There Will Be Consequence

João Marcos

UFRN, BR

Logic4Peace
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On the social dimensions of logic & information

When the very possibility of reasoning seems compromised:

Does Logic have relevant social aspects? What are they?
What kinds of warrants or support can an individual—or a group thereof—count on?
Can trust be reestablished?

When we’re drowning on data:
Can misinformation be countered? Can disinformation be stopped?

In view of generalised bias, bad faith and cognitive constraints, is it still safe to think of information as imbued with any sort of neutrality?
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Didn’t you forget about *language*?
Didn’t you forget about language? Well…

How swearing became a weapon of resistance for Ukrainians

Their enthusiastic use of bad language contrasts with Putin’s linguistic prissiness - and shows that Russia doesn’t own Russian.

Russia-Ukraine war: latest updates

The Guardian / April 13, 2022

Kyiv, May 2016
‘Don’t mention the war’ to be included in Dutch dictionary

January 24, 2022

DutchNews.nl / VanDale.nl
Is ‘the Truth’ overestimated?
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Are we losing sight of our Values?
Is ‘the Truth’ overestimated?

Are we losing sight of our Values?

The True, the Good, and the Beautiful:

- value-theoretical tradition in German philosophy of the second half of the 19th century
- philosophical statements as *assessments*, rather than *judgments*, dealing with fundamental values
- the origin of the term ‘Wahrheitswert’

*(Truth and Falsehood, H. Wansing & Y. Shramko, 2011)*

*(What is Philosophy?, W. Windelband, 1892)*
Is ‘the Truth’ overestimated?

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How do Theories of Truth help elucidating the assertoric uses of language? And what about other essential uses of language?
Truth or Consequences?

New Mexico, 2010
Truth or Consequences?

Should one choose the path of inference, or that of entailment?
Truth or Consequences?

Should one choose the path of **inference**, or that of **entailment**? Neither! We need **Consequence Theory**!
Truth or Consequences?

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Looking for closure:

**T-consequence**: OPERATORS vs RELATIONS

A T-consequence operator $C$ on $2^S$ must respect:

(COT0) $C(\Gamma) \subseteq C(\Gamma \cup \Delta)$

(COT1) $\Gamma \subseteq C(\Gamma)$

(COT2) $C(C(\Gamma)) \subseteq C(\Gamma)$
Truth or Consequences?

Should one choose the path of inference, or that of entailment? Neither! We need Consequence Theory!

Looking for closure:

**T-consequence: OPERATORS vs RELATIONS**

A T-consequence relation $\triangleright$ on $2^S \times S$ must respect:

1. **(CR$_T$0)** if $\Pi \triangleright A$, then $\Pi' \cup \Pi \triangleright A$
2. **(CR$_T$1)** if $A \in \Pi$, then $\Pi \triangleright A$
3. **(CR$_T$2)** if $\Delta \cup \Pi \triangleright A$ and $\Pi \triangleright D$ for every $D \in \Delta$, then $\Pi \triangleright A$
Truth or Consequences?

Should one choose the path of *inference*, or that of *entailment*? Neither! We need **Consequence Theory**!

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**Note 0:** Theories are obtained as fixed points of consequence operators.
**Note 1:** Consequence relations may be induced by proof systems or by logical matrices.
**Note 2:** Every T-logic is inferentially 2-valued.
Towards a ‘Gnomatic Turn’

What are the agents looking for?

Knowledge vs Information

How are its contents expressed?

Assertions vs Opinions

We propose that information does not originate with the agents...

...but that agents are entities who may entertain certain kinds of cognitive attitudes with respect to given pieces of information.
Towards a ‘Gnomatic Turn’

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<table>
<thead>
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We propose that information does not originate with the agents, but that agents are entities who may entertain certain kinds of cognitive attitudes with respect to given pieces of information.
Towards a ‘Gnomatic Turn’

What are the agents looking for? Knowledge vs Information

How are its contents expressed? Assertions vs Opinions

\[ \varphi \land \gamma \]

\[ \sim p \]

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What are the **agents** looking for?

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How are its contents **expressed**?

**Assertions vs Opinions**

We propose that information does not originate with the agents...

...but that agents are entities who may entertain certain kinds of *cognitive attitudes* with respect to given pieces of information.
Wanted: a more generous theory of judgments
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So, again, what is **Logic** about?
Wanted: a more generous theory of judgments

So, again, what is **Logic** about?
Let’s consider the following very general intuition:

A logic $\mathcal{L}$ is concerned about the assignment and the propagation of a certain property $P$. This property $P$ is shared by the objects belonging to the underlying logical theories of $\mathcal{L}$.
Wanted: a more generous theory of judgments

A logic $\mathcal{L}$ is concerned about the assignment and the propagation of a certain property $P$. This property $P$ is shared by the objects belonging to the underlying logical theories of $\mathcal{L}$.

Humm... but what about the *Dark Side of the Moon*?
Assertions vs Denials
Note 0: The complement of ▶ is an S-consequence relation. (a.k.a. 'multiple-conclusion consequence')

Note 1: More logical values are needed if (CM1) or (CM2) are abandoned.

Note 2: An appropriate novel notion of theory-pair, and associated bilateralist consequence operators are available.
Assertions vs Denials

Primitive **judgments**: Assertion & Denial

**Sentences**: set $S$

**Consecutions**: pairs $(\Delta_1, \Delta_0) \in 2^S \times 2^S$

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Its 'single-conclusion counterpart' is a T-consequence relation.

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**Principles that characterize a judgment-compatibility relation**

“A fragment of a valid judgment-configuration is still a valid judgment-configuration.”

“Judgment gluts are disallowed.”

“Judgment gaps are disallowed.”
Assertions vs Denials

Primitive judgments: Assertion & Denial

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Principles that characterize a judgment-compatibility relation

A relation $\triangleright$ on $2^S \times 2^S$ satisfying, for every $\Pi, \Pi', \Sigma, \Sigma', \Delta \subseteq S$:

“A fragment of a valid judgment-configuration is still a valid judgment-configuration.”

(CM0) if $\Pi' \cup \Pi \triangleright \Sigma \cup \Sigma'$, then $\Pi \triangleright \Sigma$

“Judgment gluts are disallowed.”

(CM1) if $\Pi \triangleright \Sigma$, then $\Pi \cap \Sigma = \emptyset$

“Judgment gaps are disallowed.”

(CM2) if $\Pi \triangleright \Sigma$, then there is some $\Delta' \subseteq \Delta$ such that $\Delta' \cup \Pi \triangleright \Sigma \cup (\Delta \setminus \Delta')$

Note 0: The complement of $\triangleright$ is an $S$-consequence relation.

(a.k.a. ‘multiple-conclusion consequence’)

Its ‘single-conclusion counterpart’ is a $T$-consequence relation.

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Problem Matemat. 8, V. 1936

Równa funkcja dopasowania $f(x, y)$ w przedziale $0 < x < 1$ oraz lina $x > 0$.

Stwierdzenie istnienia $f(x, y)$ w przedziale $0 < x < 1$.

Wnioski: Można dodać połowe prawdziwego działania oznaczonego $f(x, y)$.

Problem Matemat. 9, V. 1936
Acceptance vs Rejection

Should we then take denial as the *complement* of assertion?
Acceptance vs Rejection

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Changing the game:
Consider the cognitive attitudes of *acceptance* and *rejection* as independent from each other.
Acceptance vs Rejection

Should we then take denial as the complement of assertion?

Changing the game:
Consider the cognitive attitudes of acceptance and rejection as independent from each other.

![Diagram showing the relationship between acceptance (Y:φ) and rejection (N:φ) and their logical opposites (Λ:φ and Η:φ). The text emphasizes the importance of focusing on the edges rather than the nodes.](image-url)
Acceptance vs Rejection

Should we then take denial as the *complement* of assertion?

**Changing the game:**
Consider the cognitive attitudes of *acceptance* and *rejection* as independent from each other. Notice that *truth-values* may be *recovered* from such an approach:

![Diagram](focus on the edges rather than the nodes)
A many-dimensional notion of (B-)consequence
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A many-dimensional notion of (B-)consequence

Haven’t we been living in *Lineland* for too long?

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*The Sphere with his extended sky* 
*(2)* The Sphere rising 
*(3)* The Sphere on the point of vanishing My eye

---

*My body just before I disappeared* 
*The King*

---

*Lineland* →

---
A many-dimensional notion of ($\mathbb{B}$-)consequence

Haven’t we been living in *Lineland* for too long?

Consequence, proof systems and entailment relations generalize rather *smoothly*.
On collective decision-making

A shared goal: some sort of consensus reaching.
On collective decision-making

A big challenge for any society: judgment aggregation.

Kyiv 2016
On collective decision-making

A big **challenge** for any **society**: judgment aggregation.

A shared **goal**: some sort of **consensus reaching**.
Questions?
Suggestions?
Some references

- link to this talk on YouTube