4th Filomena Workshop
Universitet i Bergen

No Metaphysical Disagreement Without Logical Incompatibility

Daniel Durante
Federal University of Rio Grande do Norte
Natal-RN – Brazil
durante10@gmail.com

Introduction

No Metaphysical Disagreement Without Logical Incompatibility

I intend to support the logical incompatibility of conflicting views as a criterion for identifying a disagreement as genuinely metaphysical.

Introduction

No Metaphysical Disagreement Without Logical Incompatibility

I intend to support the logical incompatibility of conflicting views as a criterion for identifying a disagreement as genuinely metaphysical.

A disagreement is genuinely metaphysical only if each side requires reasoning according to a logic incompatible to the ones requested by the other parties.

Introduction

Suppose a metaphysical debate is contrasting theses **1** and **2**.	
1 *vs* **2** constitutes a genuine metaphysical disagreement only if:	
Accepting **1**	forces one to reason according to a logic (or a set of logics) $\mathbf{L_1}$.
Accepting **2**	forces one to reason according to a logic (or a set of logics) $\mathbf{L_2}$.
$\mathbf{L_1}$ and $\mathbf{L_2}$ are incompatible	

Introduction

When are logics L_1 and L_2 incompatible?

There is at least one sentence **S**, which is valid in L_1 (L_2) but not in L_2 (L_1).

There is at least one sentence **S**, which is valid in L_1 (L_2) but it is non-expressible in L_2 (L_1).

Introduction

When are logics L_1 and L_2 incompatible?

There is at least one sentence **S**, which is valid in L_1 (L_2) but not in L_2 (L_1).

There is at least one sentence **S**, which is valid in L_1 (L_2) but it is non-expressible in L_2 (L_1).

It's not always obvious when two different formal systems are formulations of the same logic or not. But decision here is largely less controversial then determining if a supposed metaphysical debate is verbal or substantial.

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

Defence against deflationism

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

Defence against deflationism

If different metaphysical proposals demand different logics, then the metaphysical disagreements spread (through logic) out of their theoretical limits, generating other disagreements in all matters upon which we reason.

If	$P_1, \ldots, P_n \models_{L1} S$	then our disagreement on metaphysical theses **1** and **2** may be the source of our disagreement on **S**. And **S** may be any sentence, of any subject.
	$P_1, \ldots, P_n \not\models_{L2} S$	

Metaphysical disagreements would then not be inert or merely verbal, but relevant and substantial.

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?
Defence against deflationism
Shield against verbal disputes

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

Defence against deflationism

Shield against verbal disputes

- If a specific disagreement is irrelevant and does not produce other divergences outside its theoretical limits, then we know it does not involve logical incompatibility.
- So, according to our criterion, it will not be a genuinely metaphysical disagreement.

The criterion of logical incompatibility shields metaphysics from irrelevant proposals and merely verbal controversies.

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?
Defence against deflationism
Shield against verbal disputes
Justification of Logical Laws

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

Defence against deflationism

Shield against verbal disputes

Justification of Logical Laws

- We will see that the criterion relies on the assumption that logical principles are metaphysical principles that characterize the most general structure of reality.
- If so, logical laws are reliable because they express the most basic features of reality.

Logical laws are then justified by the fact that they are metaphysical laws that characterize reality. (Frege, Aristotle)

Metaphysical and Logical Motivations

Let us assume that I am right and the criterion is good!

What do we get from this criterion?

- **Defence against deflationism**
- **Shield against verbal disputes**
- **Justification of Logical Laws**

If we get a lot, we pay a lot!

This is a demarcation criterion that charges its price in the choices it demands.

Metaphysics, Ontology and Logic

Demarcation Choices

Metaphysics, Ontology and Logic

Demarcation Choices

Metaphysics (textbook definition)

deals with questions whose answers involve characterization of the most general structure of reality.

Metaphysics, Ontology and Logic

Demarcation Choices
Metaphysics (textbook definition)
deals with questions whose answers involve characterization of the most general structure of reality.
Ontology (Quine)
answers the question about what things exist. (other proposals) ⇒ ~~what is real~~, ~~what is fundamental~~, ~~what grounds what~~, …

Metaphysics, Ontology and Logic

Demarcation Choices

Metaphysics (textbook definition)

deals with questions whose answers involve characterization of the most general structure of reality.

Ontology (Quine)

answers the question about what things exist.

(other proposals) ⇒ ~~what is real~~, ~~what is fundamental~~, ~~what grounds what~~, …

Logic (generality)

A formal system is a logical system when, as a whole, it states only generalities. A logical system does not separate reality. Whatever it says about a particular being is also true of all of them.

Ontology → Ontological Commitment

The criterion of logical incompatibility is proposed as a means to overcome some limitations of the Quinean method for ontology, which is based on the notion of **ontological commitment**.

Ontology → Ontological Commitment

The criterion of logical incompatibility is proposed as a means to overcome some limitations of the Quinean method for ontology, which is based on the notion of **ontological commitment**.

The notion of ontological commitment precisely identifies which entities are assumed (as existing) by a theory T

Ontology → Ontological Commitment

The criterion of logical incompatibility is proposed as a means to overcome some limitations of the Quinean method for ontology, which is based on the notion of **ontological commitment**.

The notion of ontological commitment precisely identifies which entities are assumed (as existing) by a theory T
The ontological commitments of a theory **T** are:
• the entities that if they did not exist, some of the sentences of **T** would be false; • revealed in the existential sentences of **T**.
T is ontologically committed with entities of type *P* if and only if $\mathbf{T} \models \exists \mathbf{x} \mathbf{P(x)}$.

Ontology → Ontological Commitment

The criterion of logical incompatibility is proposed as a means to overcome some limitations of the Quinean method for ontology, which is based on the notion of **ontological commitment**.

The notion of ontological commitment precisely identifies which entities are assumed (as existing) by a theory T
The ontological commitments of a theory **T** are:
• the entities that if they did not exist, some of the sentences of **T** would be false; • revealed in the existential sentences of **T**.
T is ontologically committed with entities of type *P* if and only if $\mathbf{T} \models \exists \mathbf{x} P(\mathbf{x})$.

Our ontology should, therefore, be obtained by the **ontological commitments** of the formally regimented versions of **our best scientific theories**.

Metaphysics → Beyond Ontology

Question

Are the numbers mental constructs or they are independent of our thinking?

Metaphysics → Beyond Ontology

Question	
Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation (ontological question)	Do the numbers exist or not? Do they take part in what there is or not?

Metaphysics → Beyond Ontology

Question	
Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation (ontological question)	Do the numbers exist or not? Do they take part in what there is or not?
Dummett's Interpretation (metaphysical question)	Does the mind have a role in the constitution of the numbers?

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?

- If numbers are mental constructs, if they are constituted by thought, then they are not part of reality and do not exist.
- Quine's interpretation commits with the following thesis:

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?

- If numbers are mental constructs, if they are constituted by thought, then they are not part of reality and do not exist.
- Quine's interpretation commits with the following thesis:

Realist thesis	The mind is separated from mathematical reality.

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?

- If numbers are mental constructs, if they are constituted by thought, then they are not part of reality and do not exist.
- Quine's interpretation commits with the following thesis:

Realist thesis	The mind is separated from mathematical reality.

- If the mind is separate from mathematical reality, what is only in the mind does not exist in reality.
- So interpreted, the question is treatable by the method of ontological commitment:

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?
Realist thesis	The mind is separated from mathematical reality.

- Numbers exist or not, depending on whether or not our best scientific theories assume **ontological commitments** to them.
  - **If they do**, numbers exist (out of our mind) as much as atoms, stars, and sunflowers.
  - **If they don't**, numbers do not exist (out of our mind) as much as phlogiston, unicorns, and Santa Claus.

Quine's Interpretation: ontological

Are the numbers mental constructs or they are independent of our thinking?	
Quine's Interpretation	Do the numbers exist or not?
Realist thesis	The mind is separated from mathematical reality.

- Numbers exist or not, depending on whether or not our best scientific theories assume o**ntological commitments** to them.
  - **If they do**, numbers exist (out of our mind) as much as atoms, stars, and sunflowers.
  - **If they don't**, numbers do not exist (out of our mind) as much as phlogiston, unicorns, and Santa Claus.

In Quine's interpretation, the relation of mathematical entities to our thinking is an **ontological question** whose solution must be given by the method of **ontological commitment**.

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?

- Dummett's interpretation calls into question the realist thesis and considers at least conceivable that to be constituted by the mind can be among the admissible features of reality.

- It admits at least the conceivability that the mind could sustain the existence of some real things.

- So, it is not the ontological problem of the existence or not of the numbers that is **at stake** in Dummett's interpretation, but the metaphysical question about the truth or not of the very **realist thesis**.

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Two Possible Answers	

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Two Possible Answers	
Realist answer (Platonism)	The mind <u>is</u> separated from mathematical reality. Numbers, if they exist, they do so independently of our thinking.

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Two Possible Answers	
Realist answer (Platonism)	The mind <u>is</u> separated from mathematical reality. Numbers, if they exist, they do so independently of our thinking.
Idealist answer (constructivism)	The mind <u>is not</u> separated from mathematical reality. Numbers, if they exist, they are made up from our mental activity.

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Realist answer	Numbers, if they exist, they do so independently of our thinking.
Idealist answer	Numbers, if they exist, they are made up from our mental activity.
Both sides can accept that numbers exist and still disagree on whether the mind has any role in their existence.	

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Realist answer	Numbers, if they exist, they do so independently of our thinking.
Idealist answer	Numbers, if they exist, they are made up from our mental activity.
Both sides can accept that numbers exist and still disagree on whether the mind has any role in their existence.	
Assuming or avoiding **ontological commitments** to numbers will not bind us to either side of this debate.	

Dummett's Interpretation: metaphysical

Are the numbers mental constructs or they are independent of our thinking?	
Dummett's Interpretation	Does the mind have a role in the constitution of numbers?
Realist answer	Numbers, if they exist, they do so independently of our thinking.
Idealist answer	Numbers, if they exist, they are made up from our mental activity.
Both sides can accept that numbers exist and still disagree on whether the mind has any role in their existence.	
Assuming or avoiding **ontological commitments** to numbers will not bind us to either side of this debate.	
Dummett's interpretation **is not** treatable through Quinean methodology. It regards the question of the relation of mathematical entities to our thinking as a **metaphysical question**.	

Ontology *vs* Metaphysics

	What is there?
Ontology (Quine)	• Reality is entirely filled by the things that exist. • It is ontology that will tell us what things fill up reality. • And the method of ontological commitment is the right way to address ontological questions.

Ontology *vs* Metaphysics

Ontology (Quine)	**What is there?** • Reality is entirely filled by the things that exist. • It is ontology that will tell us what things fill up reality. • And the method of ontological commitment is the right way to address ontological questions.
Metaphysics (textbook)	**What is it to be there? – What are the characteristics of the most general structure of reality?** • Sometimes our questions aren't on what there is, but on what are the main features of reality. • These are the metaphysical questions, and the method of ontological commitment does not help to answer them. • Reality has a structure and characterizing it is the task of metaphysics.

The Crucial Question
Metaphysical Commitment

For Ontological Disputes (What is there?)

There is the ontological commitment

Provides a method to address ontological questions.

The existential sentences we accept as true give us the things that fill up reality.

The Crucial Question
Metaphysical Commitment

For Ontological Disputes (What is there?)

There is the ontological commitment

Provides a method to address ontological questions.

The existential sentences we accept as true give us the things that fill up reality.

For Metaphysical Disputes (What is it to be there?)

Is there any metaphysical commitment?

Is there any similar method to address metaphysical questions?

Is there any pattern or indicator that would, in the case of metaphysical debates, play the same role as ontological commitment plays in the case of ontological debates?

The Crucial Question
Metaphysical Commitment

For Ontological Disputes (What is there?)

There is the ontological commitment

Provides a method to address ontological questions.

The existential sentences we accept as true give us the things that fill up reality.

For Metaphysical Disputes (What is it to be there?)

Is there any metaphysical commitment?

Is there any similar method to address metaphysical questions?

Is there any pattern or indicator that would, in the case of metaphysical debates, play the same role as ontological commitment plays in the case of ontological debates?

Would there be anything we could call a metaphysical commitment?

The Crucial Answer

Metaphysical Commitment = Logic

For Metaphysical Disputes (What is it to be there?)

There is the metaphysical commitment

If the existential sentences give us what exists (and fills up reality), then the logical principles, in regulating the behaviour of the existential quantifier (and all other connectives), constitute metaphysical principles that **characterize the most general structure of reality**.

Crucial Answer	**Metaphysical Commitment = Logic**

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1) Explaining what it means to exist.

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?	
(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.
(3)	Defining what is obligatory (or **necessary**), allowed (or **possible**) and prohibited (or **impossible**) to all existing things.

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.
(3)	Defining what is obligatory (or **necessary**), allowed (or **possible**) and prohibited (or **impossible**) to all existing things.

Only when I know how existence occurs (2),

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.
(3)	Defining what is obligatory (or **necessary**), allowed (or **possible**) and prohibited (or **impossible**) to all existing things.

Only when I know how existence occurs (2),

I can understand what it means to exist (1).

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.
(3)	Defining what is obligatory (or **necessary**), allowed (or **possible**) and prohibited (or **impossible**) to all existing things.

Only when I know how existence occurs (2),

I can understand what it means to exist (1).

And when I know what is necessary, possible and impossible to all things that exist (3),

The Most General Structure of Reality?

How "the most general structure of reality" can be characterized?

(1)	Explaining what it means to exist.
(2)	Describing how existence occurs.
(3)	Defining what is obligatory (or **necessary**), allowed (or **possible**) and prohibited (or **impossible**) to all existing things.

Only when I know how existence occurs (2),

I can understand what it means to exist (1).

And when I know what is necessary, possible and impossible to all things that exist (3),

then I know how existence occurs (2).

what logic can say about
The Most General Structure of Reality?

Is there anything we can call a Metaphysical Commitment?

There is. It's logic.

The Logical Principles characterize the most general structure of reality because:

what logic can say about
The Most General Structure of Reality?

Is there anything we can call a Metaphysical Commitment?

There is. It's logic.

The Logical Principles characterize the most general structure of reality because:

they establish what is obligatory (or **necessary**), permitted (or **possible**) and prohibited (or **impossible**) to the existing things

what logic can say about
The Most General Structure of Reality?

Is there anything we can call a Metaphysical Commitment?

There is. It's logic.

The Logical Principles characterize the most general structure of reality because:

they establish what is obligatory (or **necessary**), permitted (or **possible**) and prohibited (or **impossible**) to the existing things

in doing so, they define **how existence occurs**

what logic can say about

The Most General Structure of Reality?

Is there anything we can call a Metaphysical Commitment?

There is. It's logic.

The Logical Principles characterize the most general structure of reality because:

they establish what is obligatory (or **necessary**), permitted (or **possible**) and prohibited (or **impossible**) to the existing things

in doing so, they define **how existence occurs**

and in defining how existence occurs, they give us

what logic can say about
The Most General Structure of Reality?

Is there anything we can call a Metaphysical Commitment?

There is. It's logic.

The Logical Principles characterize the most general structure of reality because:

they establish what is obligatory (or **necessary**), permitted (or **possible**) and prohibited (or **impossible**) to the existing things

in doing so, they define **how existence occurs**

and in defining how existence occurs, they give us

what is needed for grasping **the meaning of existence**

Quine's metaphysics

- I think Quine would agree with this definition of logic as a metaphysical commitment.

In "Existence and Quantification", reflecting on the differences between classical and intuitionistic logic, Quine, somewhat reluctantly, admits:

> *Classical quantification theory enjoys an extraordinary combination of depth and simplicity, beauty and utility. It is bright within and bold in its boundaries. Deviations from it are likely, in contrast, to look rather arbitrary. But insofar as they exist it seems clearest and simplest to say that deviant concepts of existence exist along with them.* (112-113)

> *The intuitionist has a different doctrine of being from mine, as he has a different quantification theory; and that I am simply at odds with the intuitionist on the one as on the other.* (108)

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Quine's Interpretation (ontological question)	Do material objects exist or not? (treatable by the method of ontological commitment)

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Quine's interpretation (ontological question)	Do material objects exist or not? (treatable by the method of ontological commitment)

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Dummett's Interpret. (metaphysical question)	Do sensory experiences play a constitutive role in material reality?

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Dummett's Interpret. (metaphysical question)	Do sensory experiences play a constitutive role in material reality?
Realist answer (realism)	Reality is separated from sensory experiences. Material objects, if they exist, they do so independently of our sensory experiences.

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Dummett's Interpret. (metaphysical question)	Do sensory experiences play a constitutive role in material reality?
Realist answer (realism)	Reality <u>is</u> separated from sensory experiences. Material objects, if they exist, they do so independently of our sensory experiences.
Idealist answer (phenomenalism)	Reality <u>is not</u> separated from sensory experiences. Material objects, if they exist, they are constituted by our sensory experiences.

Applying the Criterion
Being different → Inferring different

QUESTION	Do our sensory experiences constitute material objects, or they exist independently of them?
Dummett's Interpret. (metaphysical question)	Do sensory experiences play a constitutive role in material reality?
Realist answer (realism)	Reality <u>is</u> separated from sensory experiences. Material objects, if they exist, they do so independently of our sensory experiences.
Idealist answer (phenomenalism)	Reality <u>is not</u> separated from sensory experiences. Material objects, if they exist, they are constituted by our sensory experiences.
Intractable by Quine's method	both sides can assume ontological commitments to material objects and still diverge on the role of sensory experiences in the constitution of these objects.

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Realism *. realism* *. Platonism*	our cognition is separate from reality
	truth transcends verifiability
	every sentence **P** is true or false regardless of the possibility of its cognitive verification.

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Realism *. realism* *. Platonism*	our cognition is separate from reality	$\vdash \mathbf{P} \vee \neg \mathbf{P}$
	truth transcends verifiability	
	every sentence **P** is true or false regardless of the possibility of its cognitive verification.	

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Realism . *realism* . *Platonism*	our cognition is separate from reality	$\vdash \mathbf{P} \vee \neg \mathbf{P}$
	truth transcends verifiability	
	every sentence **P** is true or false regardless of the possibility of its cognitive verification.	

Idealism . *phenomenalism* . *constructivism*	our cognition is not separate from reality
	truth depends on verifiability
	A sentence **P** for which no evidence enables us to verify or falsify it cognitively is neither true nor false.

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Realism . *realism* . *Platonism*	our cognition is separate from reality truth transcends verifiability every sentence **P** is true or false regardless of the possibility of its cognitive verification.	$\vdash \mathbf{P} \vee \neg \mathbf{P}$
Idealism . *phenomenalism* . *constructivism*	our cognition is not separate from reality truth depends on verifiability A sentence **P** for which no evidence enables us to verify or falsify it cognitively is neither true nor false.	$\nvdash \mathbf{P} \vee \neg \mathbf{P}$

Applying the Criterion

If Dummett's interpretation of the realism *vs* phenomenalism debate is a genuine metaphysical issue, then, according to our criterion, realists and phenomenalists should reason by different and incompatible logics.

Realism . *realism* . *Platonism*	our cognition is separate from reality truth transcends verifiability every sentence **P** is true or false regardless of the possibility of its cognitive verification.	$\vdash \mathbf{P} \vee \neg \mathbf{P}$
Idealism . *phenomenalism* . *constructivism*	our cognition is not separate from reality truth depends on verifiability A sentence **P** for which no evidence enables us to verify or falsify it cognitively is neither true nor false.	$\nvdash \mathbf{P} \vee \neg \mathbf{P}$

Realism and **idealism** are therefore logically incompatible, and the divergence between these two positions is, according to our criterion, genuinely metaphysical.

Explaining How and Explaining Why

In what we have seen so far, there are two distinct ways in which a metaphysical statement can be made.

Explaining How and Explaining Why

In what we have seen so far, there are two distinct ways in which a metaphysical statement can be made.

	$\vdash P \vee \neg P \quad \dashrightarrow \quad \vdash \forall x (P(x) \vee \neg P(x))$
Explaining How (how existence occurs)	When I link existence with quantification, I am led to recognize that because logical principles characterize the quantifiers, they constitute metaphysical principles that characterize existence, **explaining how** it occurs.

Explaining How and Explaining Why

In what we have seen so far, there are two distinct ways in which a metaphysical statement can be made.

	$\vdash P \vee \neg P \quad \dashrightarrow \quad \vdash \forall x (P(x) \vee \neg P(x))$
Explaining How (how existence occurs)	When I link existence with quantification, I am led to recognize that because logical principles characterize the quantifiers, they constitute metaphysical principles that characterize existence, **explaining how** it occurs.

	our cognition is separate from reality
Explaining Why (the meaning of existence)	And when I acknowledge traditional metaphysical theses such as the realist and idealist ones, I am led to recognize the **explanation** they give **of why** the structure of reality is the way it is.

Geometric Metaphysics → Why
Algebraic Metaphysics → How

There are, then, two quite different modes of metaphysical statements!

Geometric Metaphysics → Why
Algebraic Metaphysics → How

There are, then, two quite different modes of metaphysical statements!

Geometric Mode (Why)	**The mode of traditional statements that <u>explain why</u> and to which the realist and idealist theses belong.**
	I call it **geometric** mode because metaphysical statements according to this version have an **intuitive** appeal and a **pictorial** character.

Geometric Metaphysics → Why
Algebraic Metaphysics → How

There are, then, two quite different modes of metaphysical statements!

Geometric Mode (Why)	**The mode of traditional statements that <u>explain why</u> and to which the realist and idealist theses belong.**
	I call it **geometric** mode because metaphysical statements according to this version have an **intuitive** appeal and a **pictorial** character.

Algebraic Mode (How)	**The mode of the logical statements that <u>explain how</u> and to which affirmations as $\vdash P \vee \neg P$ belong.**
	I call it **algebraic** mode, because the statements in this version have a **formalized** and **symbolic** character, like algebra.

The Hypothesis of Isomorphism

Algebraic Mode ≅ Geometric Mode

The analogy I want to suggest with these names is that there is an **isomorphism** between the **algebraic** and the **geometric** modes of metaphysical statements.

The Hypothesis of Isomorphism

Algebraic Mode ≅ Geometric Mode

The analogy I want to suggest with these names is that there is an **isomorphism** between the **algebraic** and the **geometric** modes of metaphysical statements.

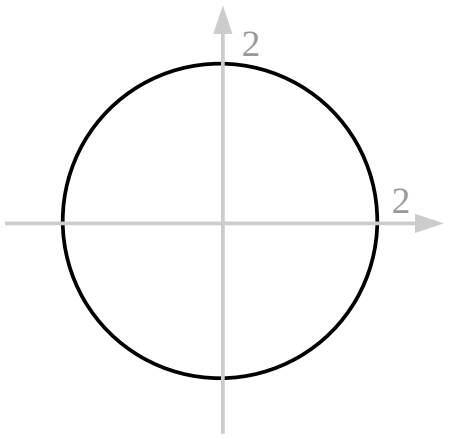
> Just as the Cartesian coordinate system revealed that geometry and algebra are isomorphic, the criterion of logical incompatibility assumes as a **hypothesis** that the geometric and the algebraic modes of metaphysics are isomorphic.

The Hypothesis of Isomorphism

Algebraic Mode ≅ Geometric Mode

The analogy I want to suggest with these names is that there is an **isomorphism** between the **algebraic** and the **geometric** modes of metaphysical statements.

Just as the Cartesian coordinate system revealed that geometry and algebra are isomorphic, the criterion of logical incompatibility assumes as a **hypothesis** that the geometric and the algebraic modes of metaphysics are isomorphic.

Algebraic mode	**Geometric mode**
$x^2 + y^2 = 4$	
$\vdash \ P \vee \neg P$	*our cognition is separate from reality*

The Hypothesis of Isomorphism

Logic ≅ Metaphysics	
There is an isomorphism linking logic (the algebraic mode) and metaphysics (the geometric mode).	
When I say:	**I mean something similar to:**
The logical principles constitute metaphysical principles.	*The algebraic equations constitute geometric figures.*

The Hypothesis of Isomorphism

Logic ≅ Metaphysics

There is an isomorphism linking logic (the algebraic mode) and metaphysics (the geometric mode).

When I say:	I mean something similar to:
The logical principles constitute metaphysical principles.	*The algebraic equations constitute geometric figures.*

Logic is for (traditional) metaphysics the same as algebra is for geometry

just another way of expressing and understanding it.

The Hypothesis of Isomorphism

Logic ≅ Metaphysics

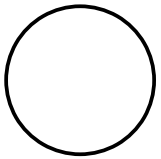
There is an isomorphism linking logic (the algebraic mode) and metaphysics (the geometric mode).

When I say:	I mean something similar to:
The logical principles constitute metaphysical principles.	*The algebraic equations constitute geometric figures.*

Logic is for (traditional) metaphysics the same as algebra is for geometry

just another way of expressing and understanding it.

In a very rough intuitive sense, when I see a **geometric figure**, I **understand why** its points and parts have the characteristics and relations they have, and when I see its **algebraic equation**, I **understand how** its points and parts are placed and relate to each other the way they do.

$x^2 + y^2 = 4$	

The Hypothesis of Isomorphism

Geometry ≅ Algebra

Geometry and algebra do not reduce to each other. They remain separate with different applications and motivations.

But we can look at geometry through algebra. In doing so, we have been able to extend the horizons of geometry beyond the three dimensions of our spatial intuition, which has had very fruitful consequences in our physical theories, for example.

The Hypothesis of Isomorphism

Geometry ≅ Algebra	Metaphysics ≅ Logic
Geometry and algebra do not reduce to each other. They remain separate with different applications and motivations.	Similarly, I don't intend to reduce metaphysics to logic. I think they are separate disciplines with different drives.
But we can look at geometry through algebra. In doing so, we have been able to extend the horizons of geometry beyond the three dimensions of our spatial intuition, which has had very fruitful consequences in our physical theories, for example.	*But we can look at metaphysics through logic, and in doing so, perhaps this different perspective provides new possibilities for solving old problems.*

Algebraic Metaphysics
Logical Theorems as Prohibitions and Obligations

Every theorem with the form $\neg\exists x\, \alpha(x)$	
is a metaphysical principle that establishes a **prohibition** (impossibility) imposed on all beings.	
$\neg\exists x\, (P(x) \wedge \neg P(x))$	No individual can satisfy and not satisfy any predicate.

Algebraic Metaphysics
Logical Theorems as Prohibitions and Obligations

Every theorem with the form $\neg\exists x\, \alpha(x)$	
is a metaphysical principle that establishes a **prohibition** (impossibility) imposed on all beings.	
$\neg\exists x\,(P(x) \wedge \neg P(x))$	No individual can satisfy and not satisfy any predicate.

Every theorem with the form $\forall x\, \alpha(x)$	
is a metaphysical principle that establishes an **obligation** (necessity) imposed on all beings.	
$\forall x\,(P(x) \vee \neg P(x))$	All individuals are required to satisfy or not satisfy any predicate.

Russell's Law as a Metaphysical Principle

Russell's Law $\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$

No individual relates to all and only those who do not relate to themselves.

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
	No individual relates to all and only those who do not relate to themselves.
Russell's Law Instance	$\neg\exists x \forall y\,(Shaves(x,y) \leftrightarrow \neg Shaves(y,y))$
	No individual shaves all and only those who do not shave themselves.

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
No individual relates to all and only those who do not relate to themselves.	

Russell's Law Instance	$\neg\exists x \forall y\,(Shaves(x,y) \leftrightarrow \neg Shaves(y,y))$
No individual shaves all and only those who do not shave themselves.	
The admission of the existence of the barber from the barber paradox is inconsistent with first-order classical logic.	

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
	No individual relates to all and only those who do not relate to themselves.
Russell's Law Instance	$\neg\exists x \forall y\,(Shaves(x,y) \leftrightarrow \neg Shaves(y,y))$
	No individual shaves all and only those who do not shave themselves.
	The admission of the existence of the barber from the barber paradox is inconsistent with first-order classical logic.
Russell's Law Instance	$\neg\exists x \forall y\,((y \in x) \leftrightarrow \neg(y \in y))$
	There is no set of all sets that do not belong to themselves.

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x\forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
No individual relates to all and only those who do not relate to themselves.	

Russell's Law Instance	$\neg\exists x\forall y\,(Shaves(x,y) \leftrightarrow \neg Shaves(y,y))$
No individual shaves all and only those who do not shave themselves.	
The admission of the existence of the barber from the barber paradox is inconsistent with first-order classical logic.	

Russell's Law Instance	$\neg\exists x\forall y\,((y\in x) \leftrightarrow \neg(y\in y))$
There is no set of all sets that do not belong to themselves.	
So, any theory that allows the existence of such a set, such as **naive set theory, is inconsistent with first-order classical logic**.	
$\exists x\forall y\,((y\in x) \leftrightarrow \varphi(y))$ cannot be accepted as an axiom scheme.	

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$

Russell's law is a metaphysical prohibition. It sets a limit to what is possible for any entity. In doing so, it describes an aspect of how existence occurs.

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
Russell's law is a metaphysical prohibition. It sets a limit to what is possible for any entity. In doing so, it describes an aspect of how existence occurs.	
The concept of existence tied to first-order classical logic does not allow entities that relate to everyone and only those who do not relate to themselves.	

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
Russell's law is a metaphysical prohibition. It sets a limit to what is possible for any entity. In doing so, it describes an aspect of how existence occurs.	
The concept of existence tied to first-order classical logic does not allow entities that relate to everyone and only those who do not relate to themselves.	
Supposed entities that violate Russell's law, such as the barber of the paradox and the set of all sets that are not members of themselves, are, therefore, impossible, according to the metaphysical doctrine given by first-order classical logic.	

Russell's Law as a Metaphysical Principle

Russell's Law	$\neg\exists x \forall y\,(R(x,y) \leftrightarrow \neg R(y,y))$
Russell's law is a metaphysical prohibition. It sets a limit to what is possible for any entity. In doing so, it describes an aspect of how existence occurs.	
The concept of existence tied to first-order classical logic does not allow entities that relate to everyone and only those who do not relate to themselves.	
Supposed entities that violate Russell's law, such as the barber of the paradox and the set of all sets that are not members of themselves, are, therefore, impossible, according to the metaphysical doctrine given by first-order classical logic.	
From a logical point of view, we reject the theories that postulate such entities, and from a metaphysical point of view, we deny the existence of such entities.	

Algebraic Metaphysics
Logical Theorems as Prohibitions and Obligations

$\neg\exists x\ \alpha(x)$	$\forall x\ \alpha(x)$

Theorems of a given logic **L** with these forms characterize quite explicitly the most general behaviour of beings according to **L.**

Algebraic Metaphysics
Logical Theorems as Prohibitions and Obligations

$\neg\exists x\ \alpha(x)$	$\forall x\ \alpha(x)$

Theorems of a given logic **L** with these forms characterize quite explicitly the most general behaviour of beings according to **L.**

In establishing what is forbidden (impossible) and what is obligatory (necessary), they also establish what is permitted (possible) to the things that exist.

In doing so, they describe how existence occurs,

and give us all needed to grasp the meaning of existence.

Algebraic Metaphysics
Logical Theorems as Prohibitions and Obligations

$\neg\exists x\ \alpha(x)$ $\forall x\ \alpha(x)$

Theorems of a given logic **L** with these forms characterize quite explicitly the most general behaviour of beings according to **L.**

In establishing what is forbidden (impossible) and what is obligatory (necessary), they also establish what is permitted (possible) to the things that exist.

In doing so, they describe how existence occurs,

and give us all needed to grasp the meaning of existence.

They configure a detailed metaphysical explanation of the structure of reality and the concept of existence given by the logic **L**.

What about the Propositional Theorems?

What is the relation of other theorems, such as the propositional ones, to metaphysics?

What about the Propositional Theorems?

What is the relation of other theorems, such as the propositional ones, to metaphysics?

Theorems relate to one another and in general propositional theorems have first-order cousins.		
$\vdash P \vee \neg P$	$\Rightarrow$	$\vdash \forall x\,(P(x) \vee \neg P(x))$
$\vdash \neg(P \wedge \neg P)$	$\Rightarrow$	$\vdash \neg\exists x\,(P(x) \wedge \neg P(x))$

What about the Propositional Theorems?

What is the relation of other theorems, such as the propositional ones, to metaphysics?

Theorems relate to one another and in general propositional theorems have first-order cousins.		
$\vdash P \vee \neg P$	$\Rightarrow$	$\vdash \forall x\,(P(x) \vee \neg P(x))$
$\vdash \neg(P \wedge \neg P)$	$\Rightarrow$	$\vdash \neg\exists x\,(P(x) \wedge \neg P(x))$

It is because of the relationship between propositional and quantificational theorems that we do not need to restrict the criterion of logical incompatibility to the quantificational ones.

What about the Propositional Theorems?

What is the relation of other theorems, such as the propositional ones, to metaphysics?

Theorems relate to one another and in general propositional theorems have first-order cousins.		
$\vdash P \vee \neg P$	$\Rightarrow$	$\vdash \forall x\,(P(x) \vee \neg P(x))$
$\vdash \neg(P \wedge \neg P)$	$\Rightarrow$	$\vdash \neg\exists x\,(P(x) \wedge \neg P(x))$

It is because of the relationship between propositional and quantificational theorems that we do not need to restrict the criterion of logical incompatibility to the quantificational ones.

For a logic to provide a concept of existence, it must have quantifiers and be at least a first-order logic.
However, any logical incompatibility, even if it is a propositional one, is sufficient to guarantee distinct metaphysical commitments, since propositional incompatibilities generate first-order incompatibilities.

The Generality of Logic

Our justification so far for the metaphysical character of logic is:

When we link existence and quantification, logical principles, in governing quantifiers, become metaphysical principles that regulate and characterize existence.

Then the quantificational theorems, by relying only on logical principles, express how existence occurs and describe the most general structure of reality.

The Generality of Logic

Our justification so far for the metaphysical character of logic is:

When we link existence and quantification, logical principles, in governing quantifiers, become metaphysical principles that regulate and characterize existence.

Then the quantificational theorems, by relying only on logical principles, express how existence occurs and describe the most general structure of reality.

For this argument to be acceptable, we still need to ensure that, taken together, the theorems of any logic do not state particularities but only generalities.

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

> do not divide or separate reality;

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

- do not divide or separate reality;
- do not refer to specific beings or part of them, but always to all beings;

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

- do not divide or separate reality;
- do not refer to specific beings or part of them, but always to all beings;
- do not make any particular, but only utterly general statements;

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

- do not divide or separate reality;
- do not refer to specific beings or part of them, but always to all beings;
- do not make any particular, but only utterly general statements;
- the prohibitions and obligations that they establish are always of all beings, not of just some.

The Generality of Logic

If I assume metaphysics as the discipline that deals with the most general structure of reality, and I also say that the quantificational theorems of logic describe this most general structure, then I have no choice but to require that, **taken together**, **the theorems of any logic**:

- do not divide or separate reality;
- do not refer to specific beings or part of them, but always to all beings;
- do not make any particular, but only utterly general statements;
- the prohibitions and obligations that they establish are always of all beings, not of just some.

These requirements establish a thesis that demarcates the scope of logic.
I call it **The Generality of Logic**.

Generality as a Criterion for Logicality

How to ensure the generality of logic?

Generality as a Criterion for Logicality

How to ensure the generality of logic?

There is no way to demonstrate a generic theorem stating that all quantificational logics must be general.

Generality as a Criterion for Logicality

How to ensure the generality of logic?

There is no way to demonstrate a generic theorem stating that all quantificational logics must be general.

I take generality as a criterion for logicality.

Generality as a Criterion for Logicality

How to ensure the generality of logic?

There is no way to demonstrate a generic theorem stating that all quantificational logics must be general.

I take generality as a criterion for logicality.

A quantificational system is a logic only when it meets the standard of generality.

Generality as a Criterion for Logicality

How to ensure the generality of logic?

There is no way to demonstrate a generic theorem stating that all quantificational logics must be general.

I take generality as a criterion for logicality.

A quantificational system is a logic only when it meets the standard of generality.

So, the best I can do is to argue for the plausibility of the criterion and to show that the most common systems satisfy it.

Generality for First-Order Systems

When exactly does a logical system satisfy generality?

Generality for First-Order Systems

When exactly does a logical system satisfy generality?

When all its theorems that state particularities are just **partial affirmations of** theorems that state generalities.

Generality for First-Order Systems

When exactly does a logical system satisfy generality?

When all its theorems that state particularities are just **partial affirmations of** theorems that state generalities.

This broad criterion can be narrowed to first-order languages as:

particularities		$\alpha(c)$ and $\exists x\,\alpha(x)$	
generalities		$\forall x\,\alpha(x)$ and $\neg\exists x\,\alpha(x)$	
If	**(a)**	$\vdash_L \alpha(c) \Rightarrow \vdash_L \forall x\,\alpha(x)$	then **L** is general
	(b)	$\vdash_L \exists x\,\alpha(x) \Rightarrow \vdash_L \forall x\,\alpha(x)$	

Generality for First-Order Systems

When exactly does a logical system satisfy generality?

When all its theorems that state particularities are just **partial affirmations of** theorems that state generalities.

This broad criterion can be narrowed to first-order languages as:

particularities		$\alpha(c)$ and $\exists x\,\alpha(x)$	
generalities		$\forall x\,\alpha(x)$ and $\neg\exists x\,\alpha(x)$	
If	**(a)**	$\vdash_L \alpha(c) \Rightarrow \vdash_L \forall x\,\alpha(x)$	then **L** is general
	(b)	$\vdash_L \exists x\,\alpha(x) \Rightarrow \vdash_L \forall x\,\alpha(x)$	

L is general because any of its theorems stating a particularity is just a "half-truth" whose whole story is told by a theorem stating a generality that encompasses that particularity.

Intuitionistic Logic Satisfies Generality

(a)	$\vdash_L \alpha(c) \quad \Rightarrow \quad \vdash_L \forall x\, \alpha(x)$	**Intuitionistic logic** satisfies (a) and (b) **Classical logic** only satisfies (a)
(b)	$\vdash_L \exists x\, \alpha(x) \;\Rightarrow\; \vdash_L \forall x\, \alpha(x)$	

Intuitionistic Logic Satisfies Generality

(a)	$\vdash_L \alpha(c) \quad \Rightarrow \quad \vdash_L \forall x\, \alpha(x)$	**Intuitionistic logic** satisfies (a) and (b) **Classical logic** only satisfies (a)
(b)	$\vdash_L \exists x\, \alpha(x) \;\Rightarrow\; \vdash_L \forall x\, \alpha(x)$	

There is a simple proof of (a) and (b) for intuitionistic logic and of (a) for classical logic obtained as corollaries of Prawitz's normalization theorems for natural deduction systems.

Intuitionistic Logic Satisfies Generality

(a)	$\vdash_L \alpha(c) \Rightarrow \vdash_L \forall x\, \alpha(x)$	**Intuitionistic logic** satisfies (a) and (b) **Classical logic** only satisfies (a)
(b)	$\vdash_L \exists x\, \alpha(x) \Rightarrow \vdash_L \forall x\, \alpha(x)$	

There is a simple proof of (a) and (b) for intuitionistic logic and of (a) for classical logic obtained as corollaries of Prawitz's normalization theorems for natural deduction systems.

It's easy to transform any normal proof of $\vdash_C \alpha(c)$ into a proof of $\vdash_C \forall x\, \alpha(x)$ and any normal proof of $\vdash_I \exists x\, \alpha(x)$ into a proof of $\vdash_I \forall x\, \alpha(x)$

First-order intuitionistic logic meets the standard of generality

Classical Logic Satisfies Generality

Classical logic also satisfies generality,
but to realize that one has to go a little deeper

There is an argument that shows that all counterexamples of (b) in classical logic make no particular statements and do not violate the standard of generality, despite having the form of existential affirmations.

Classical Logic Satisfies Generality

Classical logic also satisfies generality, but to realize that one has to go a little deeper	
There is an argument that shows that all counterexamples of (b) in classical logic make no particular statements and do not violate the standard of generality, despite having the form of existential affirmations.	
(b) $\vdash_L \exists x\, \alpha(x) \Rightarrow \vdash_L \forall x\, \alpha(x)$	Here is a counterexample in classical logic
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\, P(y))$	there is at least one individual that, if it is P, then all are Ps.
$\nvdash_C \forall x\,(P(x) \rightarrow \forall y\, P(y))$	given any individual, if it is P, then all are Ps.

Classical Logic Satisfies Generality

(b) $\vdash_L \exists x.\alpha(x) \Rightarrow \vdash_L \forall x.\alpha(x)$	Classical counterexample:
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$
All counterexamples of (b) are classical but not intuitionistic theorems	
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_I \exists x\,(P(x) \rightarrow \forall y\,P(y))$
otherwise, by (b): $\vdash_I \forall x\,(P(x) \rightarrow \forall y\,P(y))$ and then $\vdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$	

Classical Logic Satisfies Generality

(b) $\vdash_L \exists x.\alpha(x) \Rightarrow \vdash_L \forall x.\alpha(x)$	Classical counterexample:
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$
All counterexamples of (b) are classical but not intuitionistic theorems	
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_I \exists x\,(P(x) \rightarrow \forall y\,P(y))$
otherwise, by (b): $\vdash_I \forall x\,(P(x) \rightarrow \forall y\,P(y))$ and then $\vdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$	

- This fact guarantees that any justification for the validity of a counterexample of (b) $\exists x\,\alpha(x)$ will depend on an instance of the excluded middle $(B \vee \neg B)$ which expresses two particular distinct circumstances that ensure the classical validity of $\exists x\,\alpha(x)$.

Classical Logic Satisfies Generality

(b) $\vdash_L \exists x.\alpha(x) \Rightarrow \vdash_L \forall x.\alpha(x)$	Classical counterexample:
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$
All counterexamples of (b) are classical but not intuitionistic theorems	
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_I \exists x\,(P(x) \rightarrow \forall y\,P(y))$
otherwise, by (b): $\vdash_I \forall x\,(P(x) \rightarrow \forall y\,P(y))$ and then $\vdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$	

- This fact guarantees that any justification for the validity of a counterexample of (b) $\exists x\,\alpha(x)$ will depend on an instance of the excluded middle $(B \vee \neg B)$ which expresses two particular distinct circumstances that ensure the classical validity of $\exists x\,\alpha(x)$.

- The fact that $\exists x\alpha(x)$ is valid does not inform us which one of the two cases occurs, B or $\neg B$, and therefore, we do not make any particular, but a general statement when we affirm that $\vdash_C \exists x\,\alpha(x)$.

Classical Logic Satisfies Generality

(b) $\vdash_L \exists x.\alpha(x) \Rightarrow \vdash_L \forall x.\alpha(x)$		Classical counterexample:
$\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_C \forall x\,(P(x) \rightarrow \forall y\,P(y))$	$\nvdash_I \exists x\,(P(x) \rightarrow \forall y\,P(y))$

- In our counterexample, $\vdash_C \exists x\,(P(x) \rightarrow \forall y\,P(y))$ because both in the circumstance in which not all individuals are Ps ($\neg\forall x\,P(x)$), and in the circumstance in which all are ($\forall x\,P(x)$), the sentence is true.

- There are, then, two different situations in which $\exists x\,(P(x) \rightarrow \forall y\,P(y))$ is true and stating its classical validity says nothing on which one is in force. It tells only that the disjunction of them ($\forall x\,P(x) \vee \neg\forall x\,P(x)$) holds.

- But this disjunction does not state any particularity and does not defy the standard of generality.

Summing Up

Proposal

Standard for Metaphysical Disputes

- There is no metaphysical disagreement without logical incompatibility.

Summing Up

Proposal

Standard for Metaphysical Disputes

- There is no metaphysical disagreement without logical incompatibility.

Costs (or commitments)

- Metaphysics deals with the most general structure of reality.
- What characterizes a system as logic is that it says only generalities.
- There is an isomorphism between logic and metaphysics.

Summing Up

Proposal

Standard for Metaphysical Disputes

- There is no metaphysical disagreement without logical incompatibility.

Costs (or commitments)

- Metaphysics deals with the most general structure of reality.
- What characterizes a system as logic is that it says only generalities.
- There is an isomorphism between logic and metaphysics.

Benefits (or consequences)

- It saves metaphysics from deflationary attacks.
- It shields metaphysics from verbal disputes.
- It offers a justification for the laws of logic.

The Crucial Answer

Metaphysical Commitment = Logic

For Metaphysical Disputes (What is it to exist?)

There is the Metaphysical Commitment

If the existential sentences give us what exists (and fills up reality), then the logical principles, in regulating the behavior of the existential quantifier (and all other connectives), constitute metaphysical principles that **characterize the most general structure of reality**.

Crucial Answer	**Metaphysical Commitment = Logic**

Thank You!