Buddhist and Jain Logic: Forerunners of Modern Paraconsistency?

Graham Priest

What Will Be

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

1 Introduction

2 Buddhism and the Catuṣkoṭi

3 First Degree Entailment

4 Jainism and the Saptabhaṇgī

5 Plurivalent Logic

6 Conclusion

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

Introduction

Paraconsistency

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Explosion: $A, \neg A \vdash B$

Paraconsistency

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Explosion: $A, \neg A \vdash B$
- A consequence relation is *paraconsistent* if Explosion is *not* valid.

Syllogistic

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

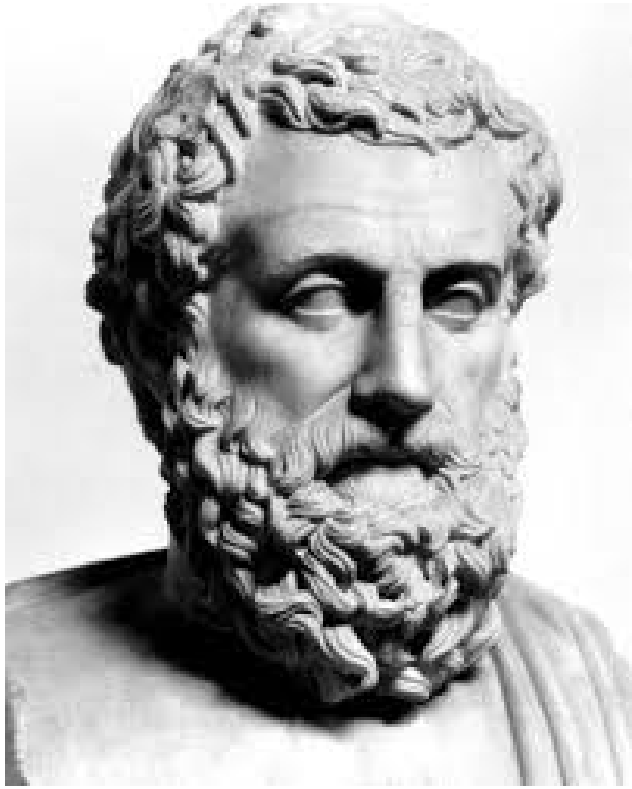
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



Syllogistic

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

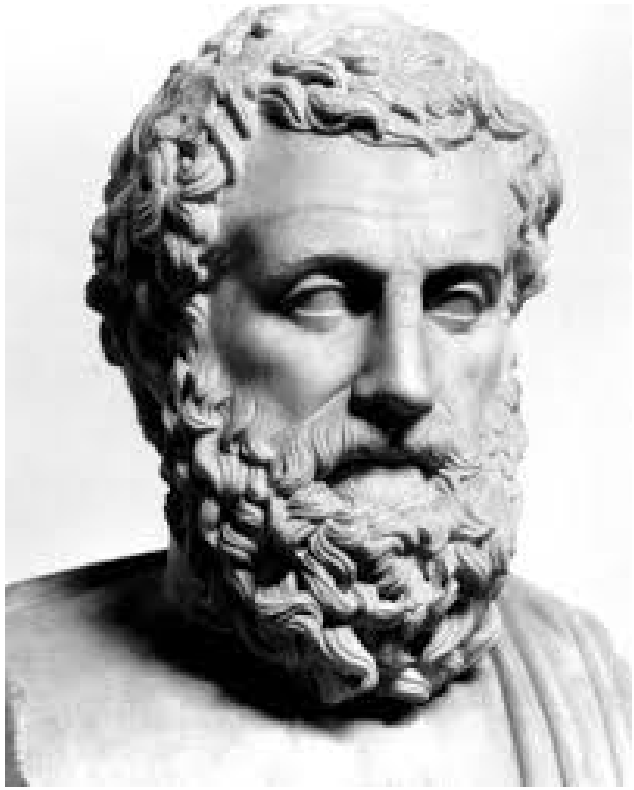
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



No *A*s are *B*s
Some *B*s are *A*s
So all *A*s are *A*s

Buddhism and the Catuṣkoṭi

The Catuṣkoṭi

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

"How is it, Master Gotama, does Master Gotama hold the view: 'After death a Tathāgata exists: only this is true, anything else is wrong'?"

"Vaccha, I do not hold the view: 'After death a Tathāgata exists: only this is true, anything else is wrong.'"

"How then, does Master Gotama hold the view: 'After death a Tathāgata does not exist: only this is true, anything else is wrong'?"

"Vaccha, I do not hold the view: 'After death a Tathāgata does not exist: only this is true, anything else is wrong.'"

"How is it, Master Gotama, does Master Gotama hold the view: 'After death a Tathāgata both exists and does not exist: only this is true, anything else is wrong.'?"

"Vaccha, I do not hold the view: 'After death a Tathāgata both exists and does not exist: only this is true, anything else is wrong.' " "How then, does

Master Gotama hold the view: 'After death a Tathāgata neither exists nor does not exist: only this is true, anything else is wrong'?"

"Vaccha, I do not hold the view: 'After death a Tathagata neither exists nor does not exist: only this is true, anything else is wrong.'"

Aggivacchagotta Sutta

First Degree Entailment

First Degree Entailment

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Truth values:
  - t (just true)
  - f (just false)
  - b (both)
  - n (neither)

First Degree Entailment

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Truth values:
  - t (just true)
  - f (just false)
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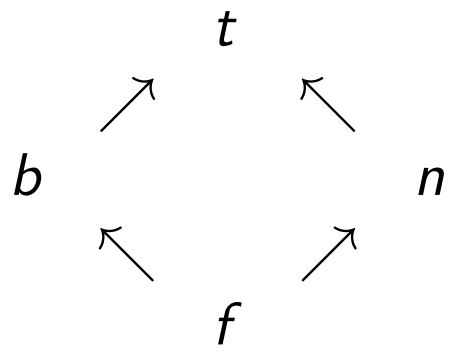


Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

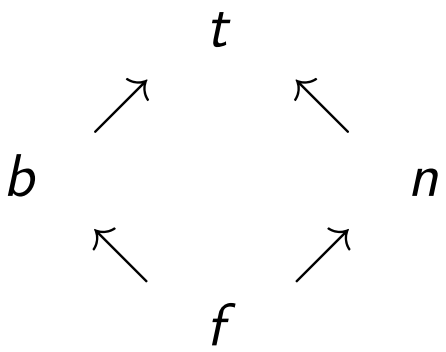
First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- $A \wedge B$ is true if A is true and B is true



Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

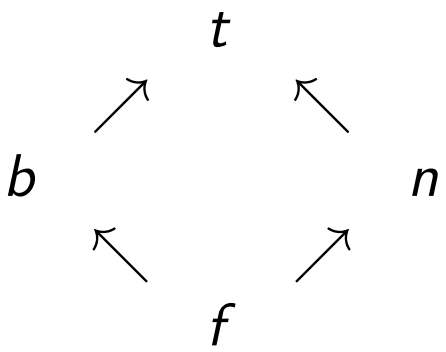
First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- $A \wedge B$ is true if A is true and B is true
- $A \wedge B$ is false if A is false or B is false



Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

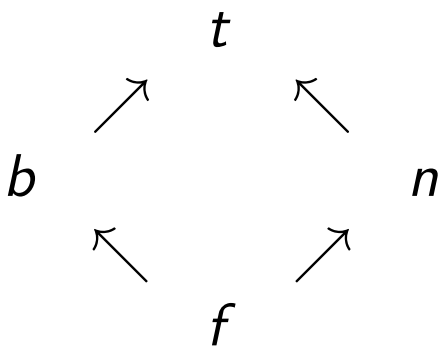
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $A \wedge B$ is true if A is true and B is true
- $A \wedge B$ is false if A is false or B is false

- If A is t and B is b, $A \wedge B$ is b

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

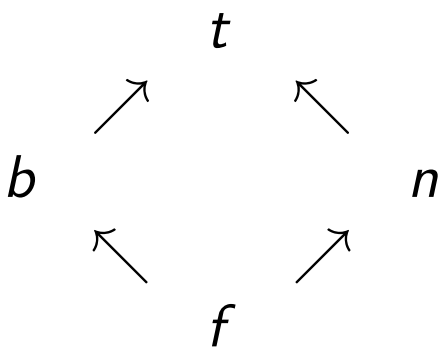
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $A \wedge B$ is true if A is true and B is true
- $A \wedge B$ is false if A is false or B is false

- If A is t and B is b, $A \wedge B$ is b
- If A is b and B is n, $A \wedge B$ is n

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

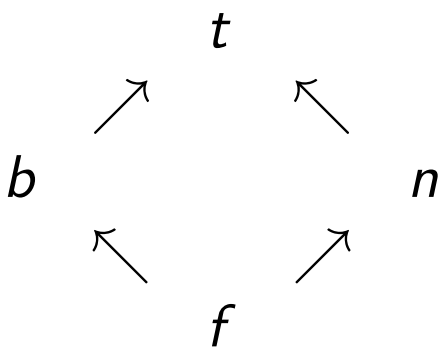
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $A \wedge B$ is true if A is true and B is true
- $A \wedge B$ is false if A is false or B is false

- If A is t and B is b, $A \wedge B$ is b
- If A is b and B is n, $A \wedge B$ is n

- The value of $A \wedge B$ is the *glb* of the values of A and B

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

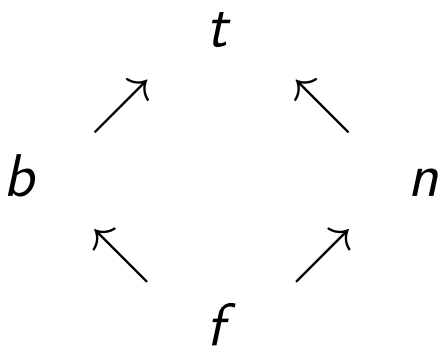
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $A \wedge B$ is true if A is true and B is true
- $A \wedge B$ is false if A is false or B is false

- If A is t and B is b, $A \wedge B$ is b
- If A is b and B is n, $A \wedge B$ is n

- The value of $A \wedge B$ is the *glb* of the values of A and B
- The value of $A \vee B$ is the *lub* of the values of A and B

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

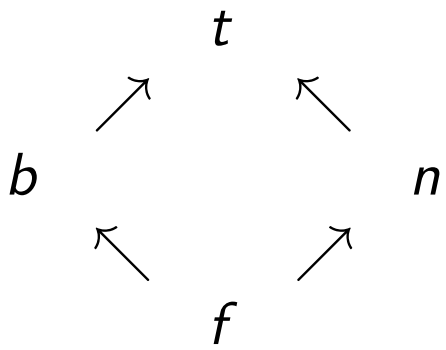
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $\neg A$ is true if A is false
- $\neg A$ is false if A is true

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

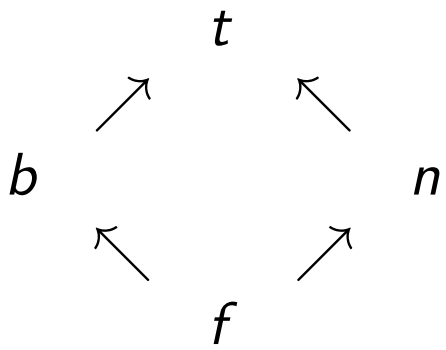
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $\neg A$ is true if A is false
- $\neg A$ is false if A is true
- If A is t, $\neg A$ is f; and vice versa

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

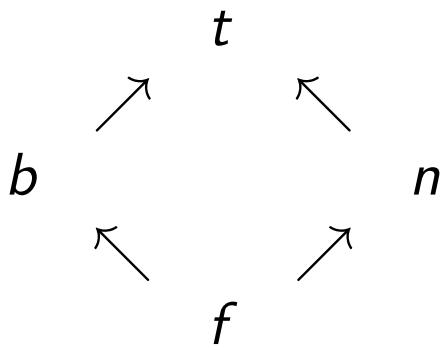
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $\neg A$ is true if A is false
- $\neg A$ is false if A is true
- If A is t, $\neg A$ is f; and vice versa
- If A is b, $\neg A$ is b.

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

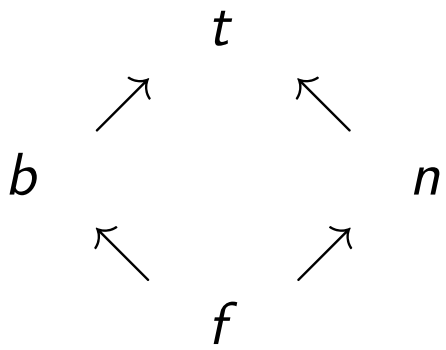
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



- $\neg A$ is true if A is false
- $\neg A$ is false if A is true
- If A is t, $\neg A$ is f; and vice versa
- If A is b, $\neg A$ is b.
- If A is n, $\neg A$ is n.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises are true (i.e., t or b) so is the conclusion.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises are true (i.e., t or b) so is the conclusion.

- $\neg\neg A \models A$
- $A \models \neg\neg A$

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises are true (i.e., t or b) so is the conclusion.

- $\neg\neg A \models A$
- $A \models \neg\neg A$

- $A, \neg A \not\models B$

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises are true (i.e., t or b) so is the conclusion.

- $\neg\neg A \models A$
- $A \models \neg\neg A$

- $A, \neg A \not\models B$
- A is b, B is f

Jainism and the Saptabhaṇgī

Jainism and the Saptabhaṇgī

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- *Anekāntavāda*

Jainism and the Saptabhaṇgī

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- *Anekāntavāda*
- *Syāt*

Jainism and the Saptabhaṇgī

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- *Anekāntavāda*
- *Syāt*
- Truth values:
  - t (just true)
  - f (just false)
  - i (?)

Jainism and the Saptabhaṇgī

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- *Anekāntavāda*
- *Syāt*
- Truth values:
  - t (just true)
  - f (just false)
  - i (?)
- $2^3 - 1 = 7$

The Saptabhaṇgī

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

The seven predicate theory consists in the use of seven claims about sentences, each preceded by 'arguably' or 'conditionally' (syāt) [all] concerning a single object and its particular properties, composed of assertions and denials, either simultaneously or successively, and without contradiction. They are as follows:

(1) Arguably, it (i.e., some object) exists. The first predicate pertains to an assertion.

(2) Arguably, it does not exist. The second predicate pertains to a denial.

(3) Arguably, it exists; arguably it does not exist. The third predicate pertains to successive assertion and denial.

(4) Arguably, it is non-assertable. The fourth predicate pertains to a simultaneous assertion and denial.

(5) Arguably, it exists; arguably it is non-assertable. The fifth predicate pertains to an assertion and a simultaneous assertion and denial.

(6) Arguably, it does not exist; arguably it is non-assertable. The sixth predicate pertains to a denial and a simultaneous assertion and denial.

(7) Arguably, it exists; arguably it doesn't exist; arguably it is non-assertable. The seventh predicate pertains to a successive assertion and denial and a simultaneous assertion and denial.

Vādideva Sūri (c. 12th Century)

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

Plurivalent Logic

K_3 and LP

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

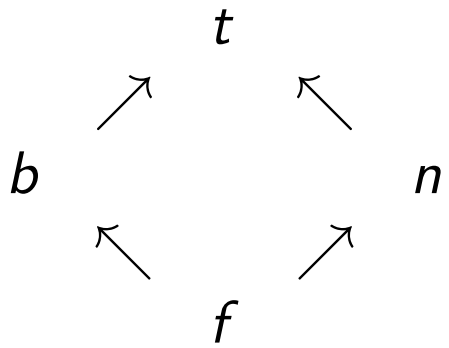
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



K_3 and LP

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

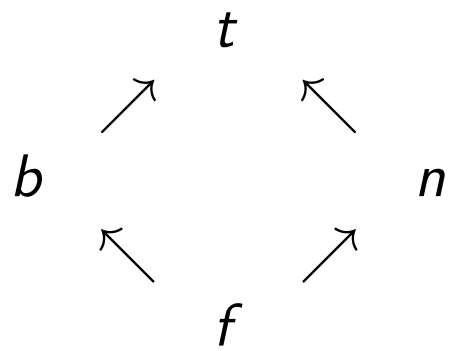
Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion



$$\begin{array}{ccccc} t & & & & t \\ \uparrow & & & & \uparrow \\ b & = & i & = & n \\ \uparrow & & & & \uparrow \\ f & & & & f \end{array}$$

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- To compute the values of $A \wedge B$, you combine all the values of A and B

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- To compute the values of $A \wedge B$, you combine all the values of A and B
- Suppose that A has the values t and f, and B has the values t and i

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- To compute the values of $A \wedge B$, you combine all the values of A and B
- Suppose that A has the values t and f, and B has the values t and i

$\wedge$	t	i
t	t	i
f	f	f

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- To compute the values of $A \wedge B$, you combine all the values of A and B
- Suppose that A has the values t and f, and B has the values t and i

$\wedge$	t	i
t	t	i
f	f	f

- $A \wedge B$ has the values, t, i, f.

Conjunction and Disjunction

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- To compute the values of $A \wedge B$, you combine all the values of A and B
- Suppose that A has the values t and f, and B has the values t and i

$\wedge$	t	i
t	t	i
f	f	f

- $A \wedge B$ has the values, t, i, f.
- Similarly for $A \vee B$

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Tho compute the vales of $\neg A$, you negate all the values for A

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Tho compute the vales of $\neg A$, you negate all the values for A
- Suppose that A has the values t and i:

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Tho compute the vales of $\neg A$, you negate all the values for A
- Suppose that A has the values t and i:

A	t	i
$\neg A$	f	i

Negation

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- Tho compute the vales of $\neg A$, you negate all the values for A
- Suppose that A has the values t and i:

A	t	i
$\neg A$	f	i

- $\neg A$ has the values f and i.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises have the value t or b so does the conclusion.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises have the value t or b so does the conclusion.
- Whatever i is, the logic is paraconsistent

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises have the value t or b so does the conclusion.
- Whatever i is, the logic is paraconsistent
- Let A have the values t and f.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises have the value t or b so does the conclusion.
- Whatever i is, the logic is paraconsistent
- Let A have the values t and f.
- Then $\neg A$ has the values f and t.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

- An inference is valid if whenever the premises have the value t or b so does the conclusion.
- Whatever i is, the logic is paraconsistent
- Let A have the values t and f.
- Then $\neg A$ has the values f and t.
- Let B have just the value f.

Validity

Buddhist and ain Logic. Forerunners of Modern Paraconsistent Logic?

Graham Priest

Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

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Introduction

Buddhism and the Catuṣkoṭi

First Degree Entailment

Jainism and the Saptabhaṇgī

Plurivalent Logic

Conclusion

Conclusion

The End

The End