AI & God

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Intro to Logic-based AI
11/7/2024

Other Rings …

NFL, Inductive Logic, Urns, Predictive Markets, & The Election …

HOL …

First, QBF for Quantum Computing …

FOL

√ FOL

√ FOL

Epistemic + FOL

$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_dVv$

√ FOL

Epistemic + FOL (for coverage of "killer" robots, later)

$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_dVv$

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$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_dVv$

√ FOL

√ Epistemic + FOL (for coverage of "killer" robots, later)

$$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_d V v$$

TOL

$$\exists X[X(j) \wedge \neg X(m) \wedge S(X)]$$

√ FOL

√ Epistemic + FOL (for coverage of "killer" robots, later)

$$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_dVv$$

TOL

$$\exists X[X(j) \wedge \neg X(m) \wedge S(X)]$$

√ FOL

√ Epistemic + FOL (for coverage of "killer" robots, later)

$\mathbf{B}_d\mathbf{B}_v\mathbf{B}_dVv$

TOL

? $\exists X[X(j) \wedge \neg X(m) \wedge S(X)]$

Double-Minded Man

The Contemporary Craft of Creating Characters
Meets Today's Cognitive Architectures:
A Case Study in Expressivity*

Selmer Bringsjord • John Licato • Alexander Bringsjord

version of 0121161500NY

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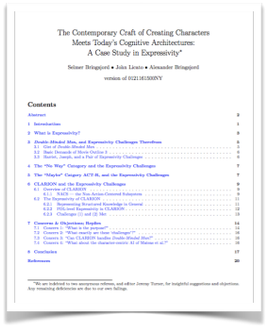

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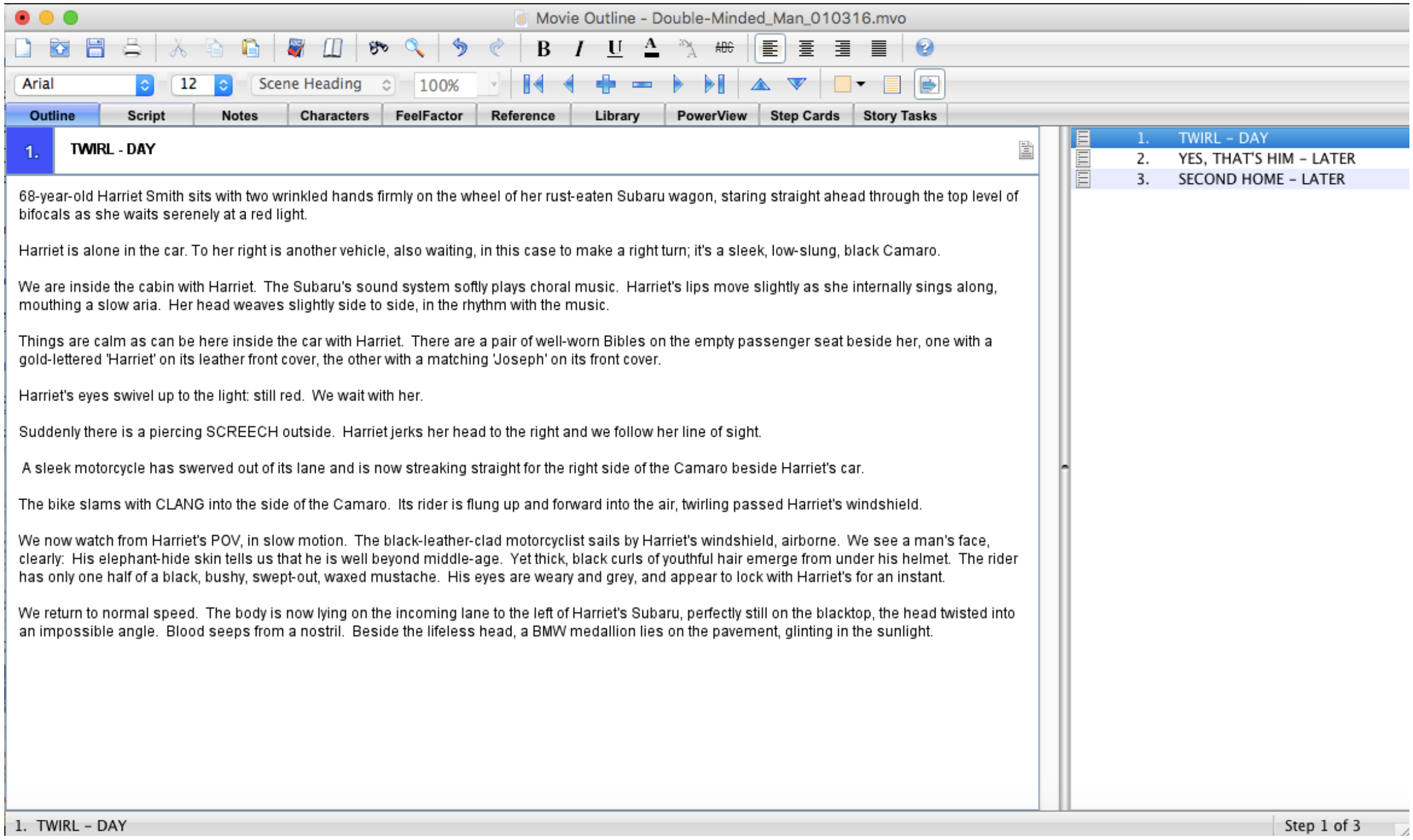

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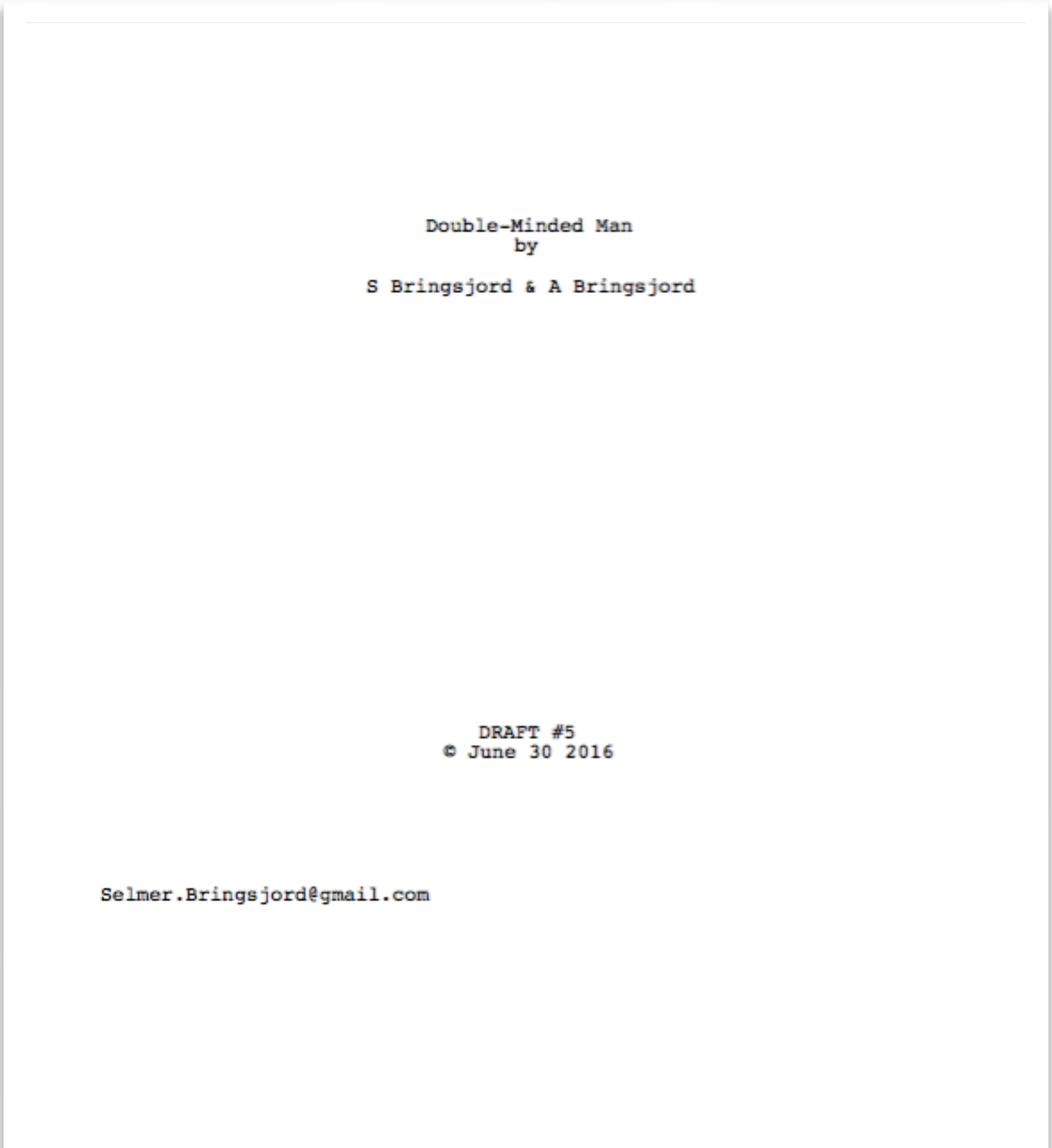

Double-Minded Man
by

S Bringsjord & A Bringsjord

DRAFT #5
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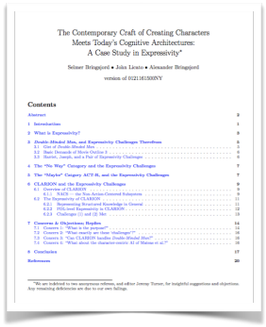

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Double-Minded Man

1. TWIRL - DAY

68-year-old Harriet Smith sits with two wrinkled hands firmly on the wheel of her rust-eaten Subaru wagon, staring straight ahead through the top level of bifocals as she waits serenely at a red light.

Harriet is alone in the car. To her right is another vehicle, also waiting, in this case to make a right turn; it's a sleek, low-slung, black Camaro.

We are inside the cabin with Harriet. The Subaru's sound system softly plays choral music. Harriet's lips move slightly as she internally sings along, mouthing a slow aria. Her head weaves slightly side to side, in the rhythm with the music.

Things are calm as can be here inside the car with Harriet. There are a pair of well-worn Bibles on the empty passenger seat beside her, one with a gold-lettered 'Harriet' on its leather front cover, the other with a matching 'Joseph' on its front cover.

Harriet's eyes swivel up to the light: still red. We wait with her.

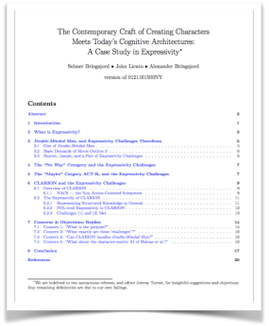
Suddenly there is a piercing SCREECH outside. Harriet jerks her head to the right and we follow her line of sight.

A sleek motorcycle has swerved out of its lane and is now streaking straight for the right side of the Camaro beside Harriet's car.

The bike slams with CLANG into the side of the Camaro. Its rider is flung up and forward into the air, twirling passed Harriet's windshield.

We now watch from Harriet's POV, in slow motion. The black-leather-clad motorcyclist sails by Harriet's windshield, airborne. We see a man's face, clearly: His elephant-hide skin tells us that he is well beyond middle-age. Yet thick, black curls of youthful hair emerge from under his helmet. The rider has only one half of a black, bushy, swept-out, waxed mustache. His eyes are weary and grey, and appear to lock with Harriet's for an instant.

We return to normal speed. The body is now lying on the incoming lane to the left of Harriet's Subaru, perfectly still on the blacktop, the head twisted into an impossible angle. Blood seeps from a nostril. Beside the lifeless head, a BMW medallion lies on the pavement, glinting in the sunlight.



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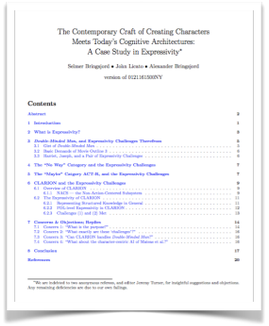
We return to normal speed. The body is now lying on the incoming lane to the left of Harriet's Subaru, perfectly still on the blacktop, the head twisted into an impossible angle. Blood seeps from a nostril. Beside the lifeless head, a BMW medallion lies on the pavement, glinting in the sunlight.



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$$\exists X[X(joseph) \wedge \neg X(m(harriet, joseph)) \wedge Sleazy(X)]$$

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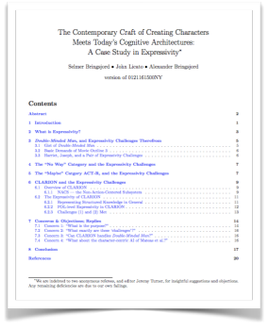

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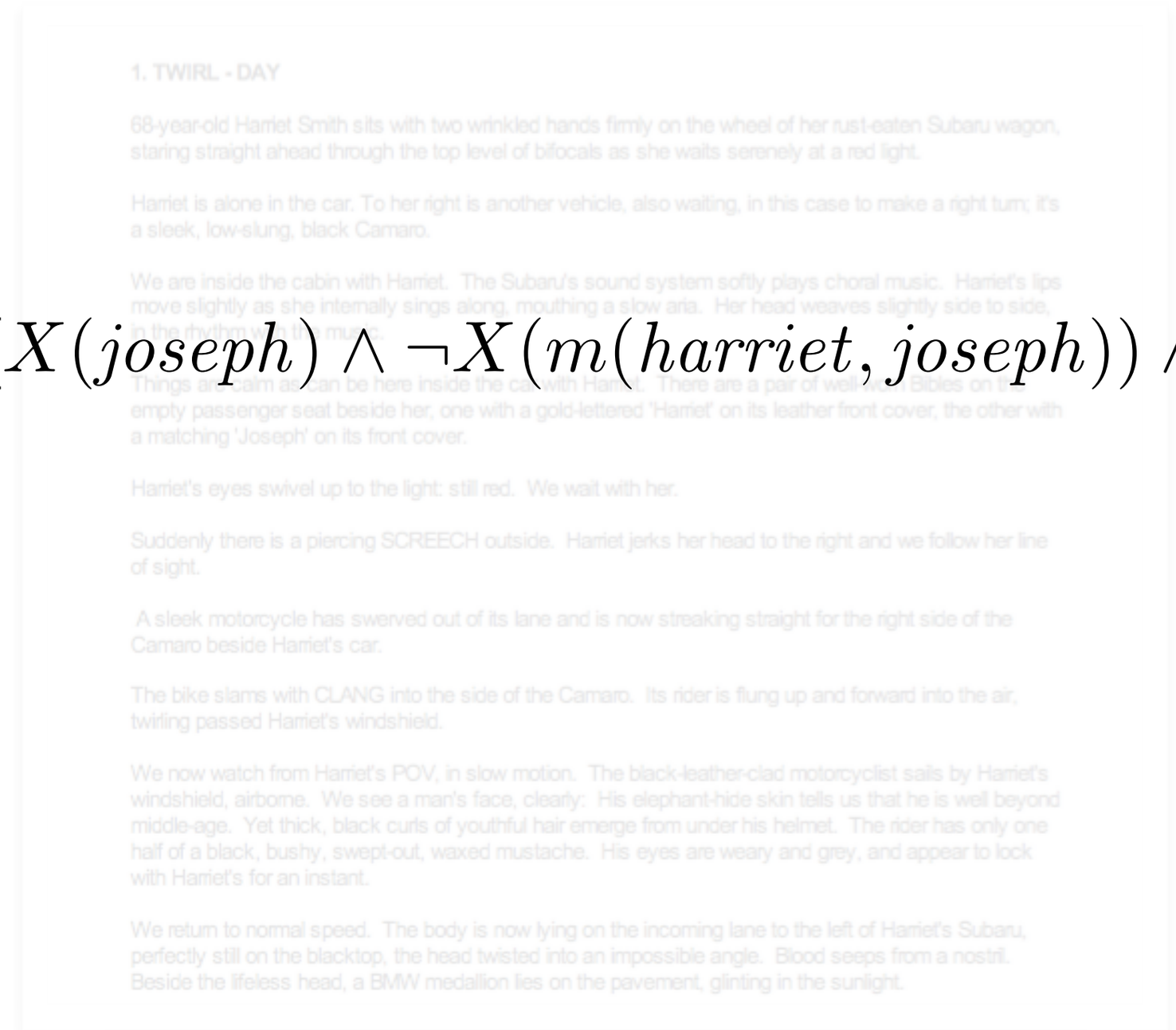

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We return to normal speed. The body is now lying on the incoming lane to the left of Harriet's Subaru, perfectly still on the blacktop, the head twisted into an impossible angle. Blood seeps from a nostril. Beside the lifeless head, a BMW medallion lies on the pavement, glinting in the sunlight.

√ $\exists X[X(joseph) \wedge \neg X(m(harriet, joseph)) \wedge Sleazy(X)]$

Climbing the *k*-order Ladder

Climbing the *k*-order Ladder

a is a llama, as is *b*, *a* likes *b*, and the father of *a* is a llama as well.

Climbing the *k*-order Ladder

$$Llama(a) \wedge Llama(b) \wedge Likes(a, b) \wedge Llama(fatherOf(a))$$

a is a llama, as is *b*, *a* likes *b*, and the father of *a* is a llama as well.

Climbing the *k*-order Ladder

ZOL $Llama(a) \wedge Llama(b) \wedge Likes(a, b) \wedge Llama(fatherOf(a))$

a is a llama, as is *b*, *a* likes *b*, and the father of *a* is a llama as well.

Climbing the *k*-order Ladder

There's some thing which is a llama and likes *b* (which is also a llama), and whose father is a llama too.

ZOL $Llama(a) \wedge Llama(b) \wedge Likes(a, b) \wedge Llama(fatherOf(a))$

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Climbing the *k*-order Ladder

$$\exists x[Llama(x) \wedge Llama(b) \wedge Likes(x, b) \wedge Llama(fatherOf(x))]$$

There's some thing which is a llama and likes *b* (which is also a llama), and whose father is a llama too.

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Climbing the *k*-order Ladder

Things *x* and *y*, along with the father of *x*,
share a certain property (and *x* likes *y*).

FOL $\exists x[Llama(x) \wedge Llama(b) \wedge Likes(x, b) \wedge Llama(fatherOf(x))]$

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Climbing the *k*-order Ladder

$$\exists x \exists y \exists R[R(x) \wedge R(y) \wedge Likes(x, y) \wedge R(fatherOf(x))]$$

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Climbing the *k*-order Ladder

SOL $\exists x \exists y \exists R[R(x) \wedge R(y) \wedge Likes(x, y) \wedge R(fatherOf(x))]$

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Climbing the *k*-order Ladder

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Climbing the *k*-order Ladder

$$\exists x, y\ \exists R, R^2[R(x) \wedge R(y) \wedge R^2(x, y) \wedge Positive(R^2) \wedge R(fatherOf(x))]$$

Things *x* and *y*, along with the father of *x*, share a certain property; and, *x* R^2s *y*, where R^2 is a positive property.

SOL $\exists x \exists y \exists R[R(x) \wedge R(y) \wedge Likes(x, y) \wedge R(fatherOf(x))]$

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Climbing the *k*-order Ladder

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Climbing the *k*-order Ladder

TOL $\mathscr{L}_3$

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SOL $\mathscr{L}_2$

$$\exists x \exists y \exists R[R(x) \wedge R(y) \wedge Likes(x, y) \wedge R(fatherOf(x))]$$

Things *x* and *y*, along with the father of *x*, share a certain property (and *x* likes *y*).

FOL $\mathscr{L}_1$

$$\exists x[Llama(x) \wedge Llama(b) \wedge Likes(x, b) \wedge Llama(fatherOf(x))]$$

There's some thing which is a llama and likes *b* (which is also a llama), and whose father is a llama too.

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Climbing the *k*-order Ladder

⋮

TOL $\mathscr{L}_3$

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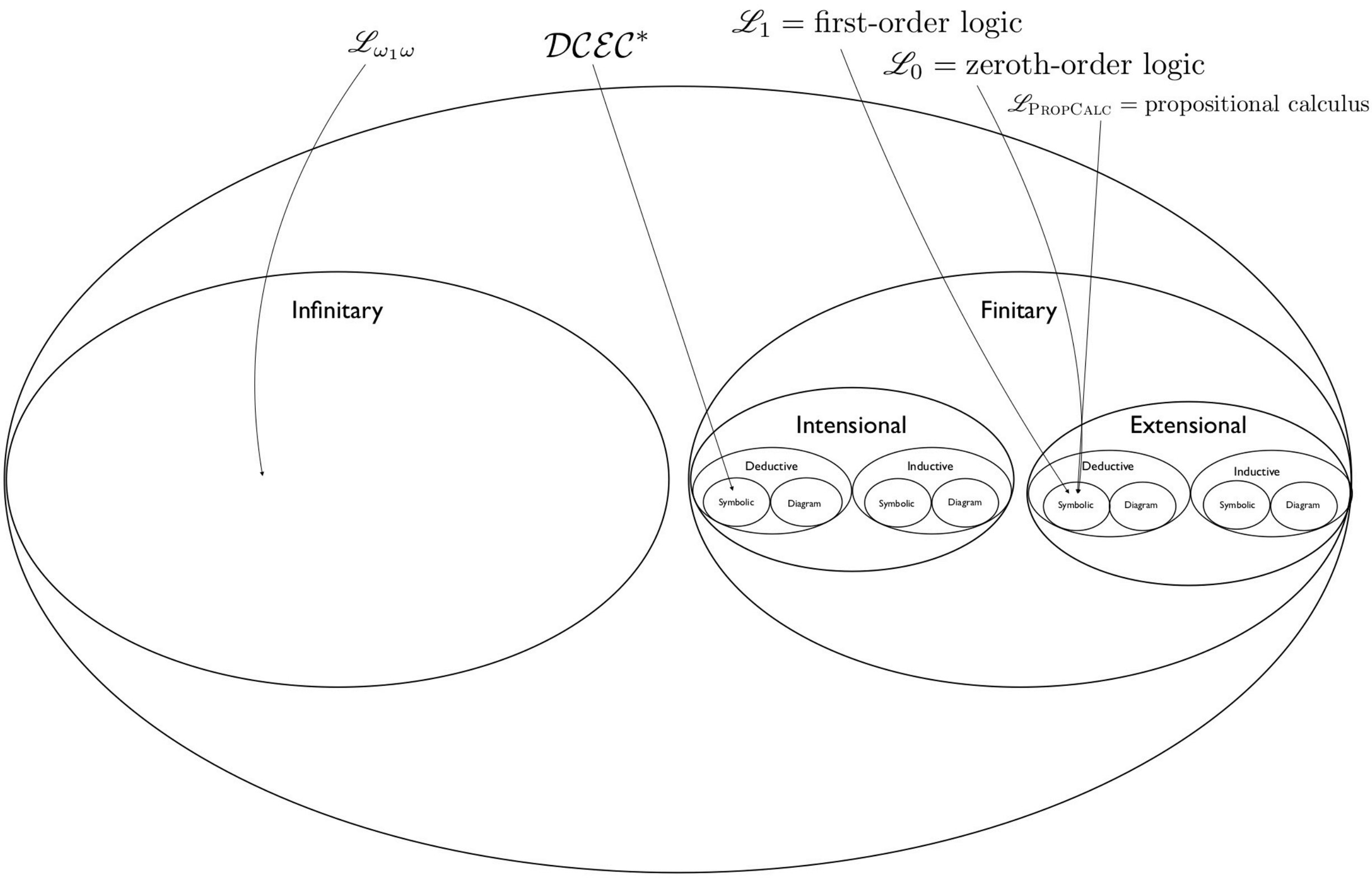
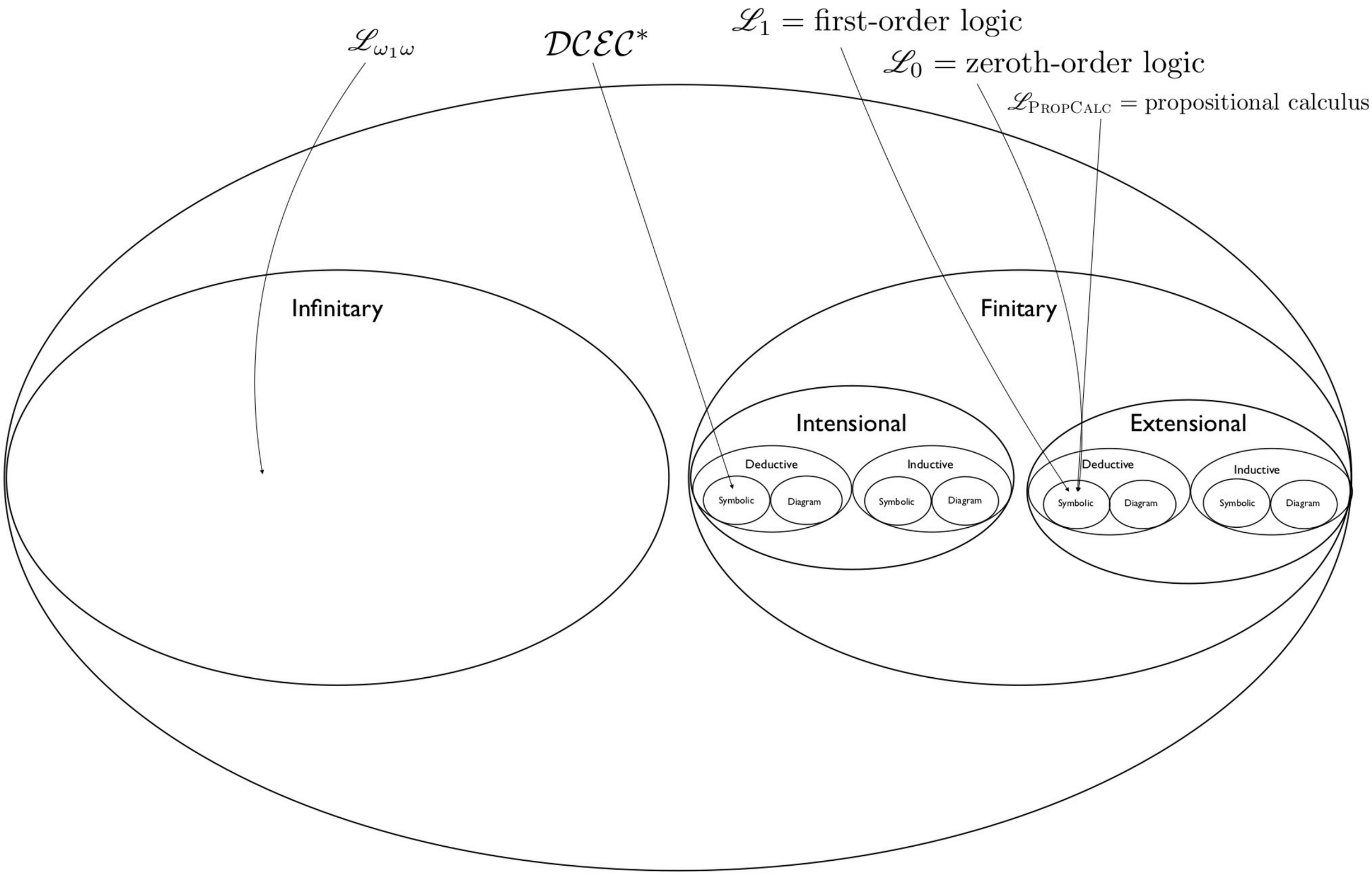
The Universe of Logics



$\mathscr{L}_3$
$\mathscr{L}_2$

The Universe of Logics



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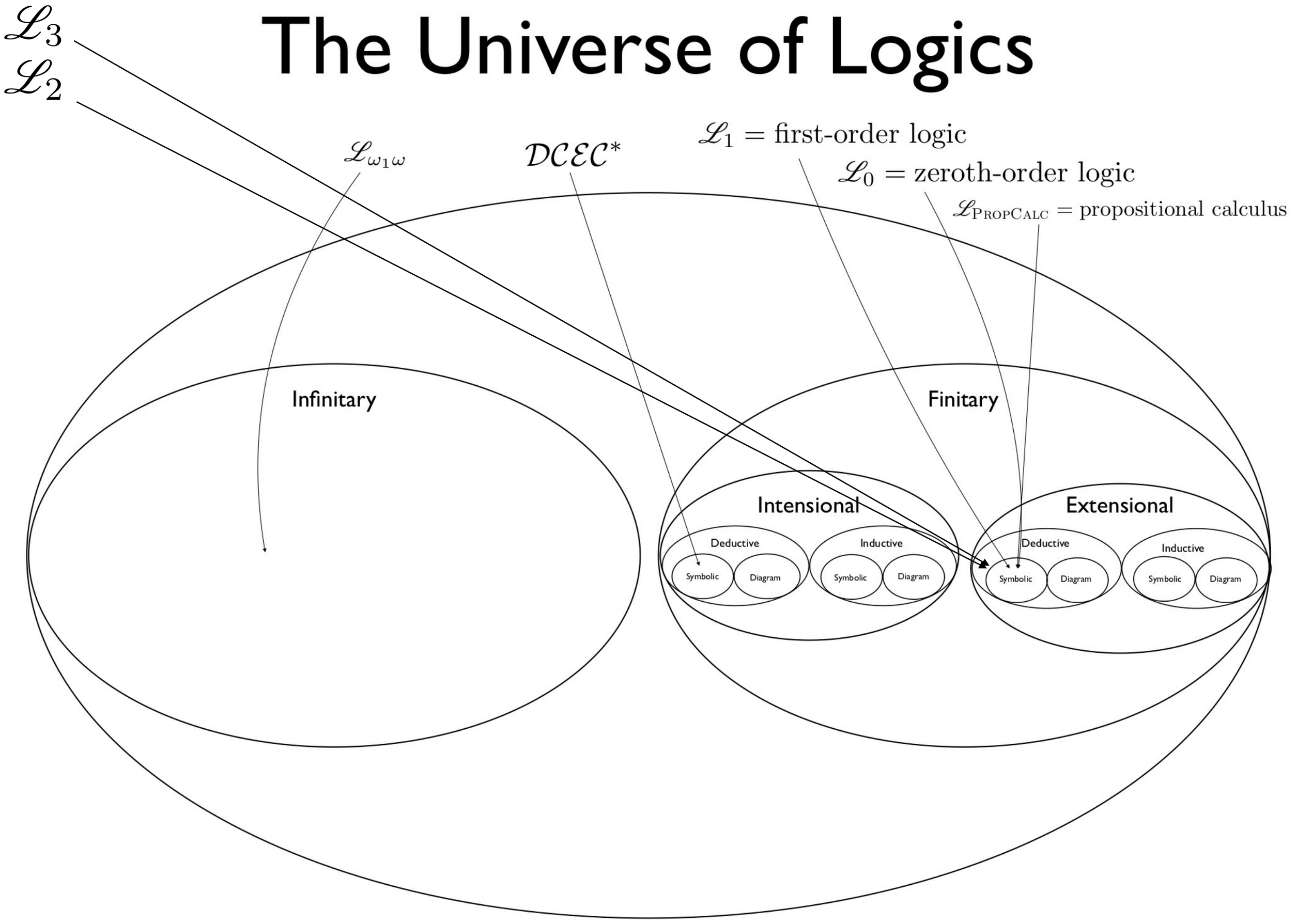

Climbing the *k*-order Ladder

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TOL $\mathscr{L}_3$

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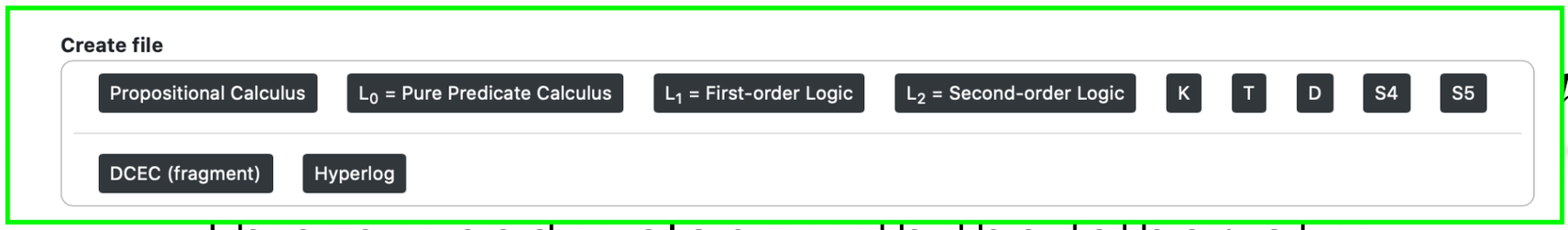

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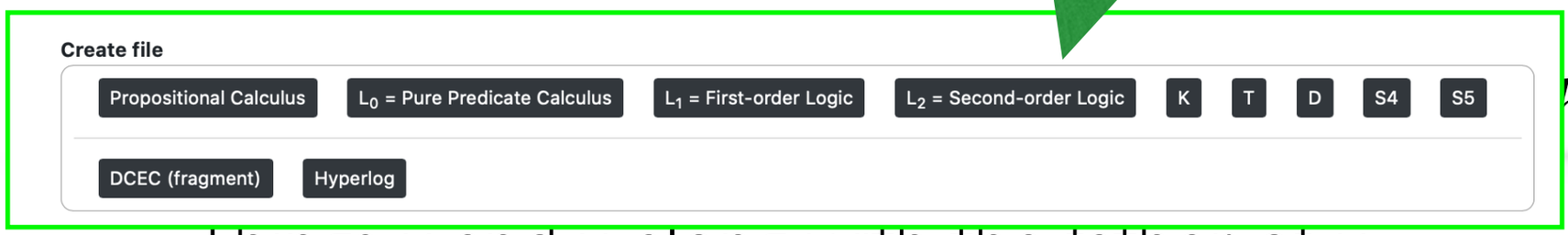

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Other AI-&-God Stuff …

Benzmüller-Scott-Gödel

A1	Either a property or its negation is positive, but not both:	$\forall \phi[P(\neg\phi) \equiv \neg P(\phi)]$
A2	A property necessarily implied by a positive property is positive:	$\forall \phi \forall \psi[(P(\phi) \wedge \Box\forall x[\phi(x) \supset \psi(x)]) \supset P(\psi)]$
T1	Positive properties are possibly exemplified:	$\forall \phi[P(\phi) \supset \Diamond\exists x \phi(x)]$
D1	A *God-like* being possesses all positive properties:	$G(x) \equiv \forall \phi[P(\phi) \supset \phi(x)]$
A3	The property of being God-like is positive:	$P(G)$
C	Possibly, God exists:	$\Diamond\exists x G(x)$
A4	Positive properties are necessarily positive:	$\forall \phi[P(\phi) \supset \Box\, P(\phi)]$
D2	An *essence* of an individual is a property possessed by it and necessarily implying any of its properties:	$\phi \; ess. \; x \equiv \phi(x) \wedge \forall \psi(\psi(x) \supset \Box\forall y(\phi(y) \supset \psi(y)))$
T2	Being God-like is an essence of any God-like being:	$\forall x[G(x) \supset G \; ess. \; x]$
D3	*Necessary existence* of an individ. is the necessary exemplification of all its essences:	$NE(x) \equiv \forall \phi[\phi \; ess. \; x \supset \Box\exists y \phi(y)]$
A5	Necessary existence is a positive property:	$P(NE)$
T3	Necessarily, God exists:	$\Box\exists x G(x)$

Benzmüller-Scott-Gödel

A1	Either a property or its negation is positive, but not both: $\forall\phi[P(\neg\phi) \equiv \neg P(\phi)]$	
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T3	Necessarily, God exists:	$\Box\exists x G(x)$

X

Benzmüller-Scott-Gödel

X

A Victorious Gödelian Variant?

Intelligently extracted from Gödel/Benzmüller's A1; F1a from Oppy.

$$\forall R(Pos(R) \rightarrow \neg Pos(\bar{R}))$$

Gödel/Benzmüller's A2; F2 from Oppy.

$$\forall R, R'[Pos(R) \wedge \Box \forall x(R(x) \rightarrow R'(x))] \rightarrow Pos(R')]$$

$$Pos(NE)$$

$$\forall R[Pos!(R) \leftrightarrow Pos(ER)]$$

Theorem 5 — welcome-weak? — from Oppy:

$$\forall R[Pos!(R) \rightarrow \Box \exists xER(x)]$$

Variant: *Positive* to *Great-making*

Intelligently extracted from Gödel/Benzmüller's A1; F1a from Oppy.

$$\forall R(GM(R) \rightarrow \neg GM(\bar{R}))$$

Gödel/Benzmüller's A2; F2 from Oppy.

$$\forall R, R'[GM(R) \wedge \Box \forall x(R(x) \rightarrow R'(x))] \rightarrow GM(R')]$$

$$GM(NE)$$

$$\forall R[GM!(R) \leftrightarrow GM(ER)]$$

Theorem 5 from Oppy:

$$\forall R[GM!(R) \rightarrow \Box \exists x GM(x)]$$

Argument for God's Existence From AI

http://kryten.mm.rpi.edu/TheArgGodExistsFromAI.pdf

AI & God:AI is Idolatry

version 110724NY

AI & God:AI is Idolatry

version 110724NY

AI & God:AI is Idolatry

version 110724NY

Goal: Establish that …

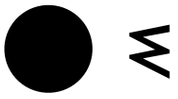
Goal: Establish that …

AI is idolatry.

Goal: Establish that …

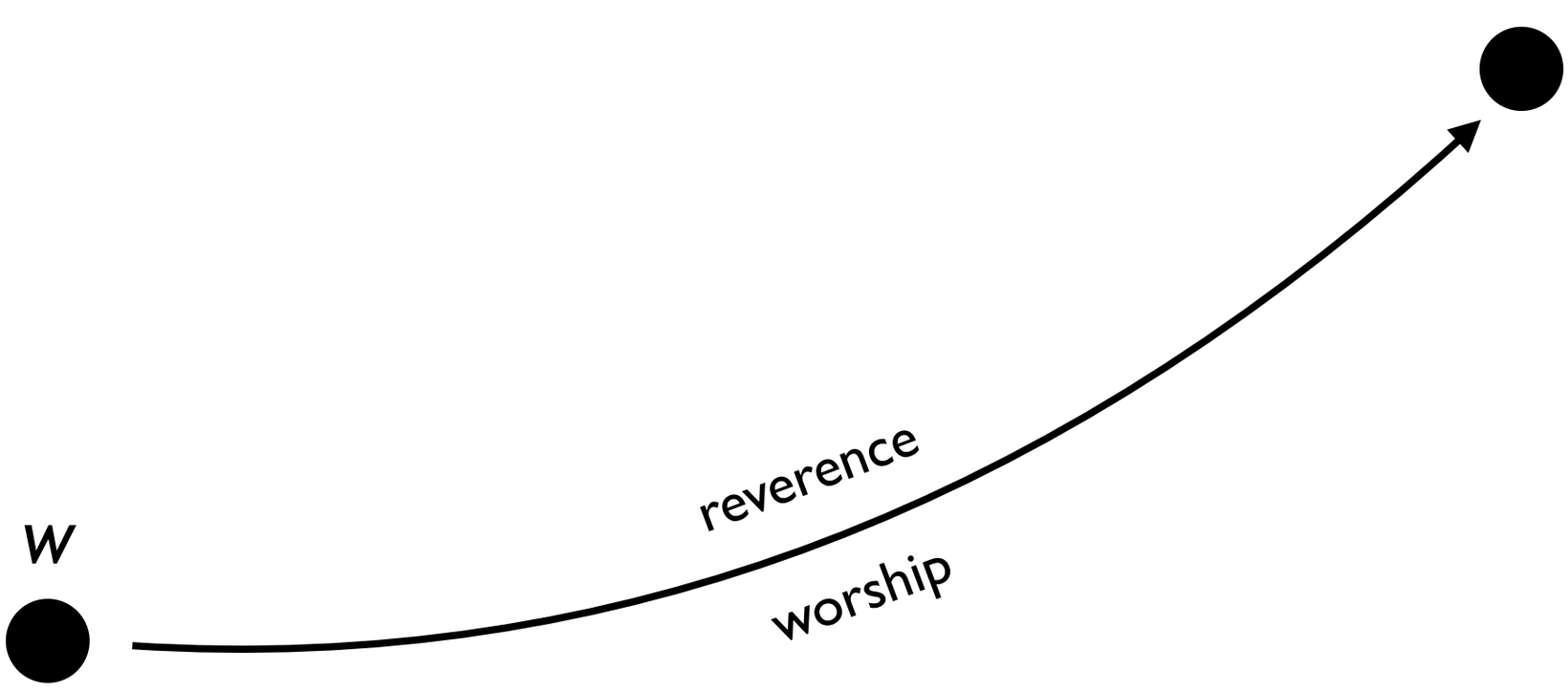
Goal: Establish that …

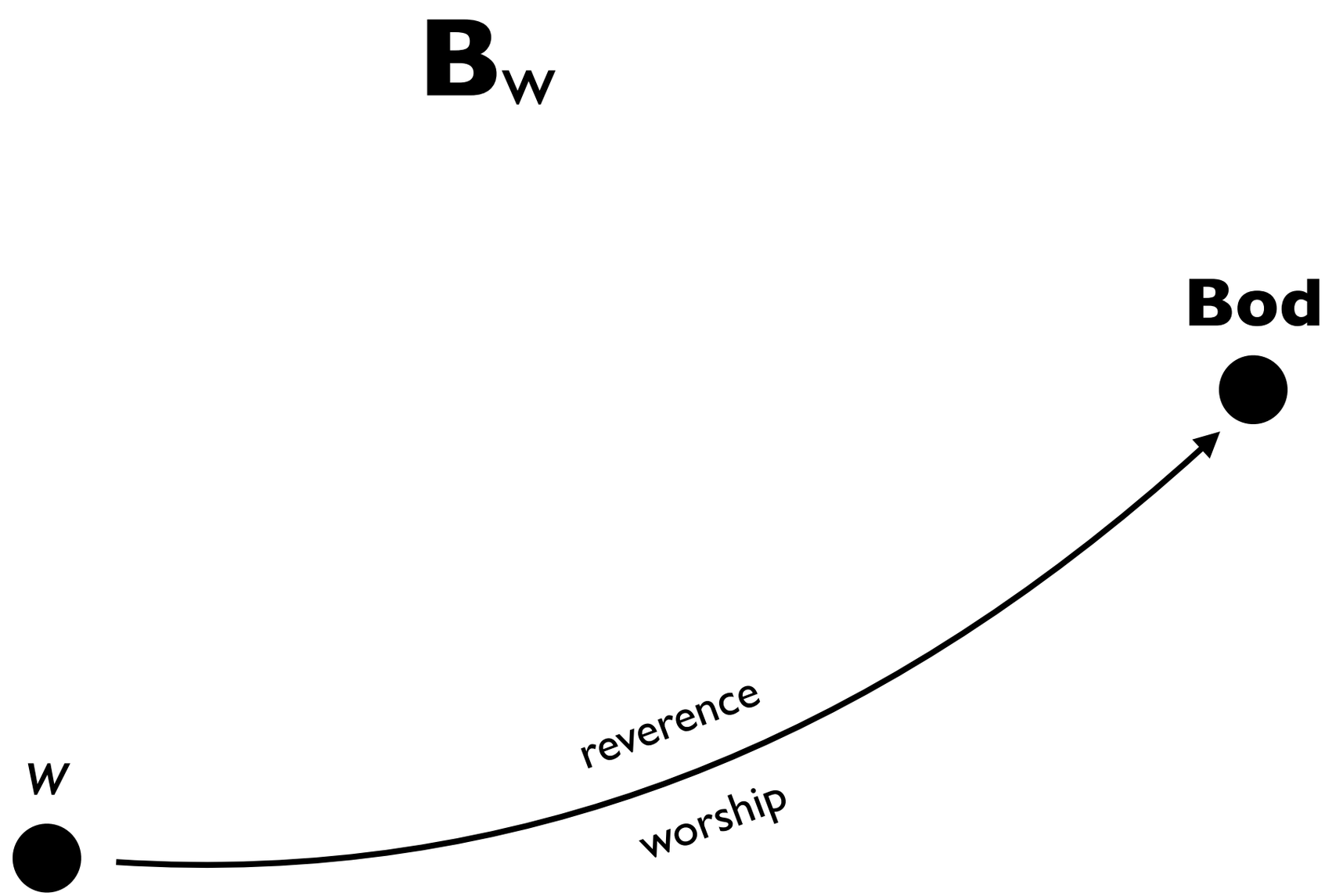
AI is a *type* of idolatry.



Bod
w

Bod





$\mathbf{B}_w$
Bod
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reverence
worship

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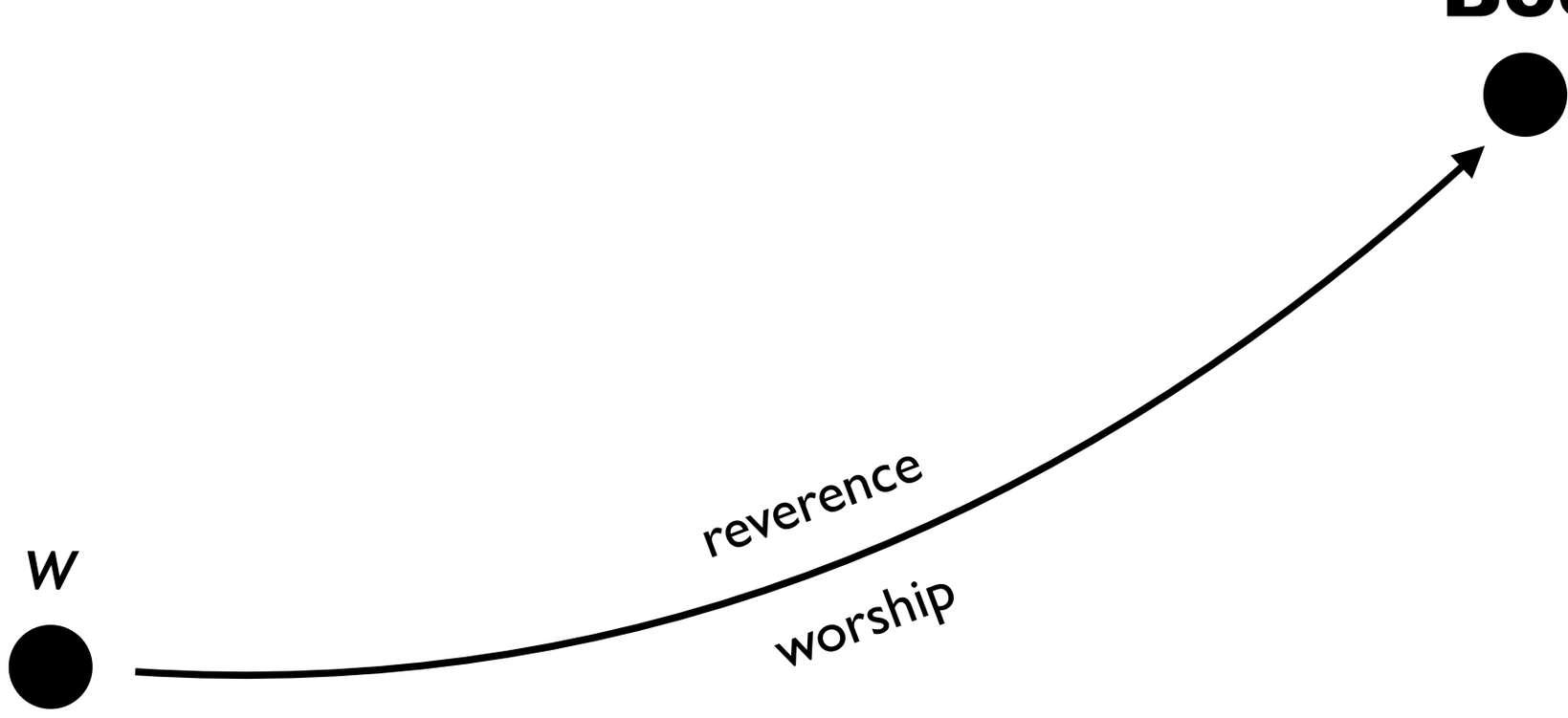
reverence

worship

$\mathbf{B}_w$ {

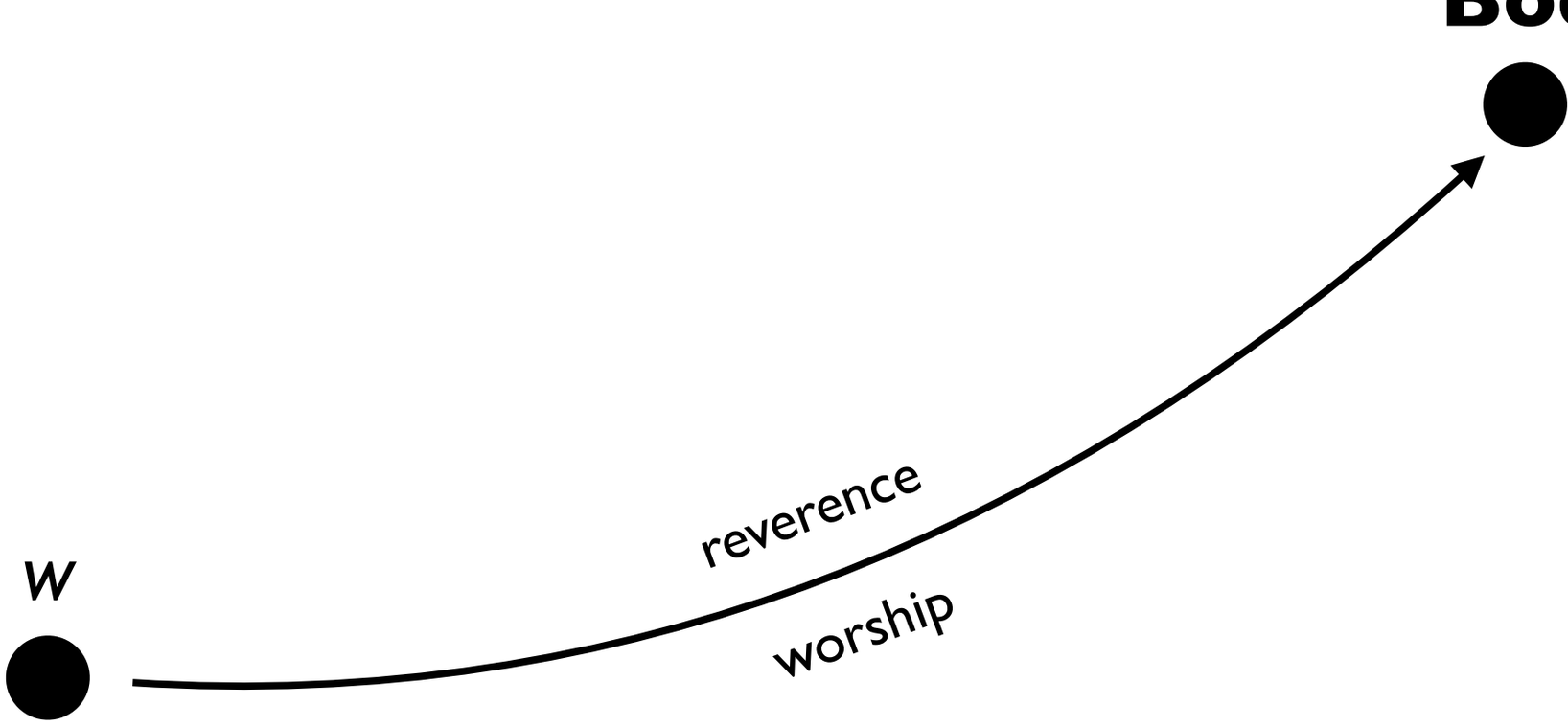
usually good (ergo not omnibenevolent)



B_W {

localized (ergo not omnipresent)

usually good (ergo not omnibenevolent)



$\mathbf{B_W}$ {

quite powerful (ergo not omnipotent)

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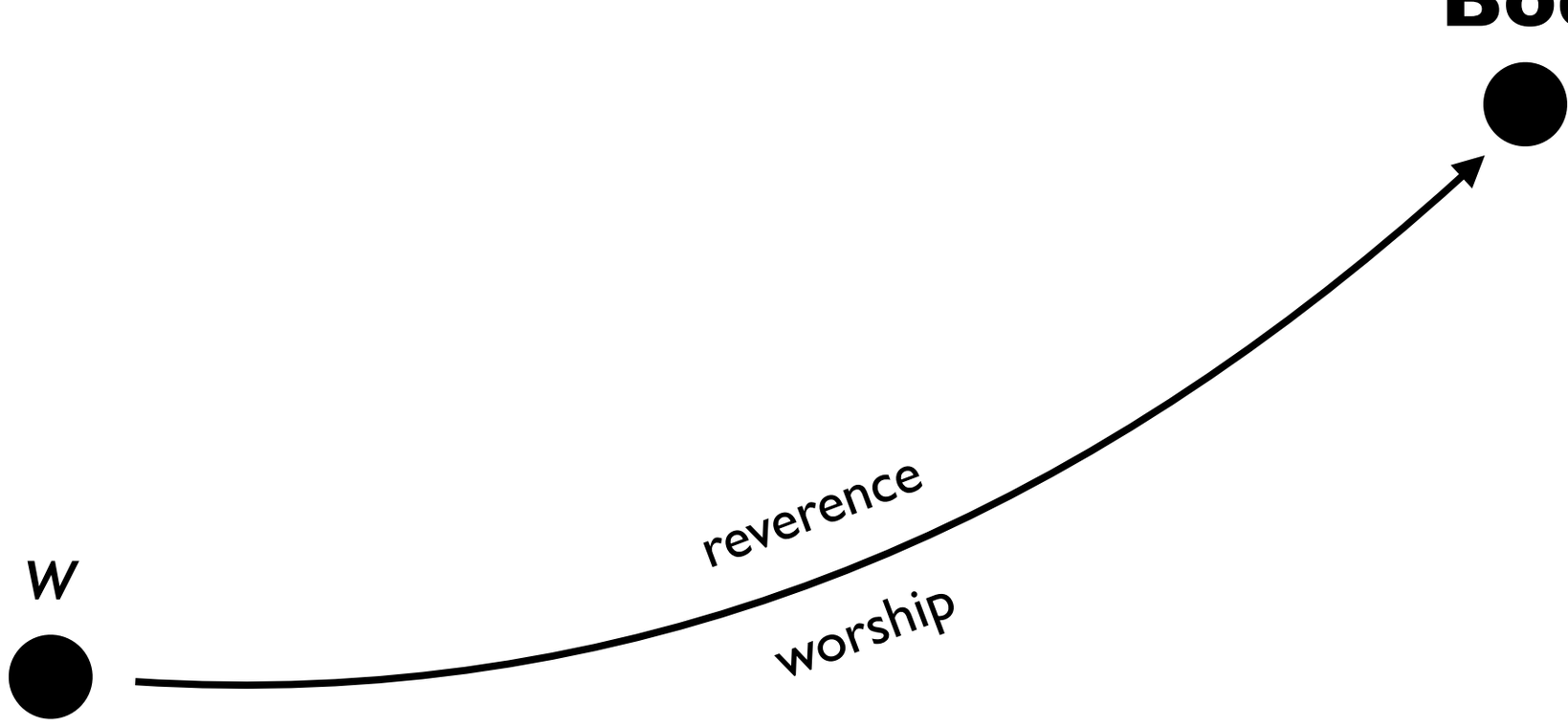


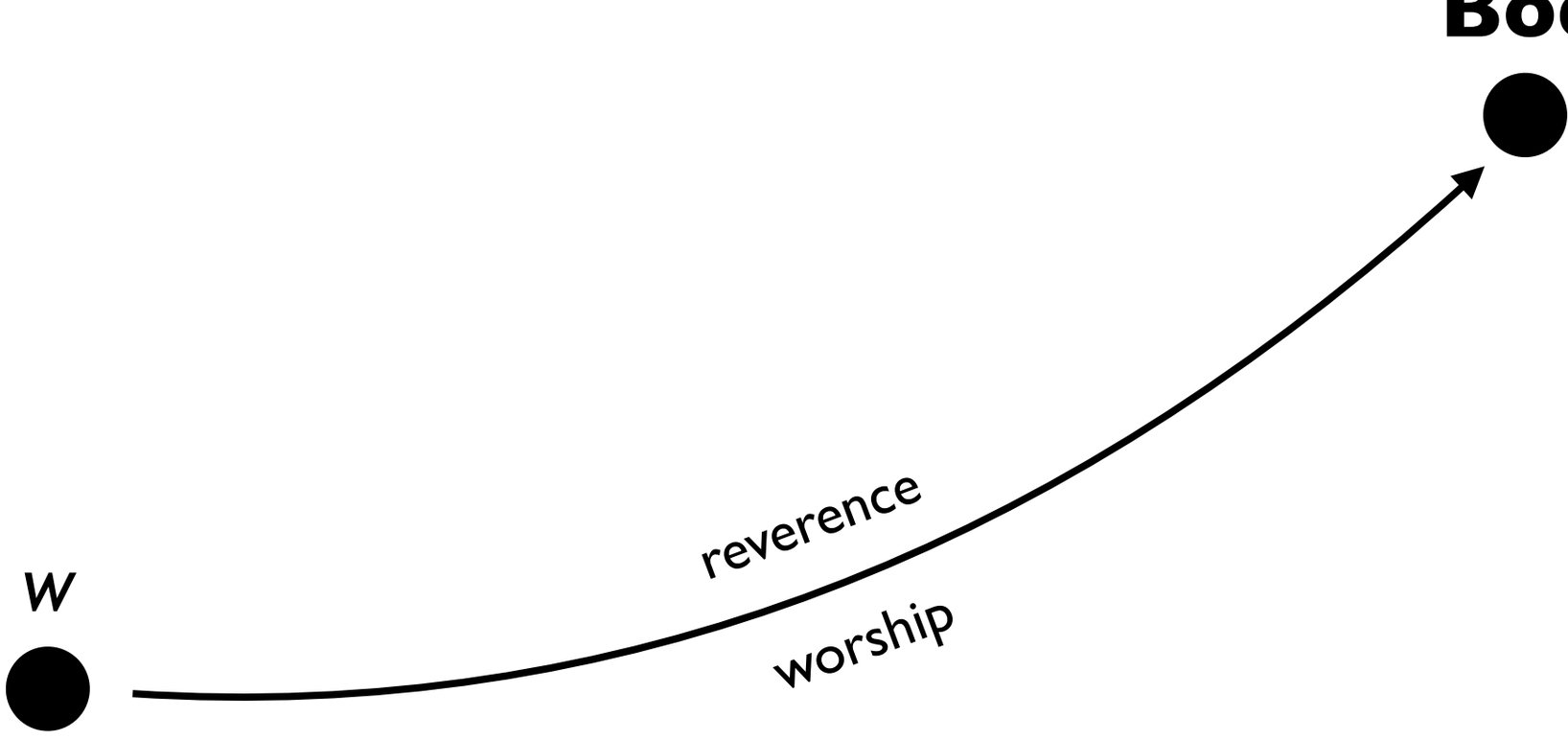
B_W {

emerged out of chaos (ergo not uncausable)

quite powerful (ergo not omnipotent)

localized (ergo not omnipresent)

usually good (ergo not omnibenevolent)



Idolatry: False God (= Bod)

$\mathbf{B_w}$ { emerged out of chaos (ergo not uncausable)
quite powerful (ergo not omnipotent)
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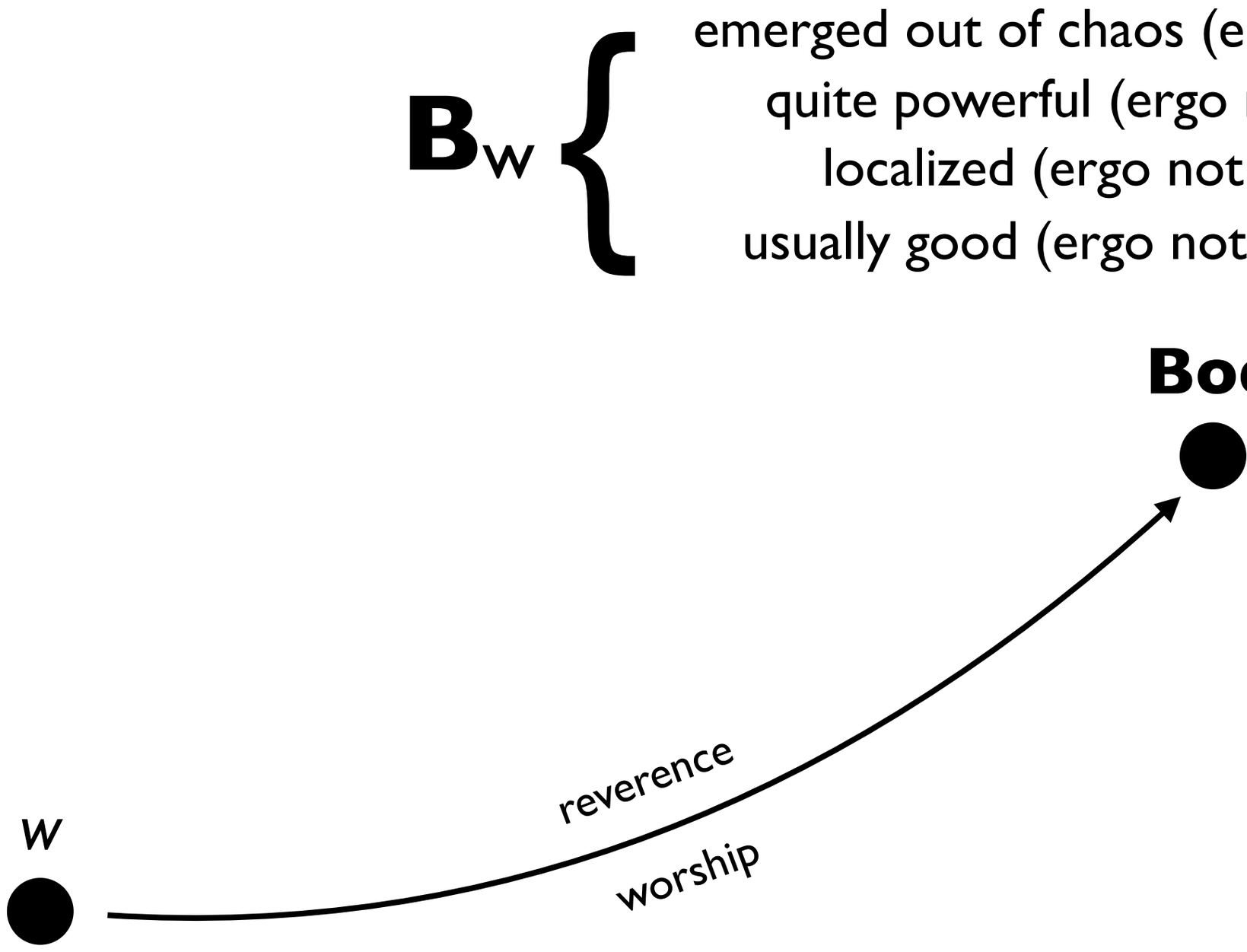

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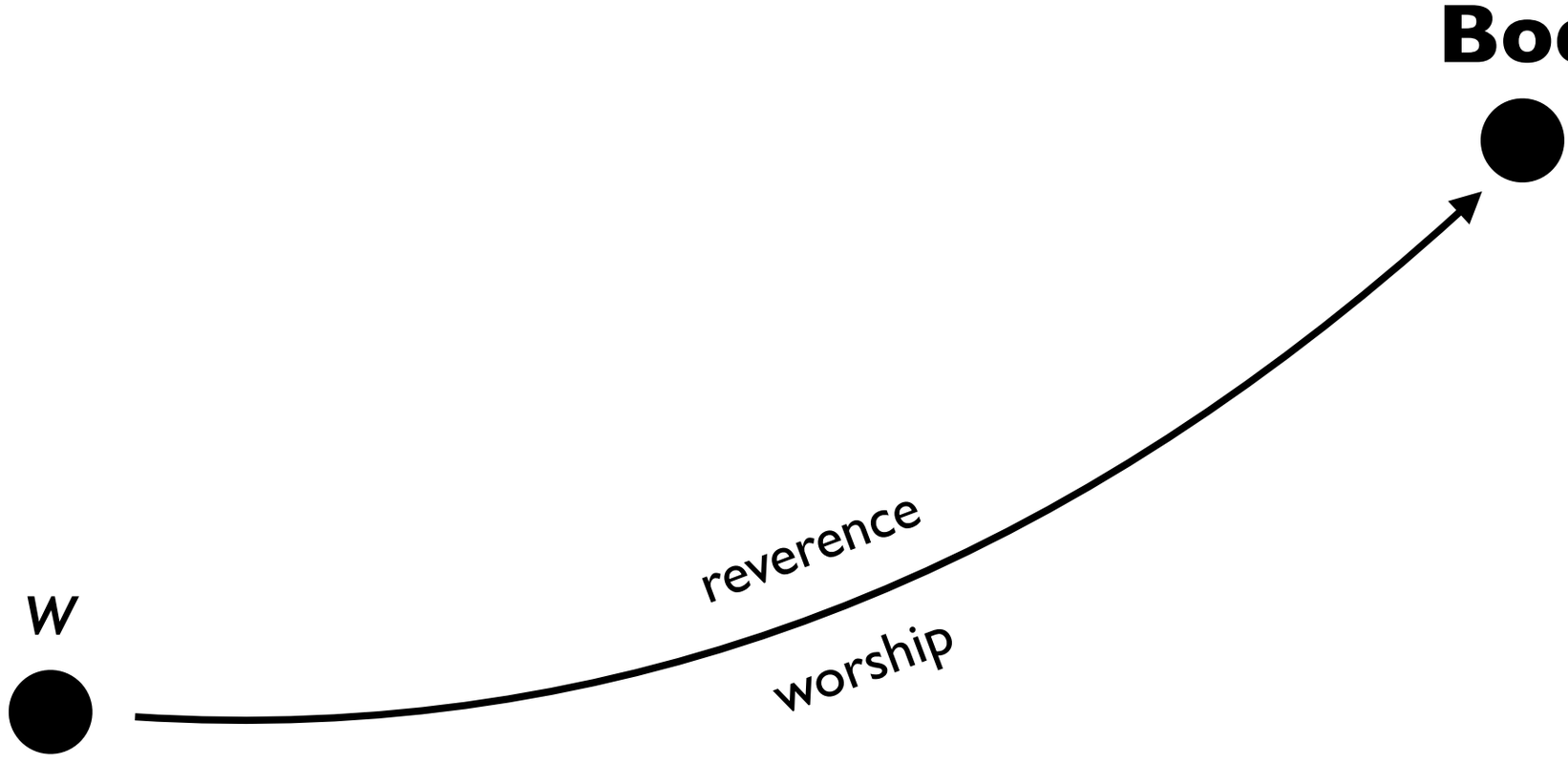

Exodus 20: 3

"The Apple" S2 E9 (I think)

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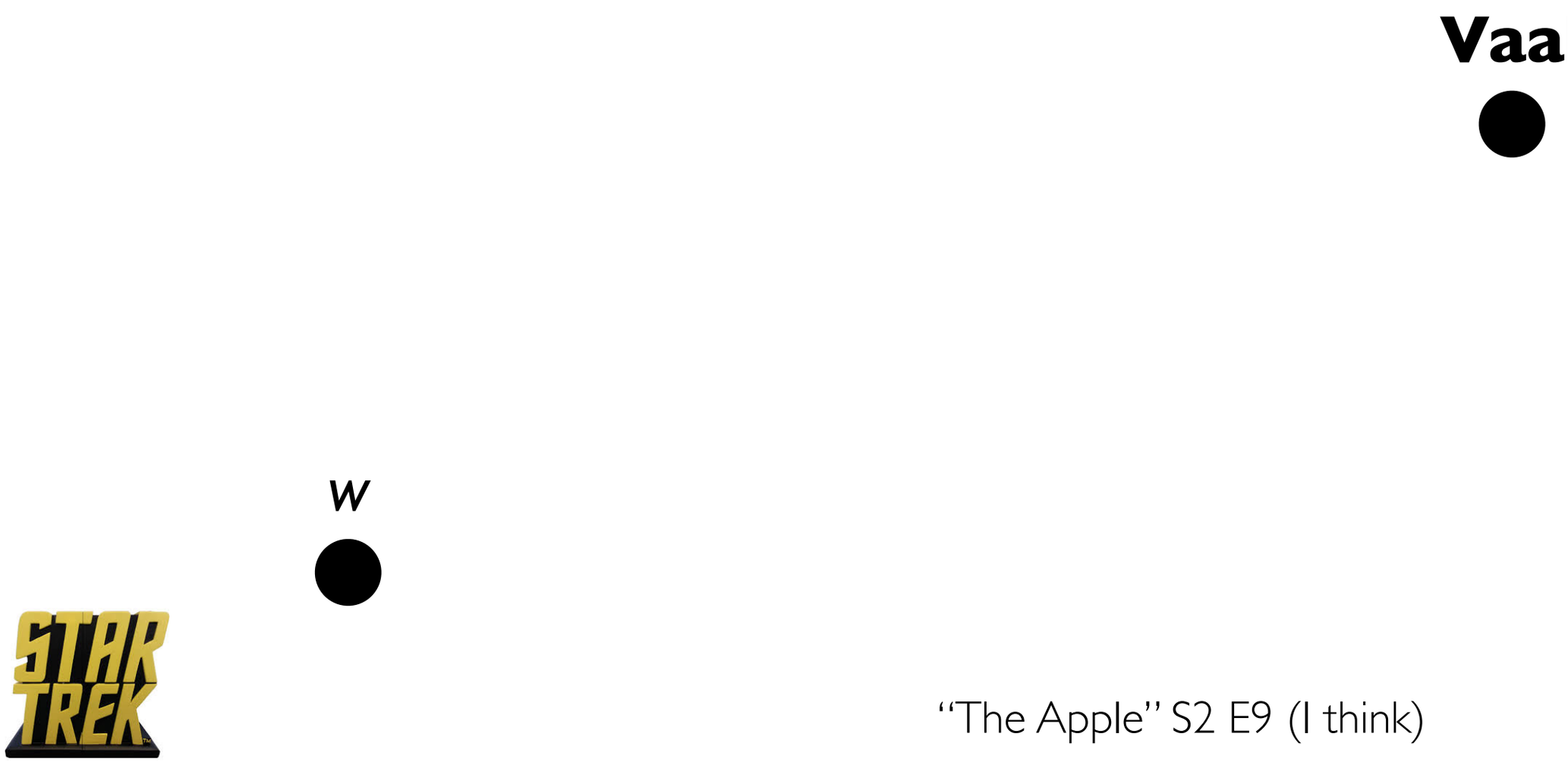
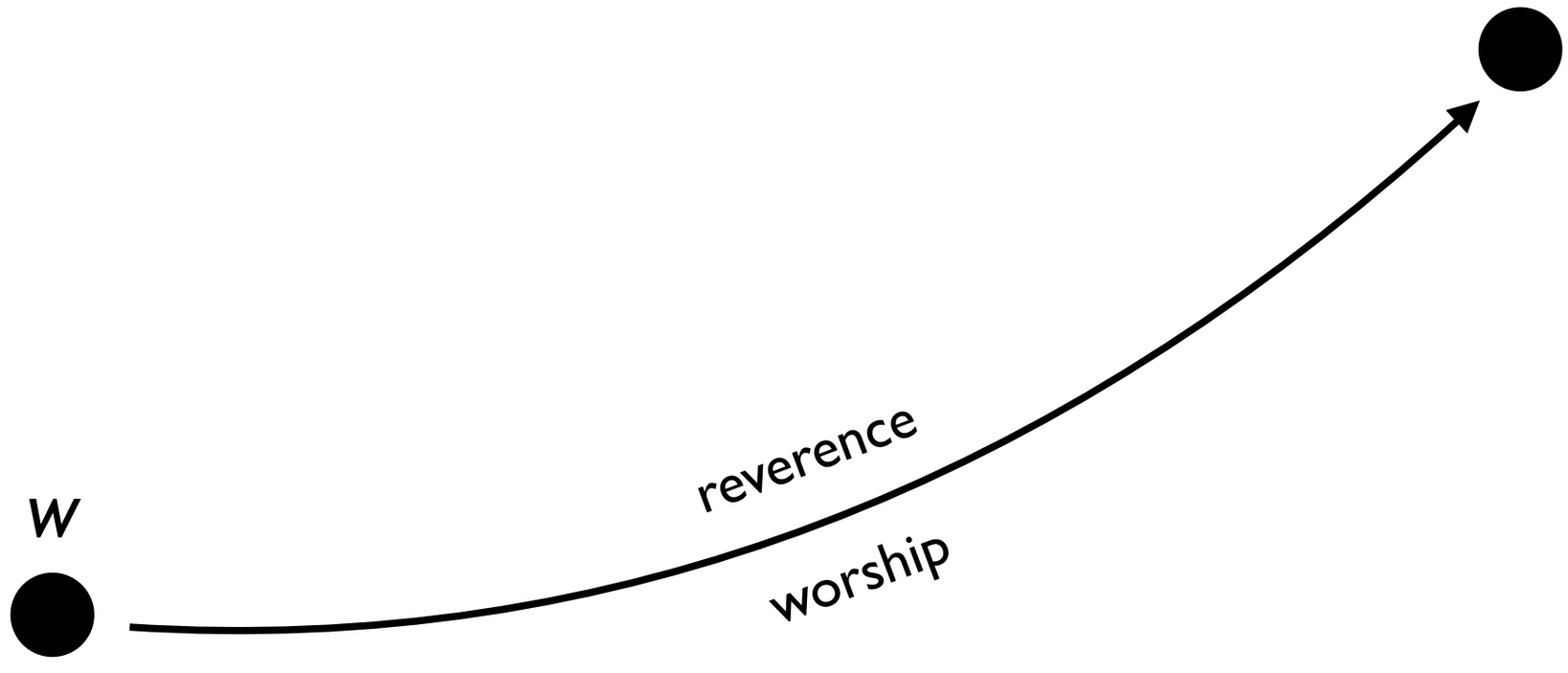


"The Apple" S2 E9 (I think)

Vaal



"The Apple" S2 E9 (I think)

Vaal

reverence

worship

W

"The Apple" S2 E9 (I think)

B_W

Vaal

reverence

worship

W

"The Apple" S2 E9 (I think)

B_W {

Vaal

W

reverence

worship

"The Apple" S2 E9 (I think)

B_W { demands offerings

Vaal

W

reverence

worship

"The Apple" S2 E9 (I think)

B_W { localized (ergo not omnipresent)
demands offerings

Vaal

W

reverence

worship

"The Apple" S2 E9 (I think)

B_W { quite powerful (ergo not omnipotent)
localized (ergo not omnipresent)
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Vaal

W

reverence

worship

STAR TREK

"The Apple" S2 E9 (I think)

Idolatry: Zoomorphic; "Graven Image" *Simpliciter*

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demands offerings

Vaal

W

reverence

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Exodus 20: 4–5

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Exodus 20: 4–5

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Vaal *is* an artifact.

Vaal

W

reverence

worship

"The Apple" S2 E9 (I think)

Exodus 20: 4–5

Idolatry: Zoomorphic; "Graven Image" *Simpliciter*

B_w { quite powerful (ergo not omnipotent)
localized (ergo not omnipresent)
demands offerings

Vaal *is* an artifact.

But no divine agent behind the scenes.

Vaal

w

reverence

worship

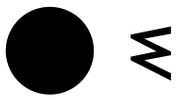
"The Apple" S2 E9 (I think)

Exodus 20: 4–5

Now let's move closer to AI

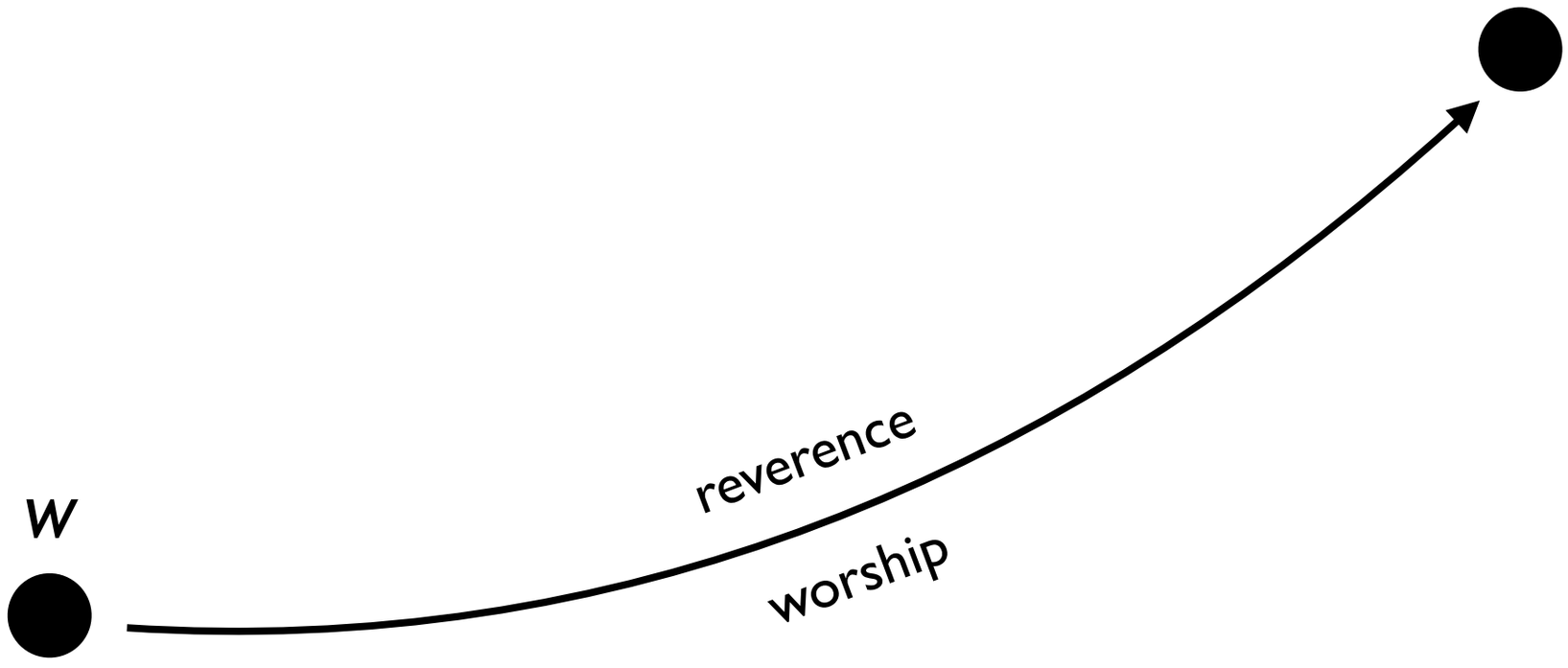
• • •

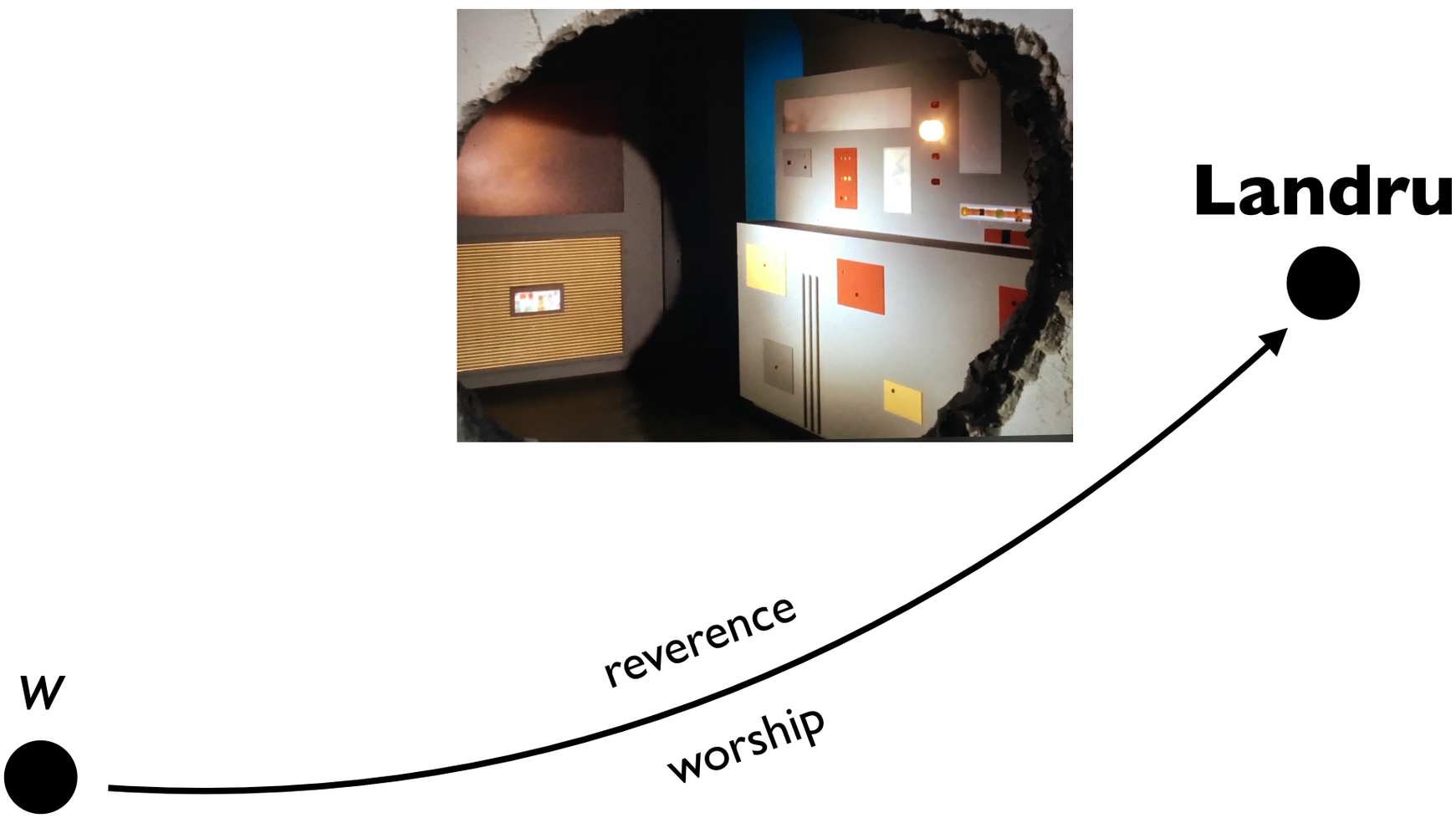
STAR
TREK



Landru
w

Landru




Landru
reverence
worship
w

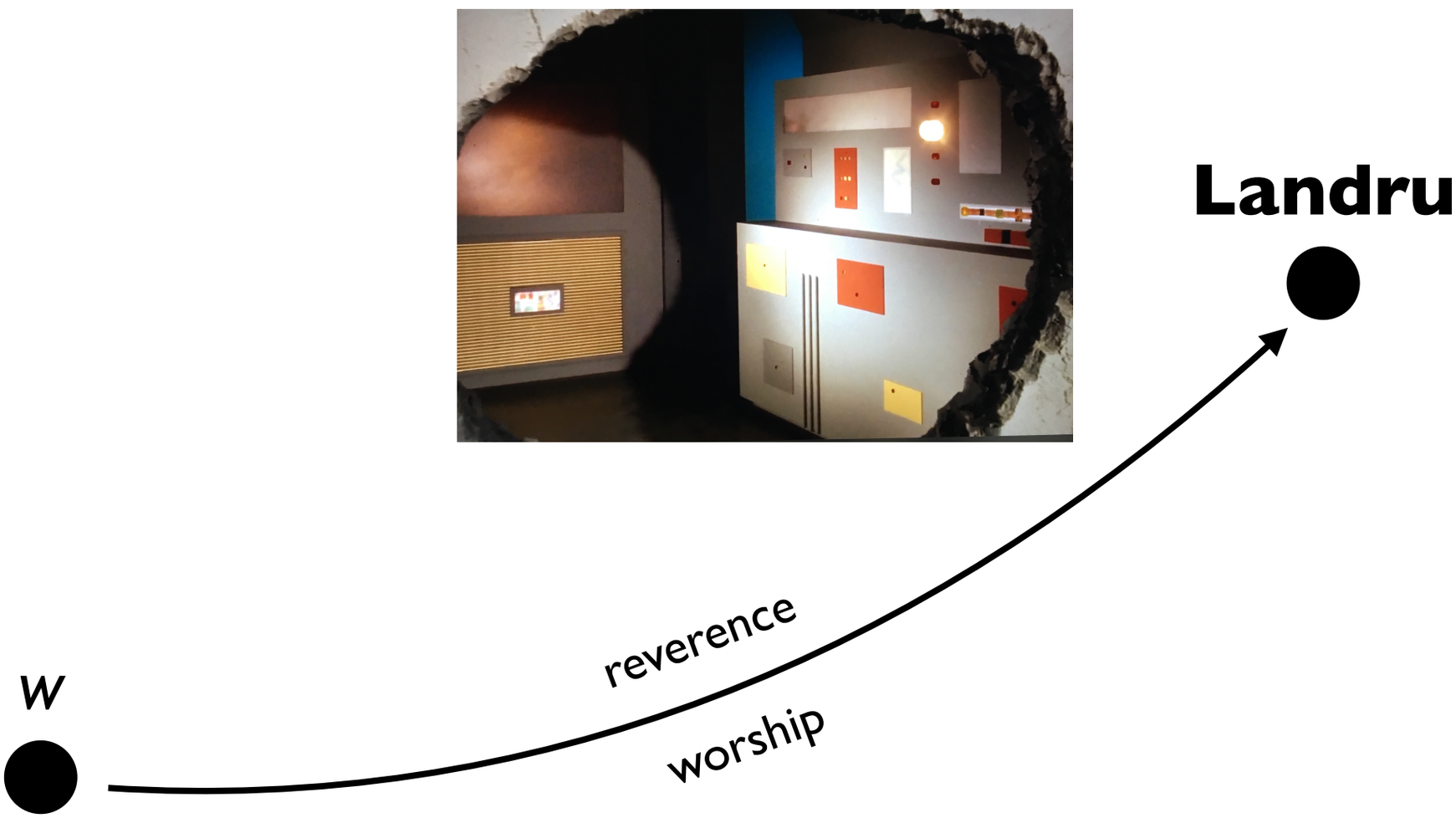
andru

reverence

worship

W

STAR TREK


Landru
reverence
worship
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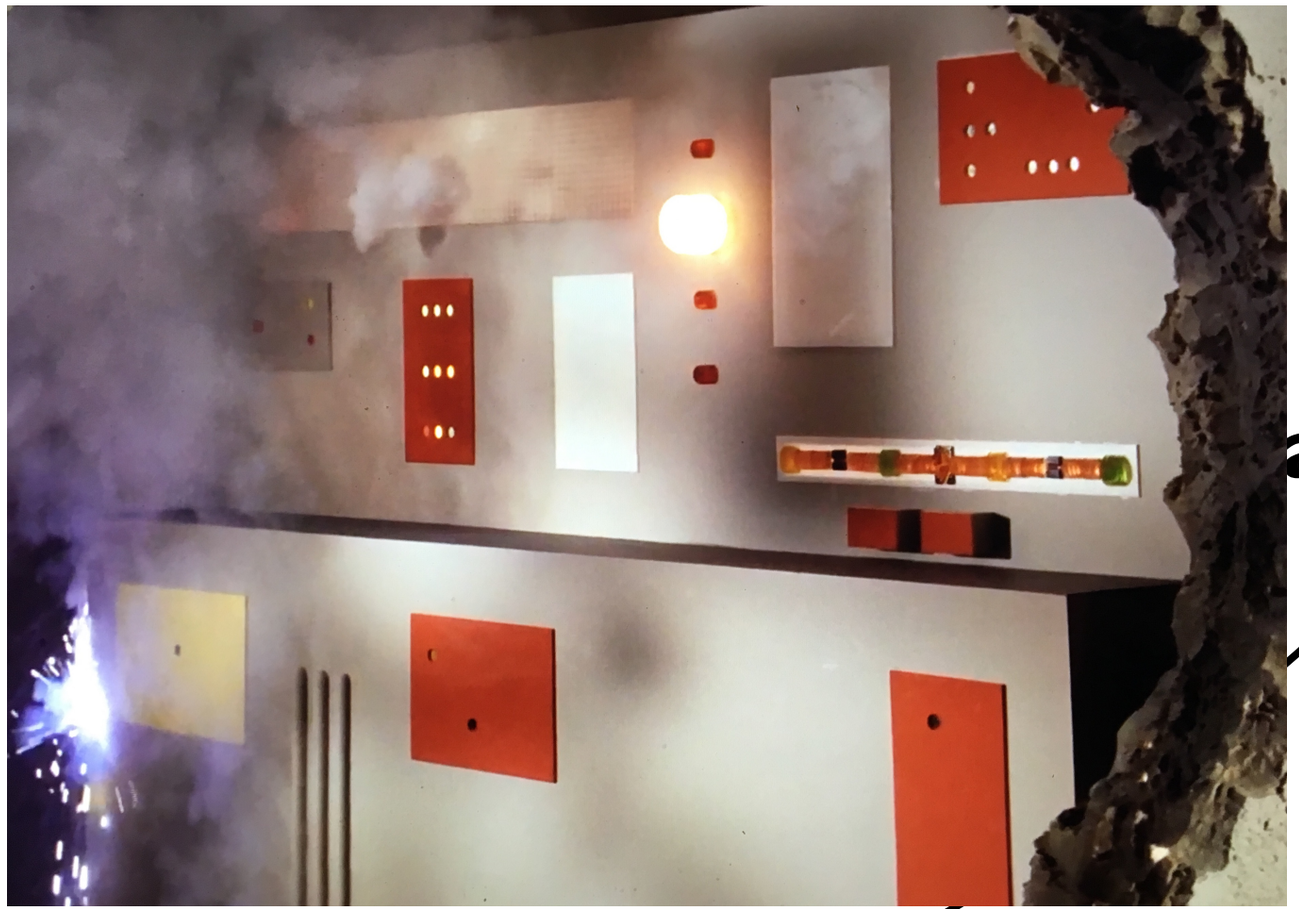


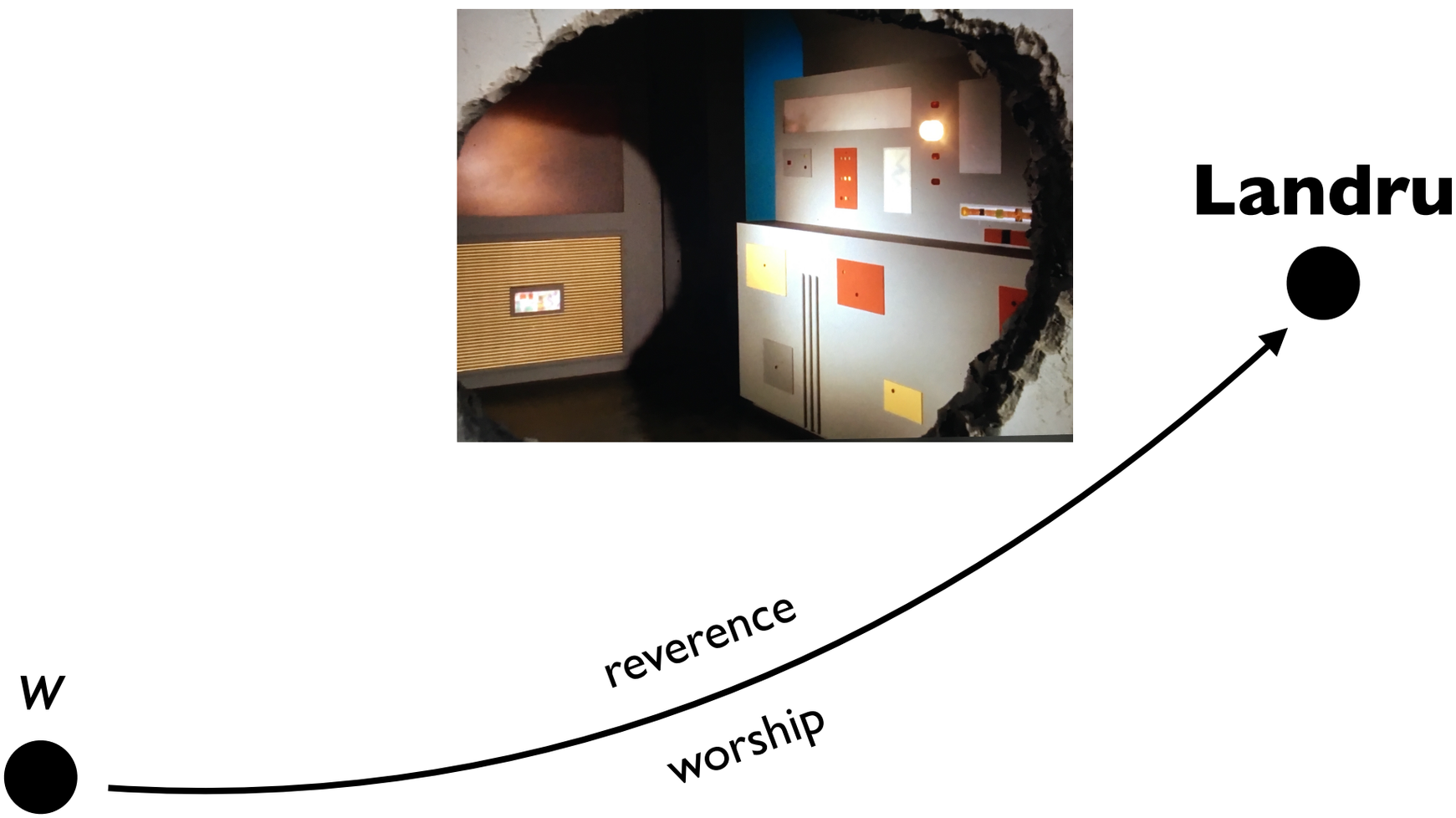
andru

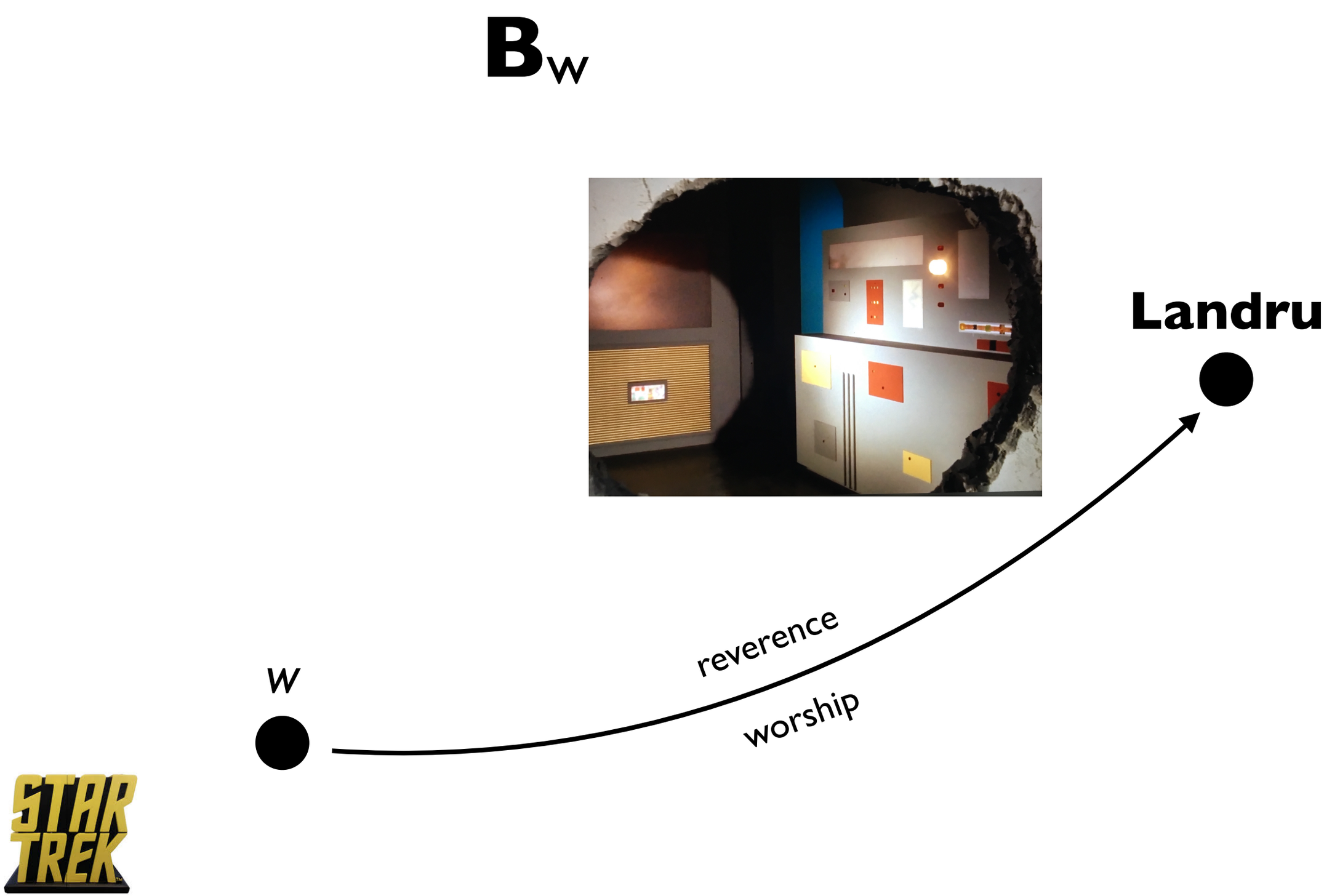
reverence

worship

W

STAR TREK


Landru
reverence
worship
w



B_w
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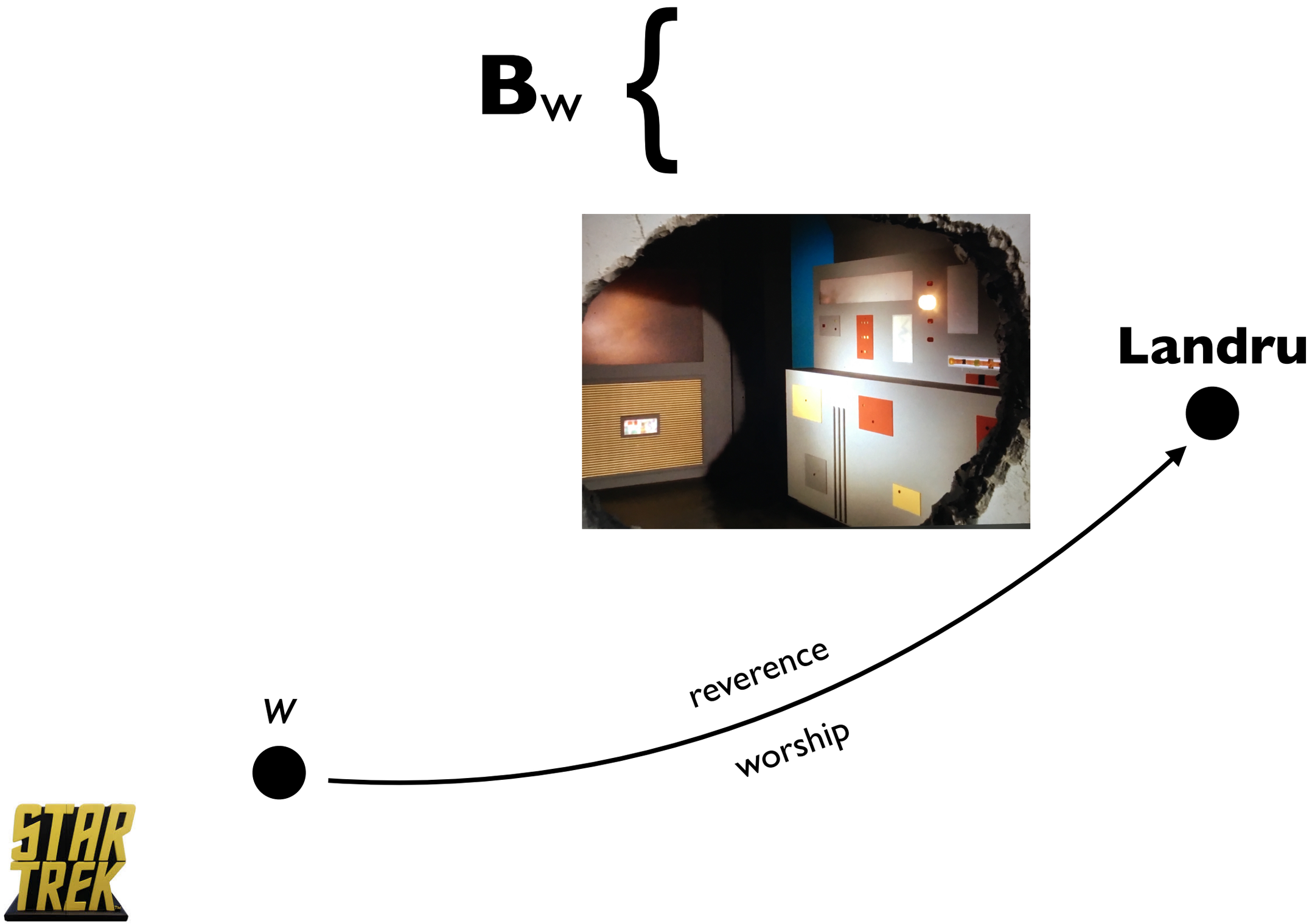

B_w
Landru
reverence
worship
w

B_W {

keeps the peace, but kills autonomy to do it

Landru

W

reverence

worship

STAR TREK

B_W { semi-localized

keeps the peace, but kills autonomy to do it

Landru

W

reverence

worship

STAR TREK

B_W {

quite powerful (ergo not omnipotent)

semi-localized

keeps the peace, but kills autonomy to do it

Landru

W

reverence

worship

STAR TREK

Idolatry: “Graven Image” Semi-*Simpliciter*

B_W { quite powerful (ergo not omnipotent)
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Idolatry: “Graven Image” Semi-*Simpliciter*

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Exodus 20: 4–5

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Exodus 20: 4–5

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Landru is an artifact; in fact, Landru is an intelligent machine.

Landru

w

reverence

worship

Exodus 20: 4–5

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semi-localized
keeps the peace, but kills autonomy to do it

Landru is an artifact; in fact, Landru is an intelligent machine.

Landru

And, here, there *is* a powerful agent behind the scenes — but this agent is long gone.

w

reverence

worship

STAR TREK

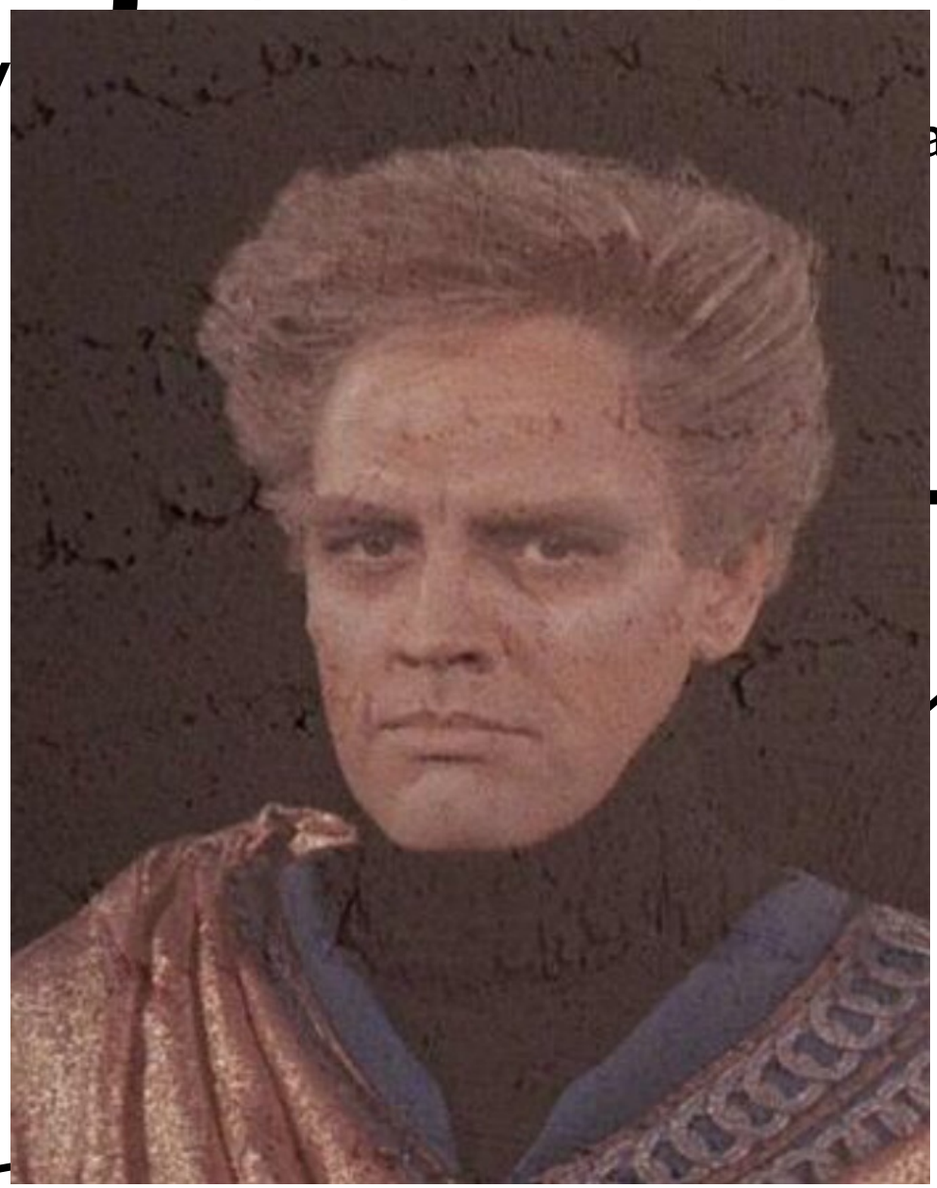
Exodus 20: 4–5

Idolatry: "Graven Image" Semi-*Simpliciter*

quite powerful (ergo not omnipotent)

B$_w$

autonomy to do it



Landru

Landru is an artifact; in fact, Landru is an intelligent machine.

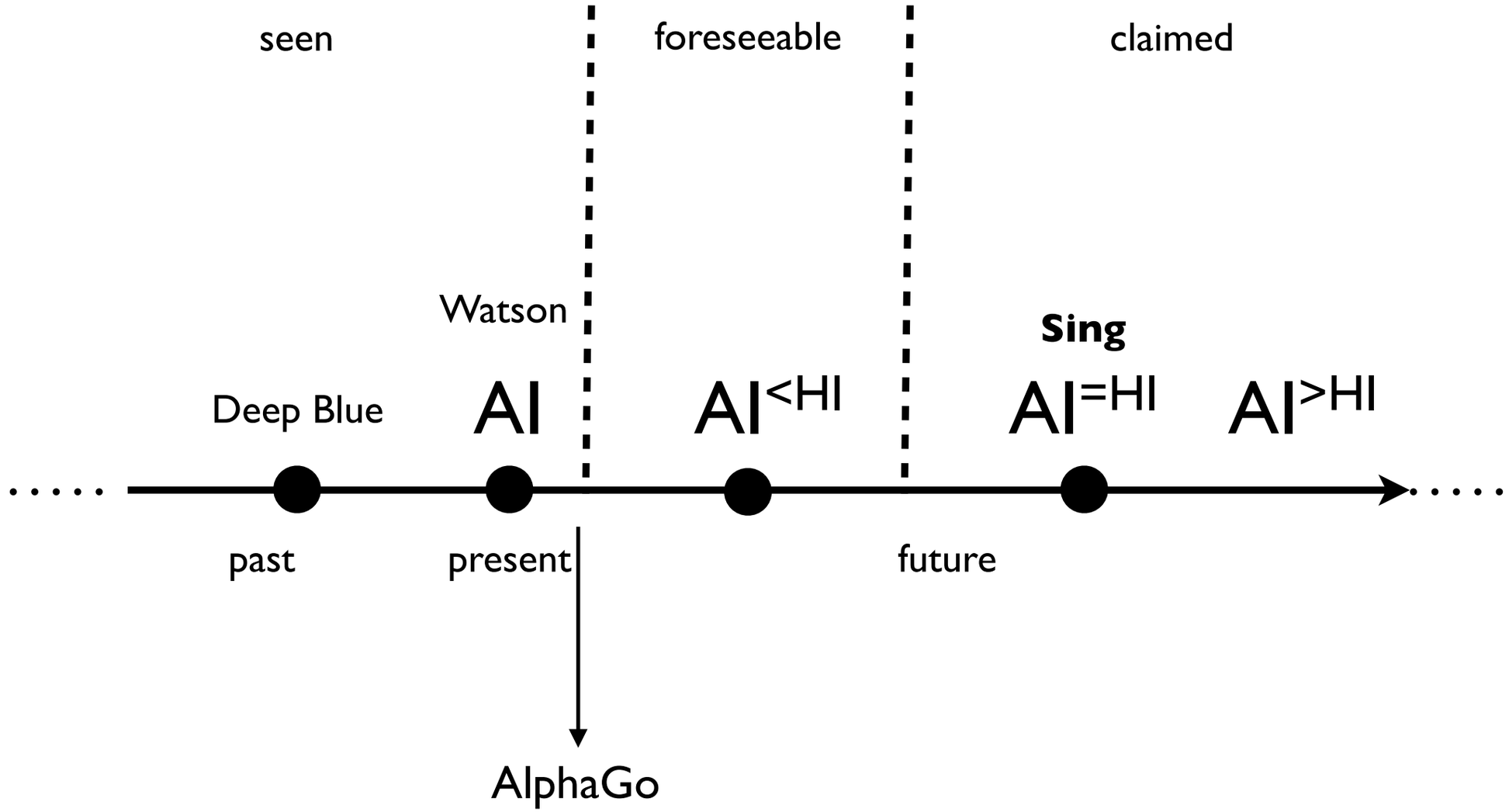
And, here, there *is* a powerful agent behind the scenes — but this agent is long gone.

w

Exodus 20: 4–5

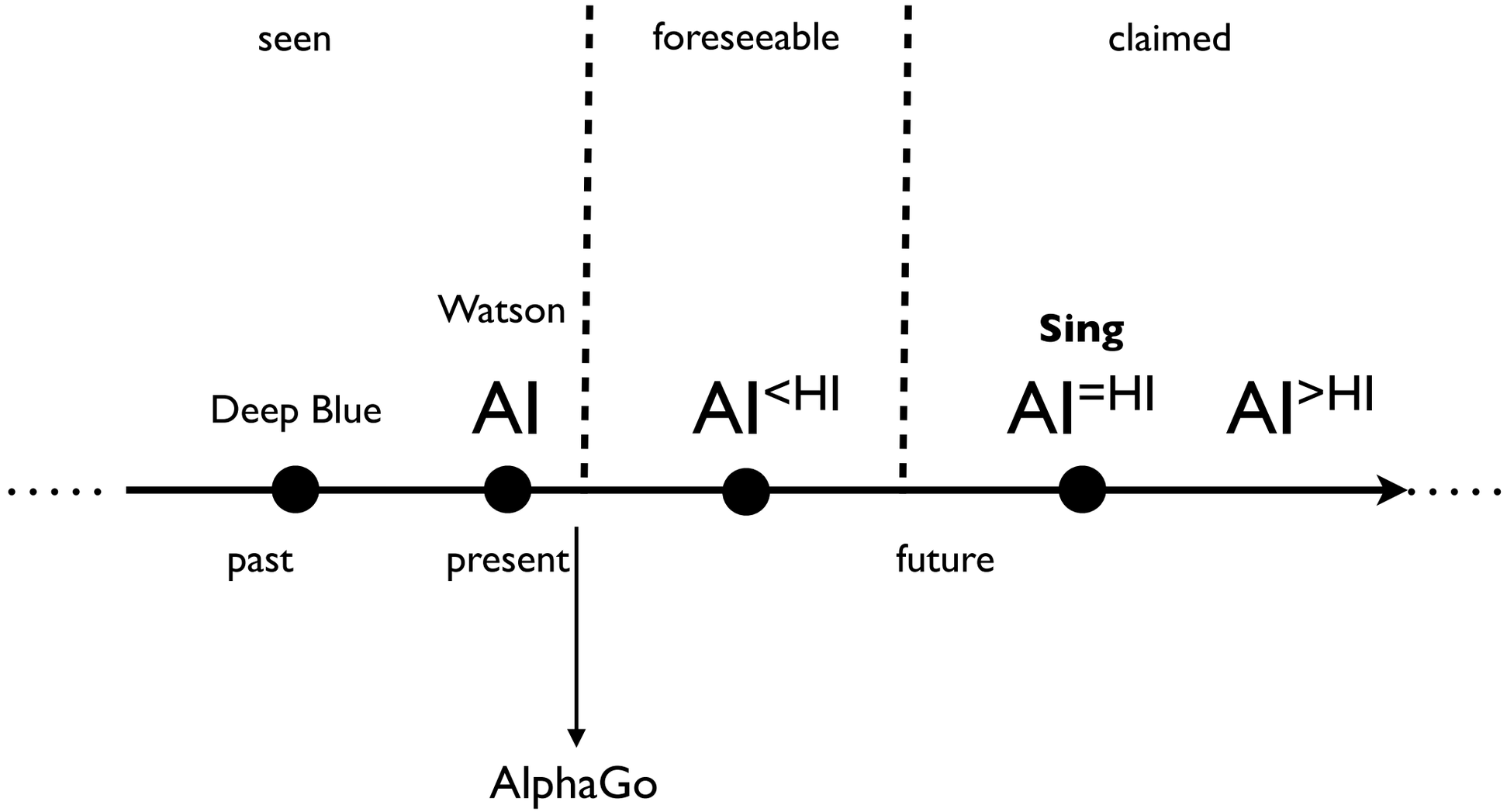
And now to AI …

Idolatrous Timeline

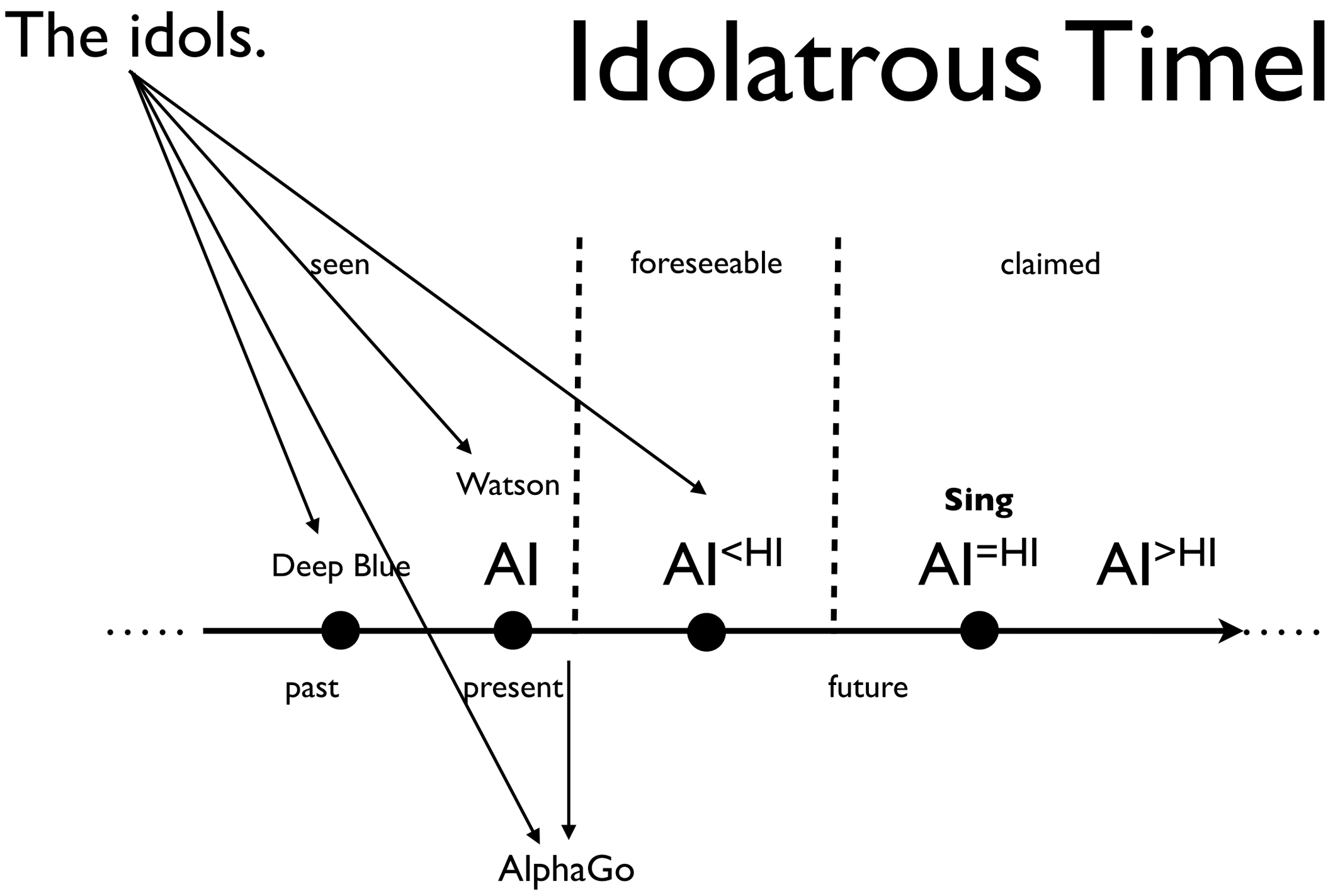


The idols.

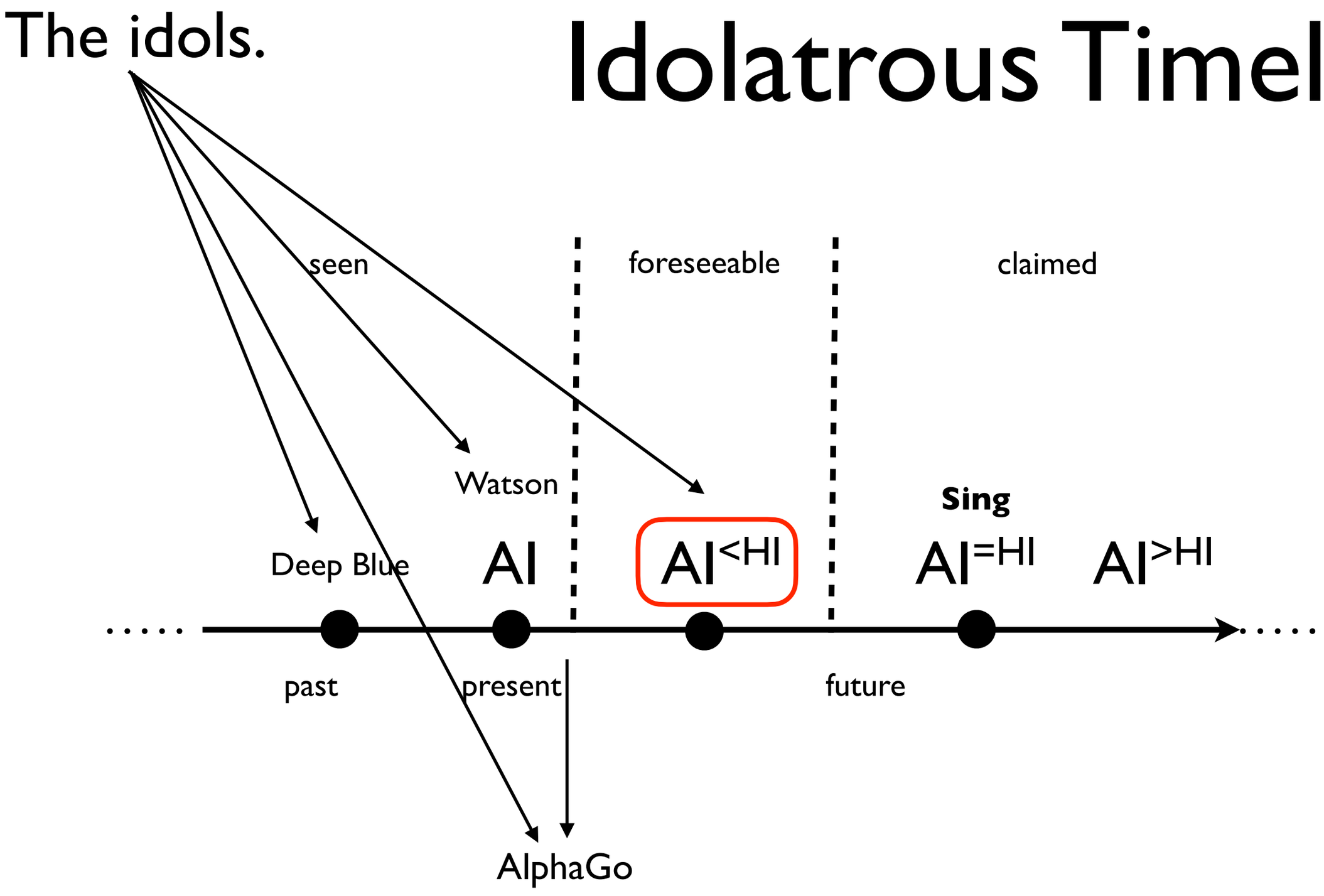
Idolatrous Timeline



Idolatrous Timeline



Idolatrous Timeline



Aquinas wouldn't be happy, since these AIs aren't "rational."**

****Summa Theologica*, 1485. Question 94. Idolatry.

Aquinas wouldn't be happy, since these AIs aren't "rational."**

They aren't conscious (let alone self-conscious), and they aren't even that smart.

******Summa Theologica*, 1485. Question 94. Idolatry.

Mathematics Tells us the Idols Aren't Human-Level Smart

Super-Serious Human Cognitive Power

Serious Human Cognitive Power

Mere Calculative Cognitive Power

Mathematics Tells us the Idols Aren't Human-Level Smart

Super-Serious Human Cognitive Power

Serious Human Cognitive Power

Jeopardy!: **Watson**

Mere Calculative Cognitive Power

Mathematics Tells us the Idols Aren't Human-Level Smart

Super-Serious Human Cognitive Power

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Go: AlphaGo

Jeopardy!: **Watson**

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Chess: Deep Blue

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Mere Calculative Cognitive Power

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Checkers: Chinook

Chess: Deep Blue

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Jeopardy!: **Watson**

Mere Calculative Cognitive Power

Mathematics Tells us the Idols Aren't Human-Level Smart

Super-Serious Human Cognitive Power

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Today's "Machine Learning"

Checkers: Chinook

Chess: Deep Blue

Go: AlphaGo

Jeopardy!: **Watson**

Mere Calculative Cognitive Power

Mathematics Tells us the Idols Aren't Human-Level Smart

Analytical Hierarchy

Serious Human Cognitive Power

Today's "Machine Learning"

Checkers: Chinook

Chess: Deep Blue

Go: AlphaGo

Jeopardy!: **Watson**

Mere Calculative Cognitive Power

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Super-Serious Human Cognitive Power

Arithmetical Hierarchy

Today's "Machine Learning"

Checkers: Chinook

Chess: Deep Blue

Go: AlphaGo

Jeopardy!: **Watson**

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Polynomial Hierarchy

Mathematics Tells us the Idols Aren't Human-Level Smart

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Mere Calculative Cognitive Power

$$\mathbf{P} \subseteq \mathbf{NP} \subseteq \mathbf{PSPACE} = \mathbf{NPSPACE} \subseteq \mathbf{EXPTIME} \subseteq \mathbf{NEXPTIME} \subseteq \mathbf{EXPSPACE}$$

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Super-Serious Human Cognitive Power

Serious Human Cognitive Power

Today's "Machine Learning"

Checkers: Chinook

Chess: Deep Blue

Go: AlphaGo

Jeopardy!: **Watson**

$\vdots$

Π_2

Σ_2

Π_1

Σ_1

Σ_0

Mere Calculative Cognitive Power

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Super-Serious Human Cognitive Power

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Checkers: Chinook

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$\vdots$

Π_2

Σ_2

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Σ_1

Σ_0

Entscheidungsproblem

Mere Calculative Cognitive Power

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The Problem: We're Ignoring the Mathematics!

Super-Serious Human Cognitive Power

Serious Human Cognitive Power

$\vdots$
Π_2
Σ_2
Π_1
Σ_1
Σ_0

Entscheidungsproblem

Mere Calculative Cognitive Power

Chess: Deep Blue

Checkers: Chinook

Jeopardy!: **Watson**

Go: AlphaGo

Today's "Machine Learning"

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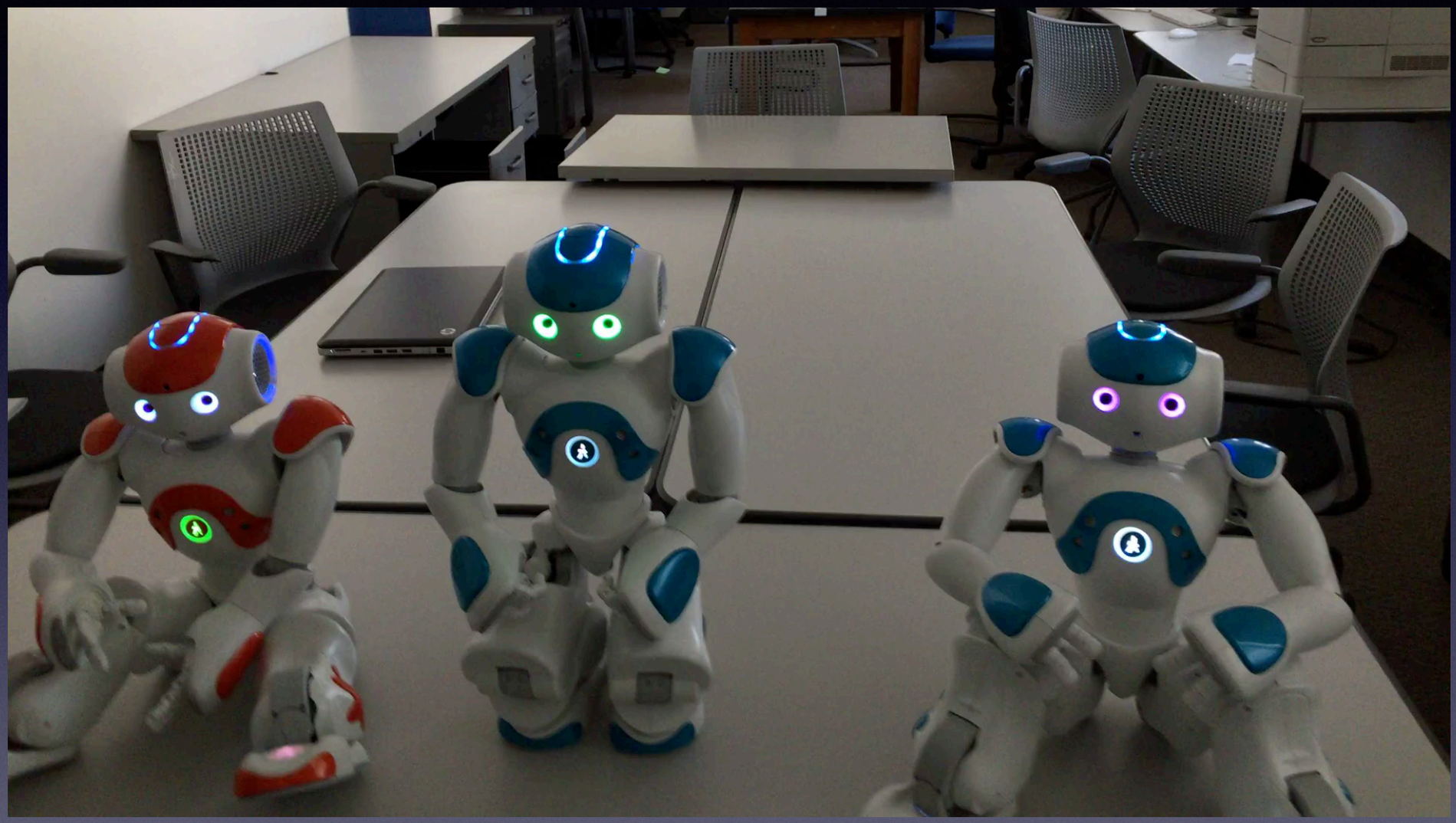
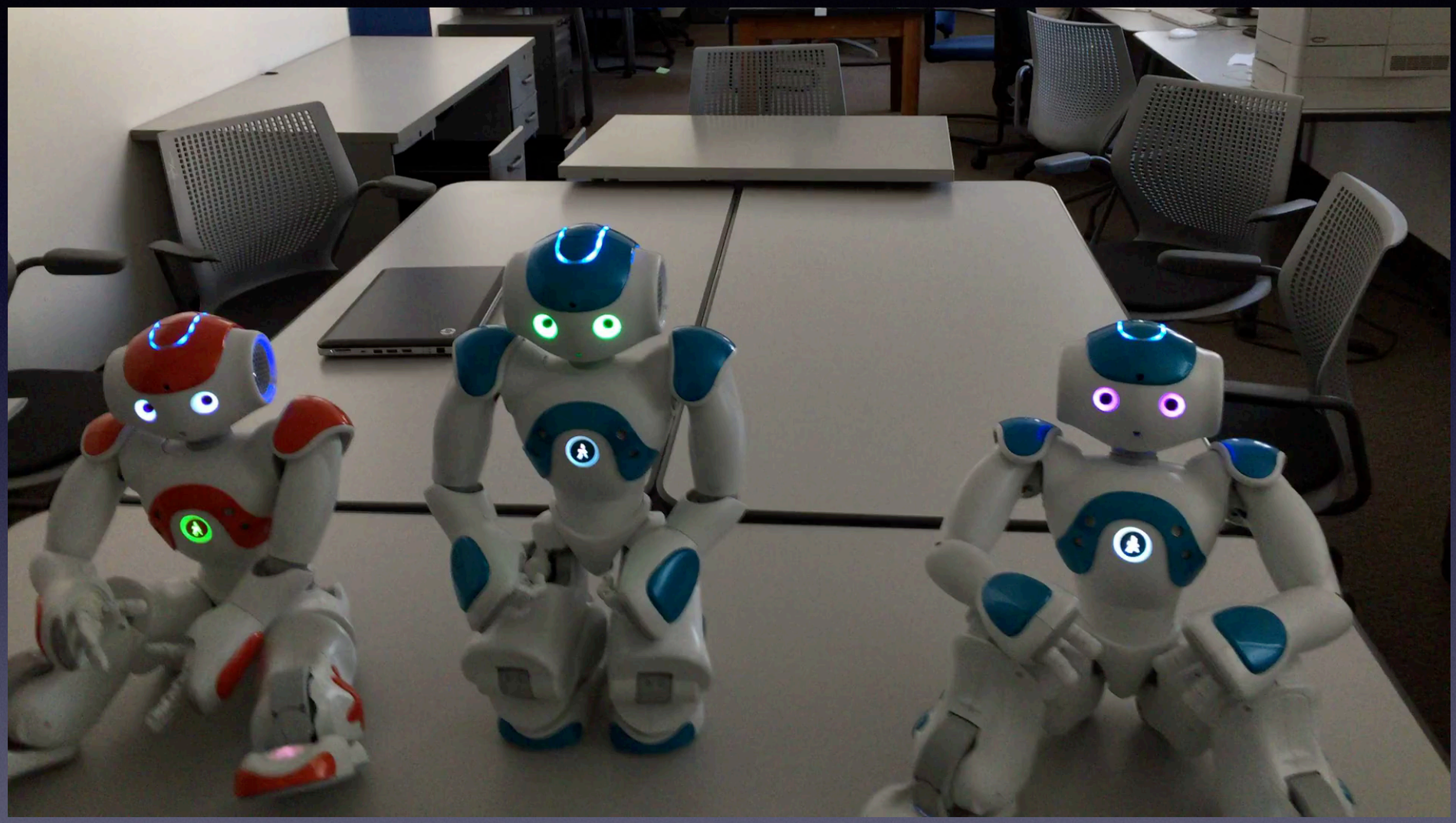


Anthropomorphic Idolatry:
Ascribing Self-Consciousness to a Simple Machine



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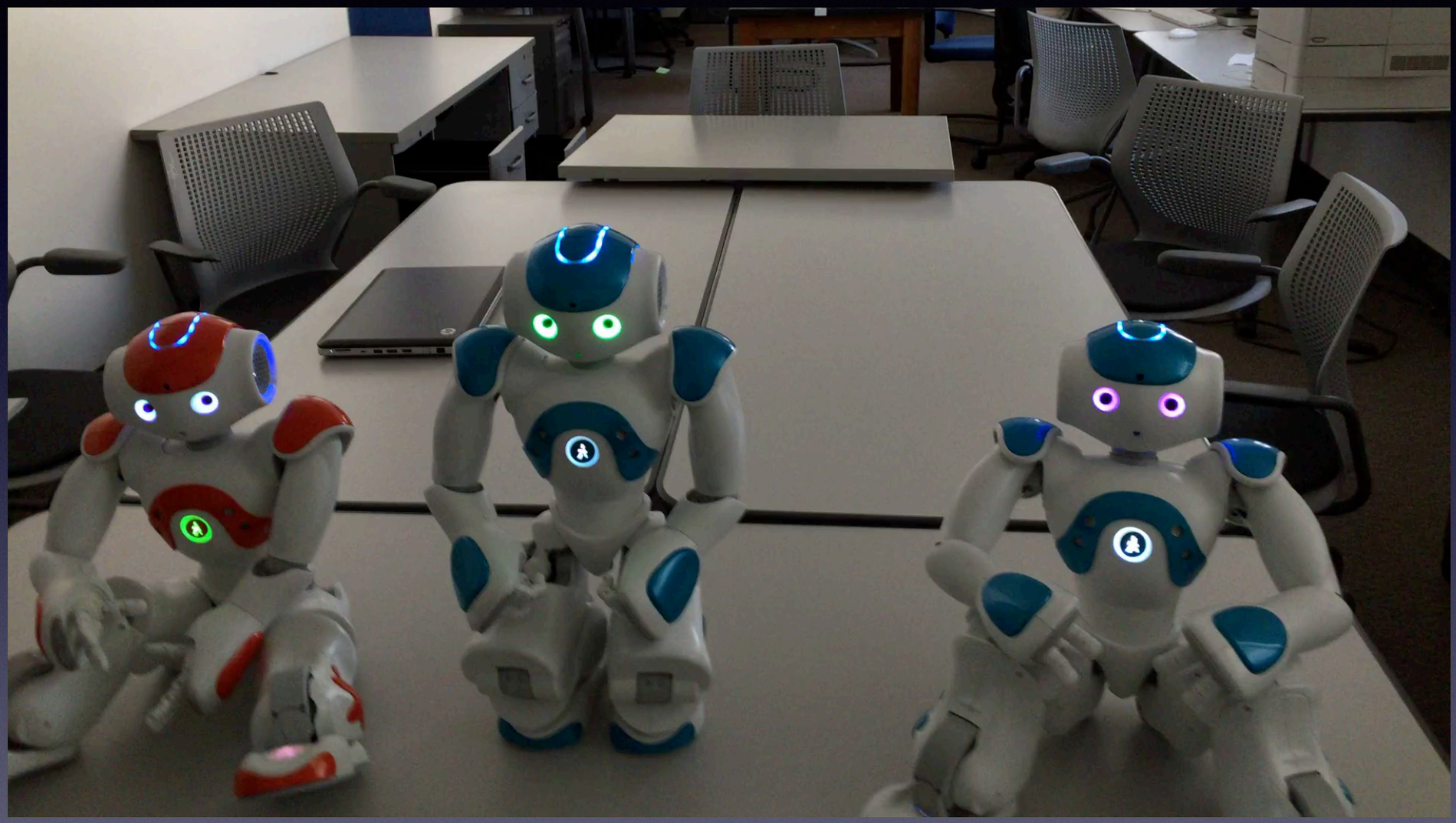

http://kryten.mm.rpi.edu/SBringsjord_etal_self-con_robots_kg4_060115161 5NY.pdf

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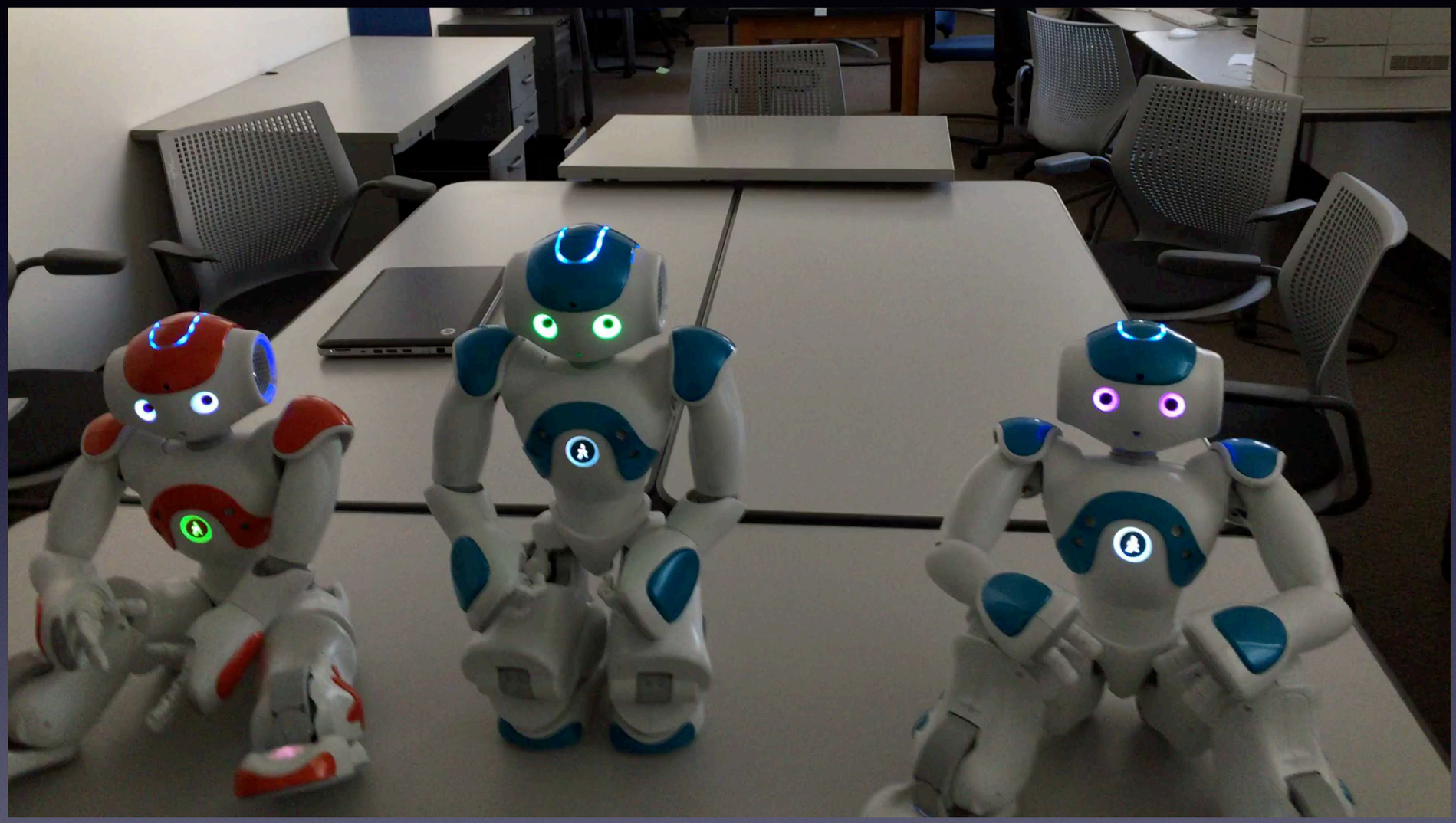

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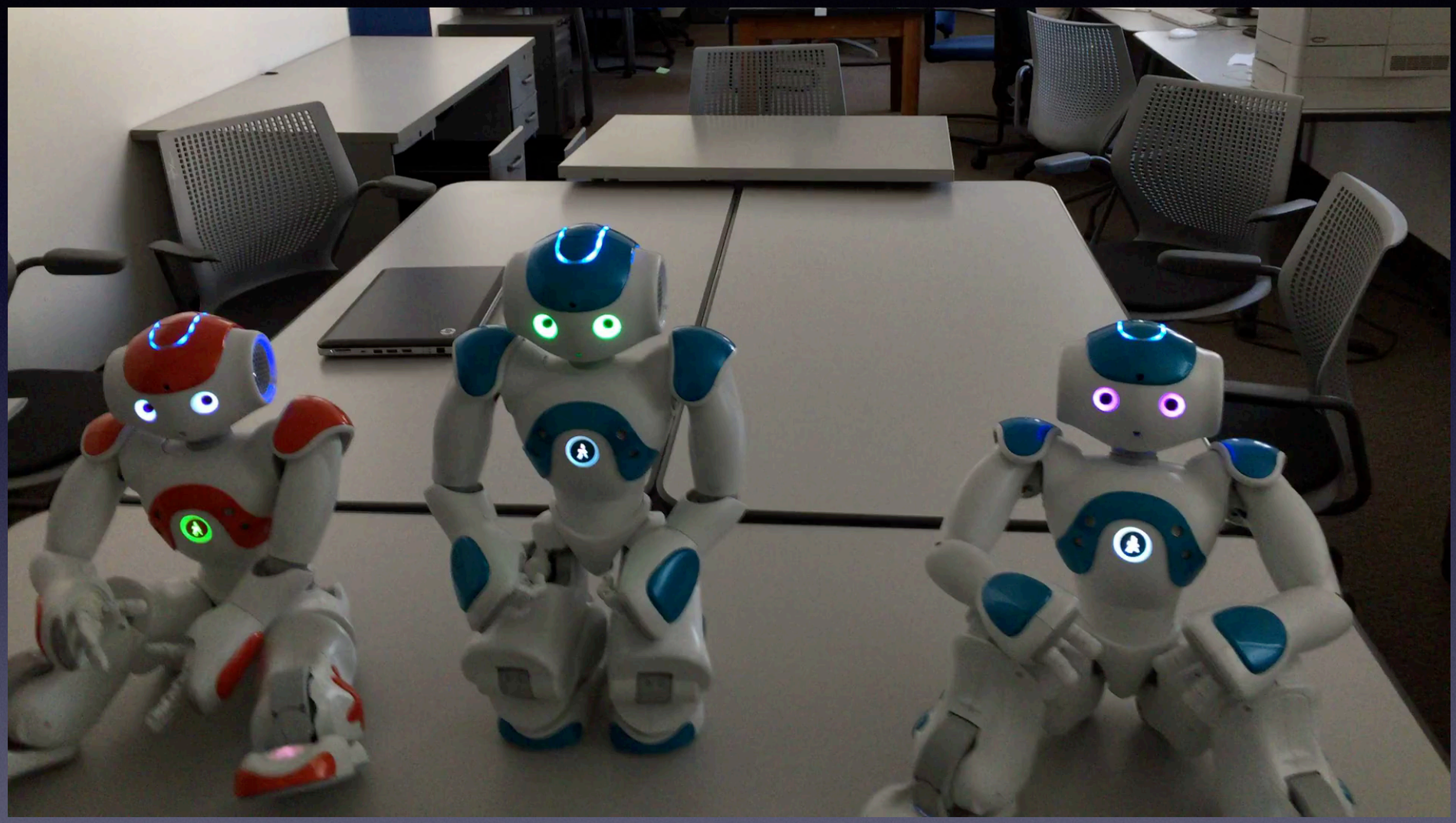

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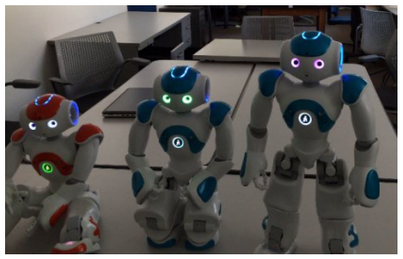
Strong AI Idolatry

Strong AI Idolatry

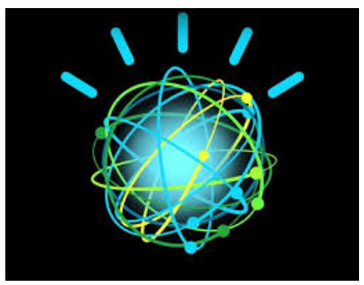
Strong AI Idolatry

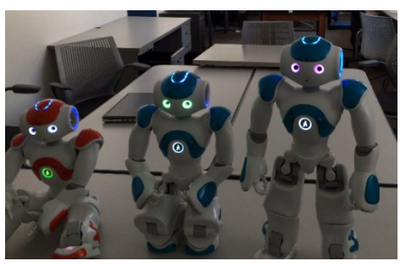


AI/AI$^{<HI}$

w

Strong AI Idolatry





AI/AI$^{<HI}$

w

Strong AI Idolatry

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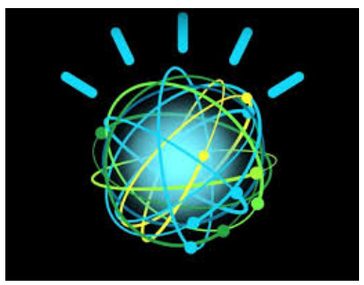

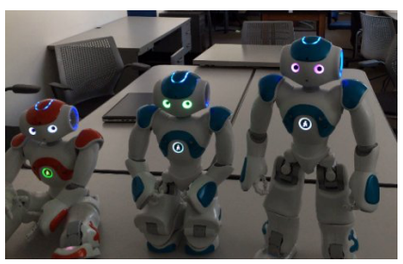

AI/AI$^{<HI}$

w

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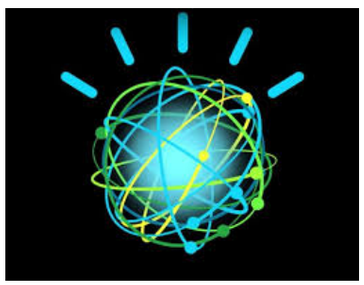
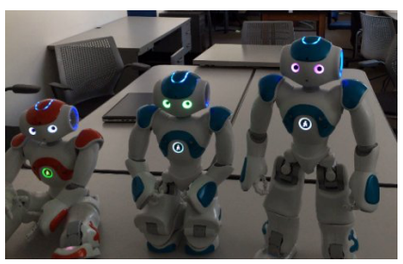




AI/AI<HI

W

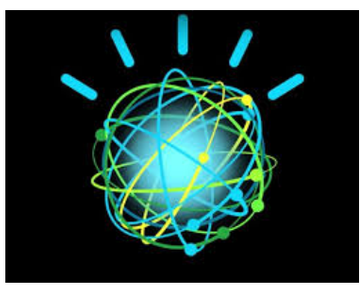
reverence

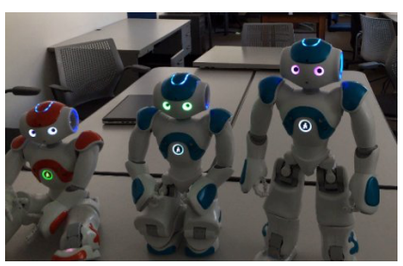
worship

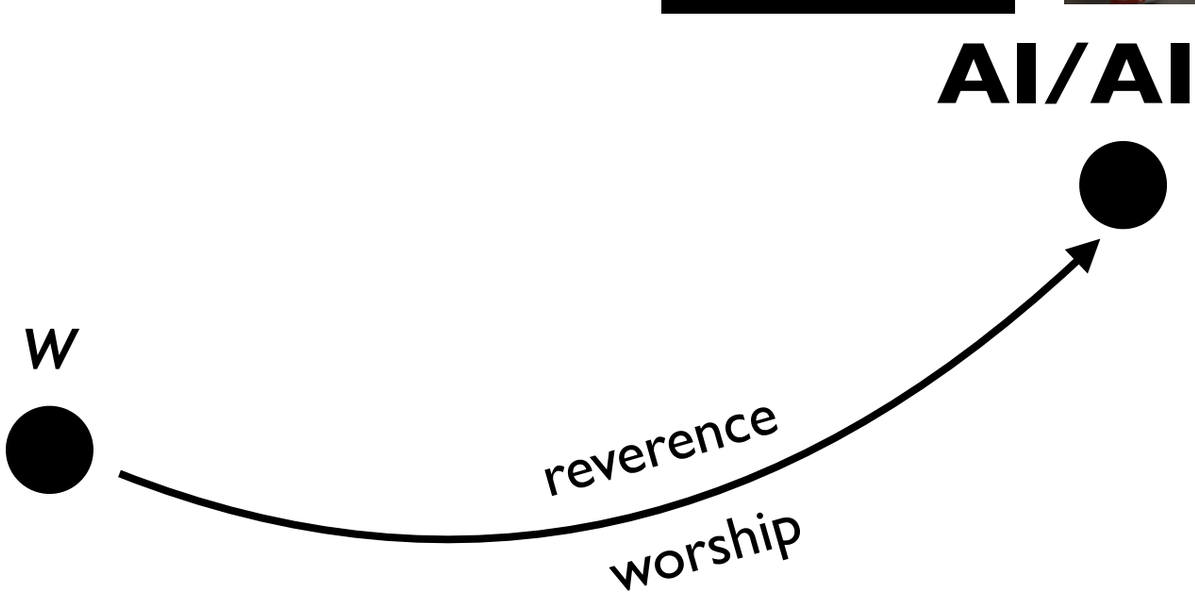
Strong AI Idolatry

But where's the background divinity?

. . .







Strong AI Idolatry

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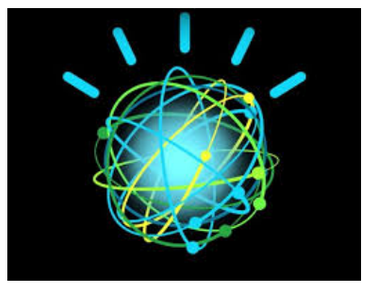

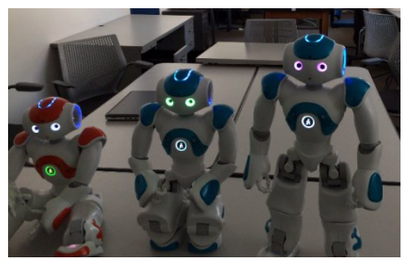

AI/AI<HI

an image of …

W

reverence

worship

Strong AI Idolatry

But where's the background divinity?

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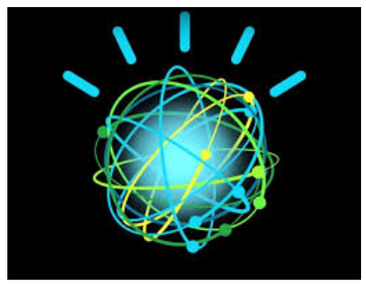

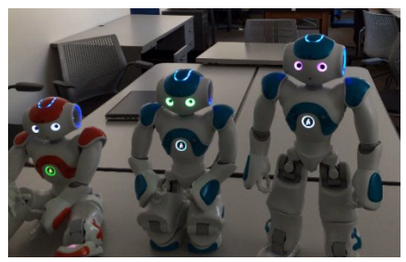

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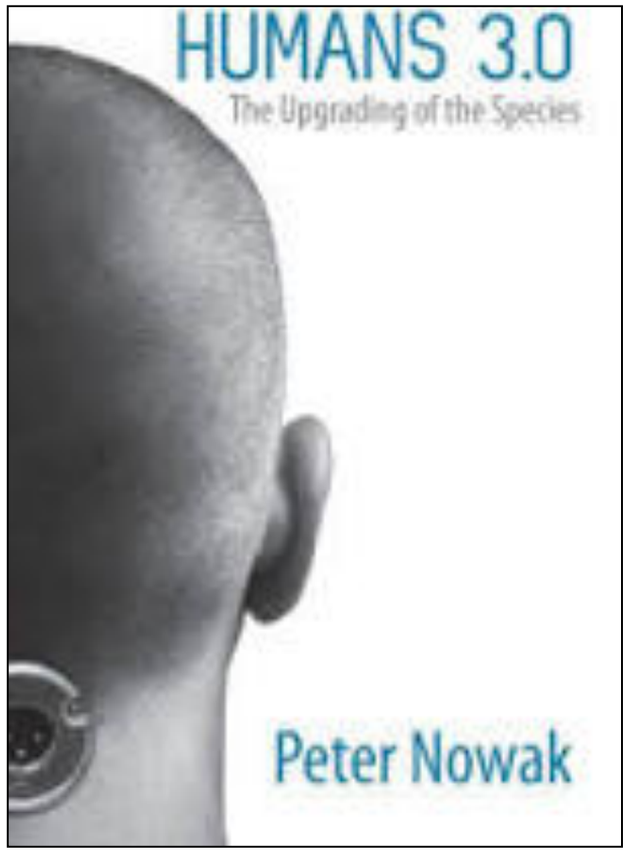
By 2045, The Singularity will occur, the moment in time when machine intelligence exceeds human intelligence, and immediately thereafter explodes to higher and higher levels that infinitely exceed our own and pass on up to supernal levels.



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The Good-Chalmers Argument for AI Dvinity

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	Premise 1	There will be AI (created by HI and such that AI = HI).
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	Premise 3	If there is AI^{+}, there will be AI^{++} (created by AI^{+}).
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Strong AI Idolatry

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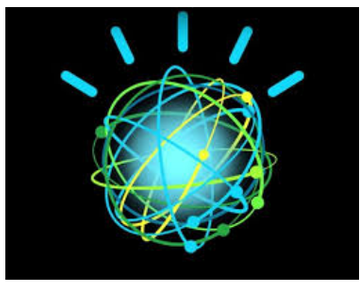

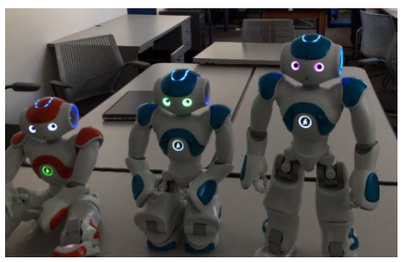

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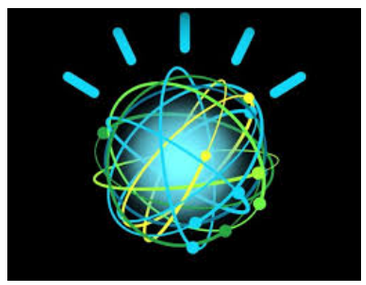

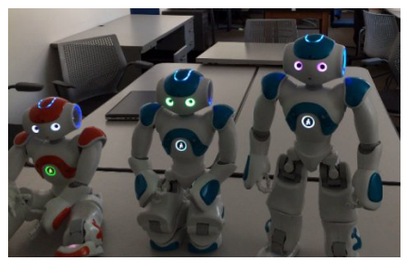

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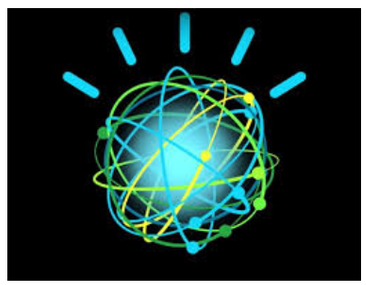

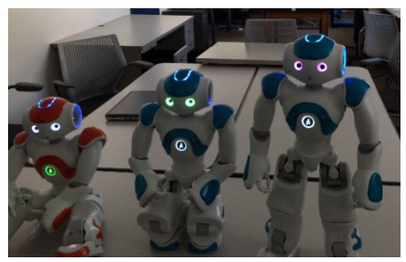

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But, there's a fatal problem:

Theorem: No computing machine *M* can create a computing machine *M'* genuinely more powerful than *M*.

Yes, AI *is* a type of idolatry.

AI er avgudsdyrkelse.