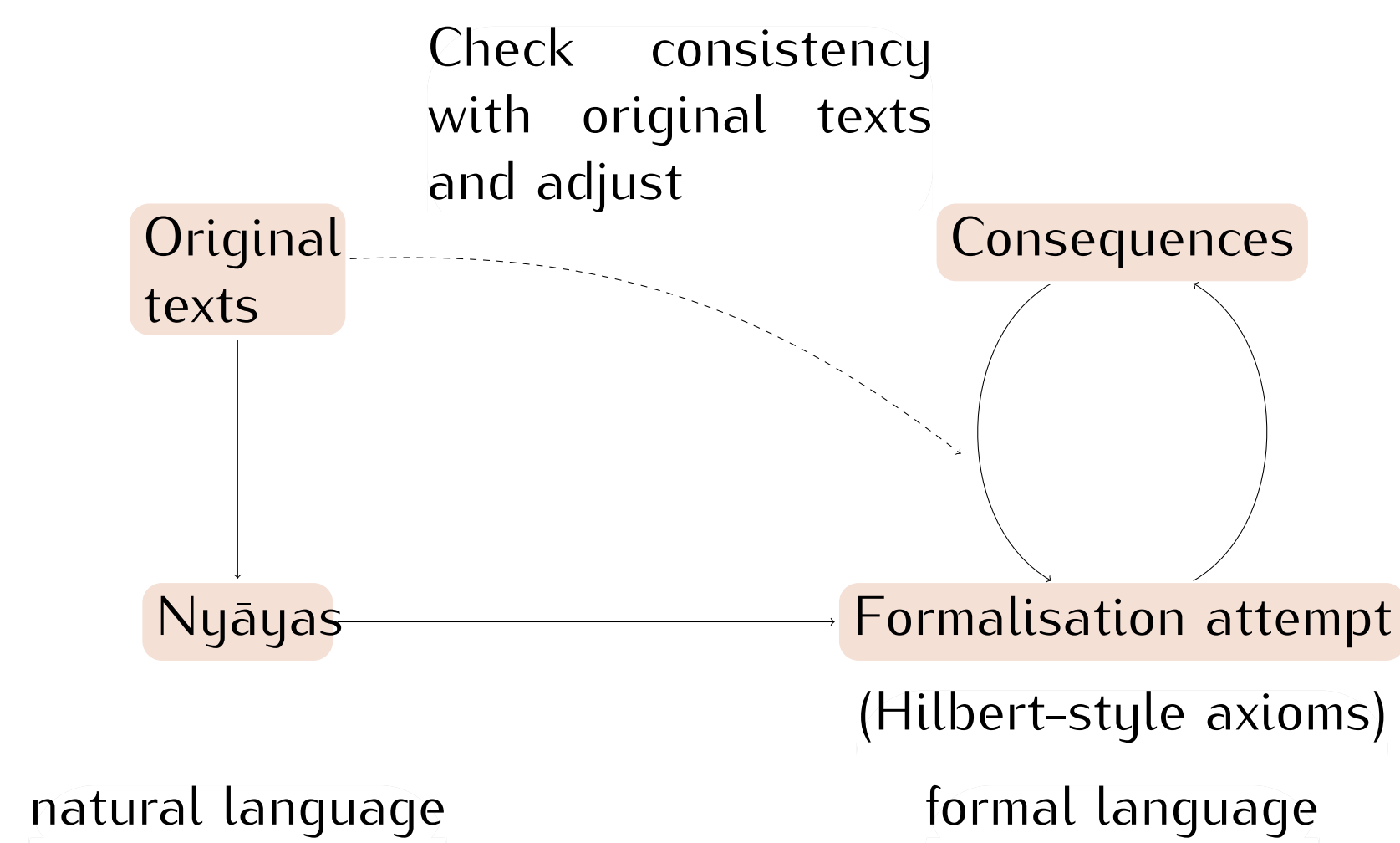
This method was used in [1] to develop an axiomatization for obligation $\mathcal{O}$ and prohibition $\mathcal{F}$. We now extend the work to include permission $\mathcal{P}$. In Mīmāṃsā "it is permitted to do X" always entails:

- that X was previously negatively obligatory or forbidden
- that doing X is not on the same level as not doing it, or as doing X while X is an extra-normative action.

Axioms

Properties $\mathcal{P}$ DOES NOT have:

- Interdefinability between concepts:
  $\mathcal{P}(\phi/\theta) \leftrightarrow \neg\mathcal{O}(\neg\phi/\theta)$

  $\mathcal{P}(\phi/\theta) \leftrightarrow \neg\mathcal{F}(\phi/\theta)$

- Monotonicity of permission:
  $\boxdot(\phi \rightarrow \psi) \wedge \mathcal{P}(\phi/\theta) \rightarrow \mathcal{P}(\psi/\theta)$

- Obligation entails permission:
  $\mathcal{O}(\phi/\theta) \rightarrow \mathcal{P}(\phi/\theta)$

Properties $\mathcal{P}$ DOES have:

- No action is both obligatory and permitted:
  $\neg(\mathcal{O}(\phi/\theta) \wedge \mathcal{P}(\phi/\theta))$

- Permissions are exceptions to prohibitions or negative obligations:
  $\mathcal{P}(\phi/\psi) \rightarrow \diamondsuit(\mathcal{F}(\phi/\top)) \vee \diamondsuit(\mathcal{O}(\neg\phi/\top))$

- Conditions of a prohibited action are more general than for the permitted action:
  $\mathcal{P}(\phi/\psi) \wedge \mathcal{F}(\phi/\theta) \rightarrow \boxdot(\psi \rightarrow \theta)$

Funding

Paradoxes Solved

1. **The free-choice paradox** is the most discussed inference surrounding permission in deontic logic: from 'you may have coffee **or** tea', we conclude that you may have coffee. The formalization of this inference in standard deontic logic [4] gives us unwanted results such as "if X is permitted, any Y is permitted", also referred to as Ross' paradox [3]. Our logic gives a consistent formalization of the free choice inference:

$$\mathcal{P}(\phi \vee \psi/\theta) \wedge \diamondsuit\phi \wedge \diamondsuit\psi \rightarrow \mathcal{P}(\phi/\theta) \wedge \mathcal{P}(\psi/\theta)$$

2. **The Privacy Act** was a paradox introduced by [2], and leads to unwanted results in standard deontic logic [4]. In the table we take a privacy law (left column) and formalize this in our language (right column).

The collection of personal information is forbidden, unless acting on a court order authorising it.	$\mathcal{F}(A/\top), \mathcal{P}(A/C)$
The destruction of illegally collected personal information before accessing it is a defence against the illegal collection of the personal data.	$\mathcal{O}(B/A)$
The collection of medical information is forbidden, unless the entity collecting the medical information is permitted to collect personal information.	$\mathcal{F}(D/\top), \mathcal{P}(D/C)$

The consistency of our formalization can be shown in the model:
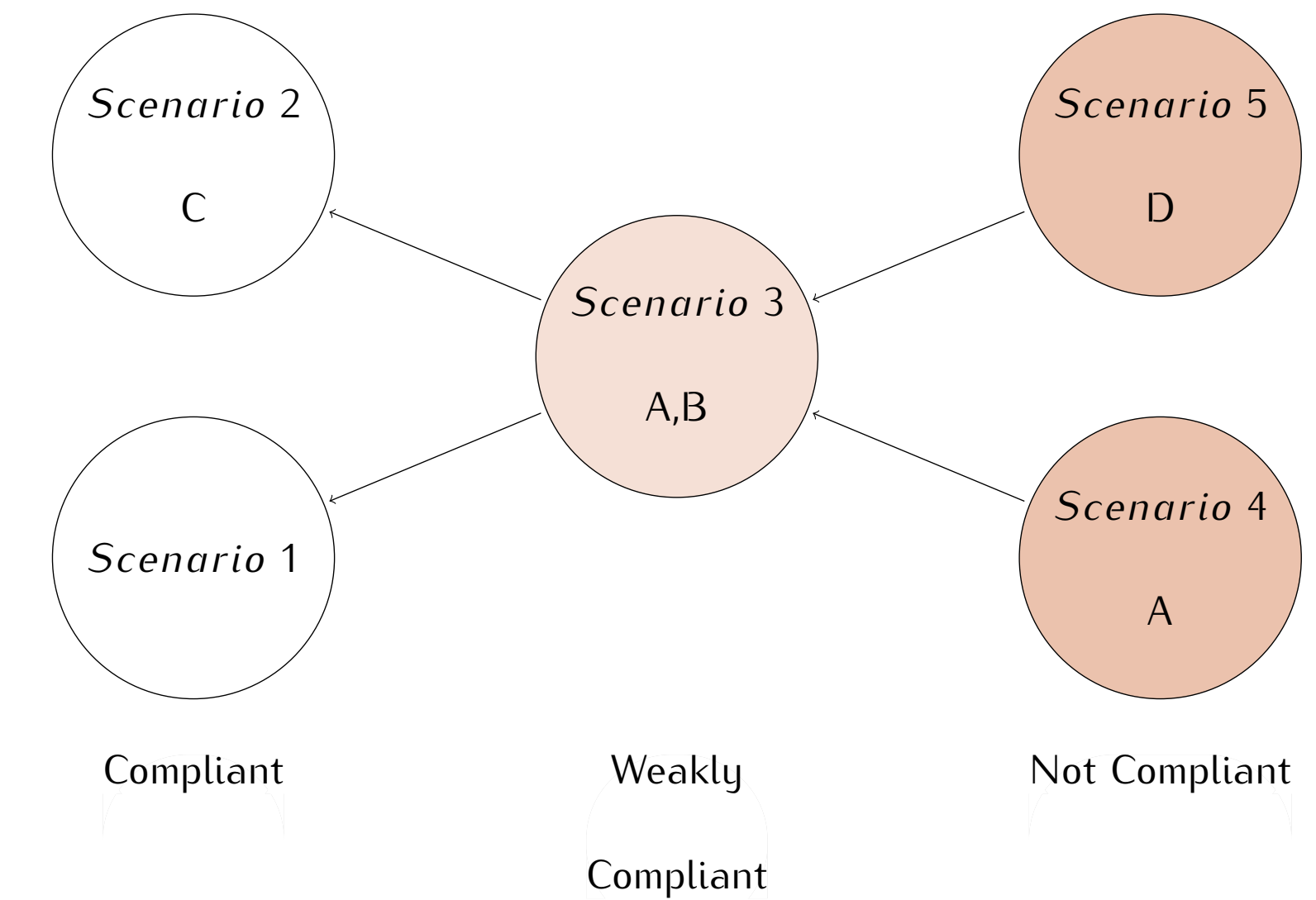
Conclusion & Future Research

- The logics extracted by Mīmāṃsā are well thought: they come with millenary full-fledged philosophical and juridical motivation
- → We extracted a consistent, sound and complete logic from Mīmāṃsā, that solves two standing paradoxes in deontic logic.
- Our aim is to later elaborate on this notion of 'better-not' and add a 'rather-so' permission and 'neutral' permission.
- → This extension can be added for AI to help agents decide what the better move or action is.

References

[1] Kees van Berkel, Agata Ciabattoni, Elisa Freschi, Francesca Gulisano, and Maya Olszewski. "Deontic Paradoxes in Mīmāṃsā Logics: There and Back Again". In: *Journal of Logic, Language and Information* (2022), pp. 1–44.

[2] Guido Governatori. "Thou shalt is not you will". In: *Proceedings of the 15th international conference on artificial intelligence and law*. 2015, pp. 63–68.

[3] Alf Ross. "Imperatives and logic". In: *Philosophy of Science* 11.1 (1944), pp. 30–46.

[4] Georg Henrik Von Wright. "Deontic logic". In: *Mind* 60.237 (1951), pp. 1–15.