Lecturer: Xavier Parent

Imperative logic and its problems

by Joerg Hansen

Topic of the lecture

Handbook chapter “Imperative logic and its problems", by J. Hansen

- Imperative logic close to deontic logic, albeit different
- Complements the ‘big’ historical chapter in the handbook studied last week
- logic is light, but not the philo
- “The fundamental problem of deontic logic" (Makinson)

Aim of the lecture: yes or no?

Chapter layout

Imperative logic

Building blocks: Imperatives

- used to direct
- express a command: imperative mood
  - “Be quiet!"
  - “If you kiss me, hug me!"
- Logical form: !A (“Do A!")

Imperative reasoning - Examples

Don’t kill!
Therefore: Don’t kill him!

Open the door!
The door cannot be opened unless it is unlocked
Therefore: Unlock the door!

Imperative vs normative sentences

They are related:

- imperative -> obligation

Linguistic difference

- in an imperative sentence, you is always the subject (*you should*)
- state verb
  - ? Know it!

Logical difference - see Geach on negation

- Am I to do A?
  - OA or $O\neg A$ or $PA \wedge P\neg A$ (cf. normative positions chapter)
  - $!A$ or $!\neg A$

Jørgensen's dilemma

Back to 1937:

> *"So we have the following puzzle: According to a generally accepted definition of logical inference only sentences which are capable of being true or false can function as premisses or conclusions in an inference; nevertheless it seems evident that a conclusion in the imperative mood may be drawn from two premisses one of which or both of which are in the imperative mood. How is this puzzle to be dealt with?"*

Jørgensen's dilemma

1st point

Truth is essential to logic

An argument is (logically) valid if the conclusion follows from the premises.
A valid argument if it is truth-preserving:

> If the premises are true, then the conclusion must be true

Jørgensen's dilemma

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$$\frac{A \quad B}{C} \qquad A, B \models C$$

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$$\frac{\begin{array}{l} p \\ p \to q \end{array}}{q} \qquad p, p \to q \models q$$

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For every assignments of truth-values to the propositional letters, if the premisses are true, so is the conclusion

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$$\frac{p \qquad p \to q}{q}$$

$$p, p \to q \models q$$

p	q	$p \to q$
1	1	1
1	0	0
0	1	1
0	0	1

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Assumption: formulae are truth-apt

Jørgensen's dilemma

Same point can be made about SDL:

Main difference: truth made relative to a world and a model

Jørgensen's dilemma

Same point can be made about SDL:

Main difference: truth made relative to a world and a model

Given a model $M =< W, R, I >$ and $w \in W$

$$M, w \models A : A \text{ is true at word } w \text{ in model } M$$

- $M, w \models p$ iff $w \in I(p)$
- $M, w \models \neg A$ iff it is not the case that $M, w \models A$
- $M, w \models A \wedge B$ iff $M, w \models A$ and $M, w \models A$
- $M, w \models \bigcirc A$ iff for any $v \in W$, if Rwv then $M, v \models A$

Jørgensen's dilemma

Same point can be made about SDL:

Main difference: truth made relative to a world and a model

Consequence relation $\models$: maintenance of truth guaranteed locally

$\Gamma \models A$ iff: $\forall M$ and $\forall w \in W$, if $M, w \models \Gamma$, then $M, w \models A$

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Back to third century bc

Aristotle - De Intepretatione, 17 a 4

"Every sentence has meaning [...] Yet every sentence is not a proposition; only such are propositions as have in them either truth or falsity. Thus a prayer is a sentence, but is neither true nor false."

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Correspondence theory of truth

A is true iff *A* corresponds to some fact

corresponds to ⟷ "the door is open"

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Correspondence theory of truth

A is true iff *A* corresponds to some fact

corresponds to ⟷ "Open the door!"

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Quote from the chapter

> *"[This traditional view] finds its explanation in the different intentions in which imperative and indicative are used. The main use of indicatives is to convey what the speaker beleives the world to be like. If it is so, then the sentence is 'true'. If it is not, then the sentence is 'false'." (p.5)*

Jørgensen's dilemma

2nd point

Imperatives are not truth-apt

Jørgensen's puzzle

How is imperative logic possible?

Jørgensen's dilemma

2nd point

Norms are not truth-apt

Jørgensen's puzzle

How is deontic logic possible?

Jørgensen's dilemma

Two possible answers

- Imperative inferences do not exist
  - Hansen 2008
- There might be alternative concepts to truth
  - mainstream view

In deontic logic, other answers are possible

Dubislav's trick

Key idea

- Imperative inference reduced to an indicative one

Dubislav's trick

Key idea

- Imperative inference reduced to an indicative one

Weinberger's Principle

To each imperative there corresponds a descriptive sentence that is true if the imperative is satified and false if it is not-satified (violated).

'Do *A*!' rendered as

dictor — modality

descriptor(the thing that is ordered) — propositional content

Dubislav's trick

Key idea

- Imperative inference reduced to an indicative one

Dubislav's convention

"An imperative ψ is called derivable from an imperative ϕ if the descriptive sentence belonging to ψ is derivable with the usual methods from the descriptive sentence belonging to ϕ"

$$!A \mid\sim !B \text{ iff } A \vdash_{PL} B$$

Dubislav's trick

Key idea

- Imperative inference reduced to an indicative one

Multiple premises:

> *An imperative ψ is called derivable from the imperatives $\phi_1, ..., \phi_n$ if the descriptive sentence belonging to ψ is derivable with the usual methods from the descriptive sentences belonging to $\phi_1, ..., \phi_n$.*

$$!A_1, ...!A_n \mid\sim !B \text{ iff } A_1, ..., A_n \vdash_{PL} B$$

Dubislav's trick

Main criticism: imperative logic reduced to a logic of satisfaction

- truth/false $\rightarrow$ obeyed/violated
- $!A \mid\sim !B$: if $!A$ satisfied, so is $!B$

Dubislav's trick

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Problem with mixed inferences

$$\frac{!A}{A} \qquad\qquad \frac{A}{!A}$$

The imperative modality collapses

Dubislav's trick

Main criticism: imperative logic reduced to a logic of satisfaction

- truth/false $\rightarrow$ obeyed/violated
- $!A \mid\sim !B$: if $!A$ satisfied, so is $!B$

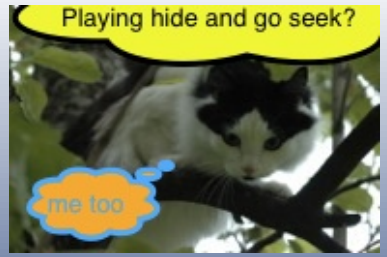
Problem with contrary-to-duty imperative

Do A
If not-A, do B

??

Get the cat!
If you don't, call 911!

??



Other alternative concepts to truth

Other candidates that could substitute for ‘truth’

Existence $!A \mid\sim !B$: if the first ‘exists’, so does the second (p. 16)

Ideal existence existence wrt an ‘ideal world of ought’ (p. 18)

Speech acts theory - Searle 1969

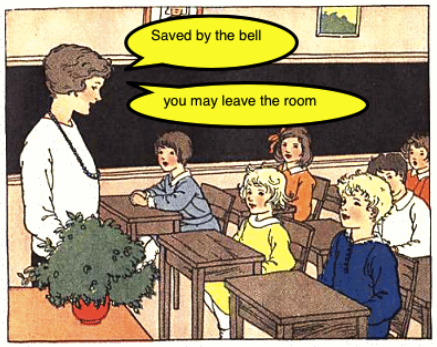
- Like any speech act, an imperative has felicity conditions

Objection (p. 18): categorical mistake

Deontic logic

Von Wright: Norm vs Norm Proposition

Norm



Norm proposition

A norm proposition:

- reports the existence of a norm within a given normative system
- is truth-apt