



The Master

Possible Positions



Physicalism



Conceptualism



Nominalism (+ fictionalism)



Platonism



Possible Positions

Platonism is the view that:

- a. mathematical objects exist;
- b. they are non-physical, abstract objects that exist independently of the mind.

We can access these abstract objects through the use of reason.

For a full defense of Platonism
and Nominalism/Fictionalism,
see Balaguer (2001).

PLATONISM

and

ANTI-PLATONISM

in

MATHEMATICS

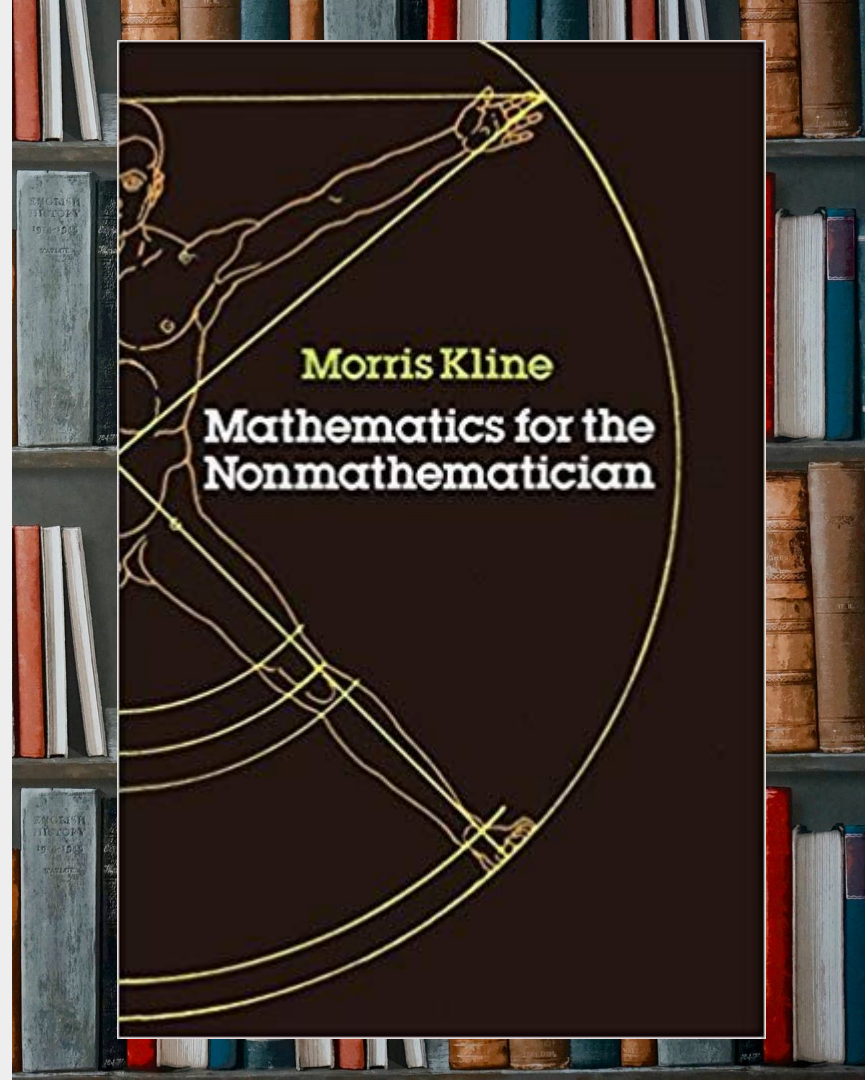
Mark Balaguer

Plato is absolutely fascinated by mathematics.

He argues that through math we could come to understand the true nature of reality.

He believes mathematics is an integral part of the training of rulers.

He may have even been part of the quasi-religious sect of mathematicians headed by Pythagoras (see Kline 1967, 62-63).



600 BCE

500 BCE

400 BCE

300 BCE

Socrates (470-399) fights at
Battle of Delium in 424.

Peloponnesian
War (431-404).

Aristotle (384-322)
opens the Lyceum in
335.

Alexander
(356-323) reigns
from 336-323.

Greco-Persian
Wars
(499-449).

Plato (~425-348) opens the
Academy in 380.

Zeno (~334-262)
finds his Stoic School
around 302.

Pythagoras (~570-~495)
initiates the Pythagorean
Brotherhood in ~530-520.

Euclid (~325-270)
publishes *Elements*
circa 300 BCE.



These very things that **they [the mathematicians]** model

and draw, which also have their

own **shadows** and *images in water*,

they are now using as *images* in their turn,

in an attempt to see

THOSE THINGS THEMSELVES that one could not see

in any other way than by the **power** of **THINKING**.

(The Republic, 510e-511a).

Plato's Theory of the Forms

The Forms can be grasped by the mind, but they exist beyond our minds, in another realm.

They are the ultimate reality which our ordinary objects are based on, eg beautiful person is participating in the Form of Beauty.



The fire

Prisoners

shadows cast
on wall

Roadway where
puppeteers perform

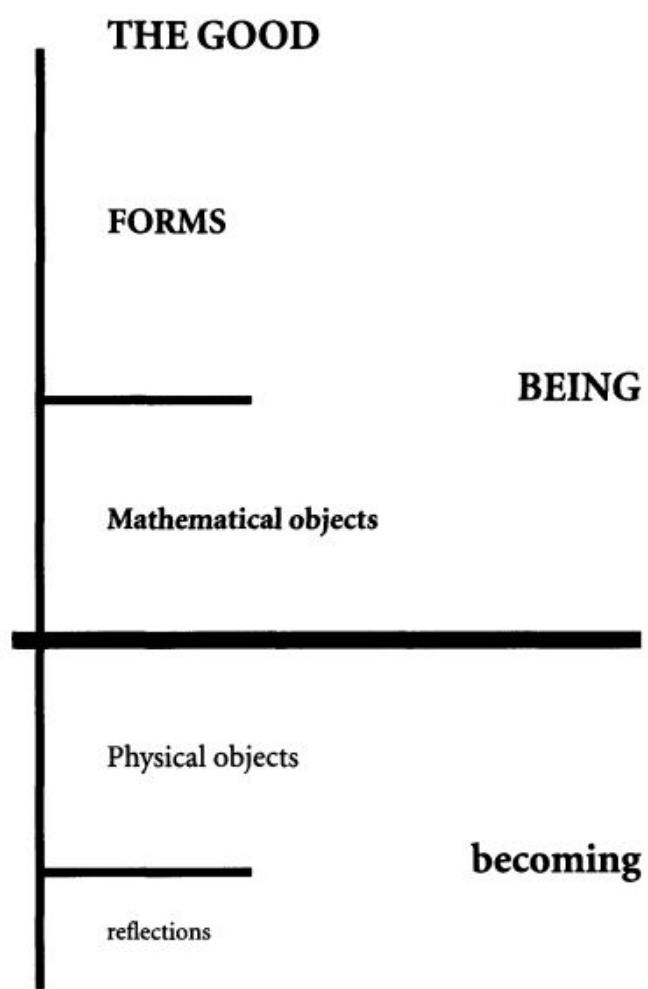
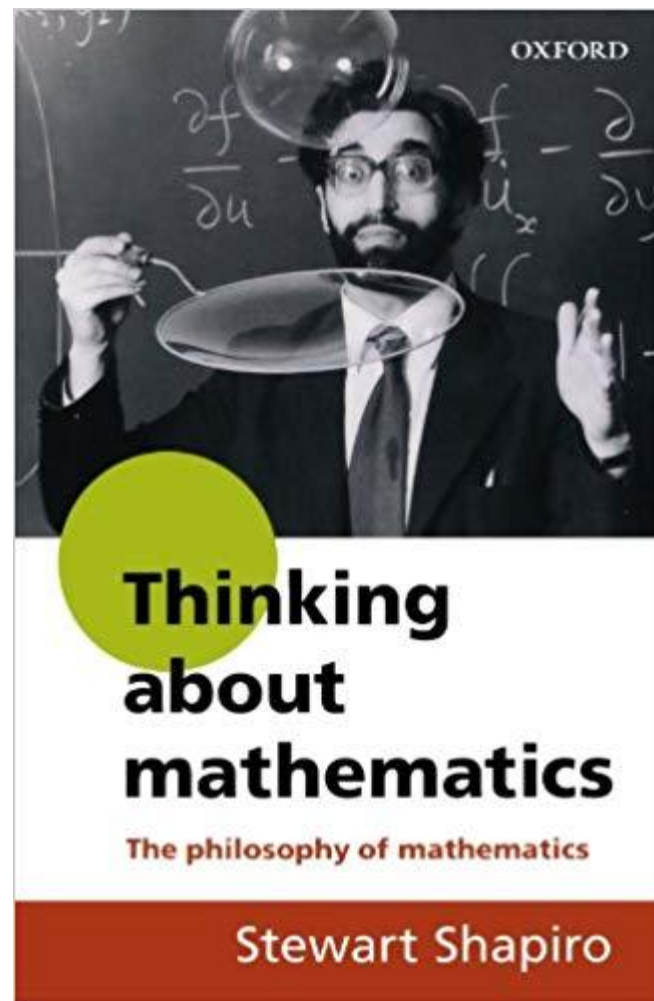
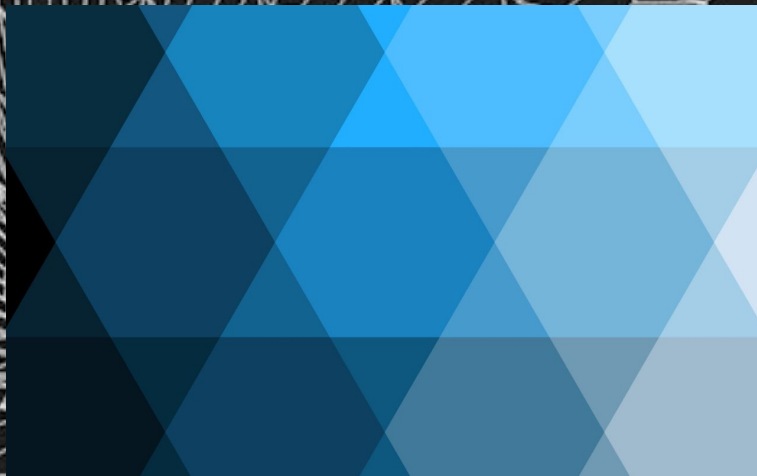


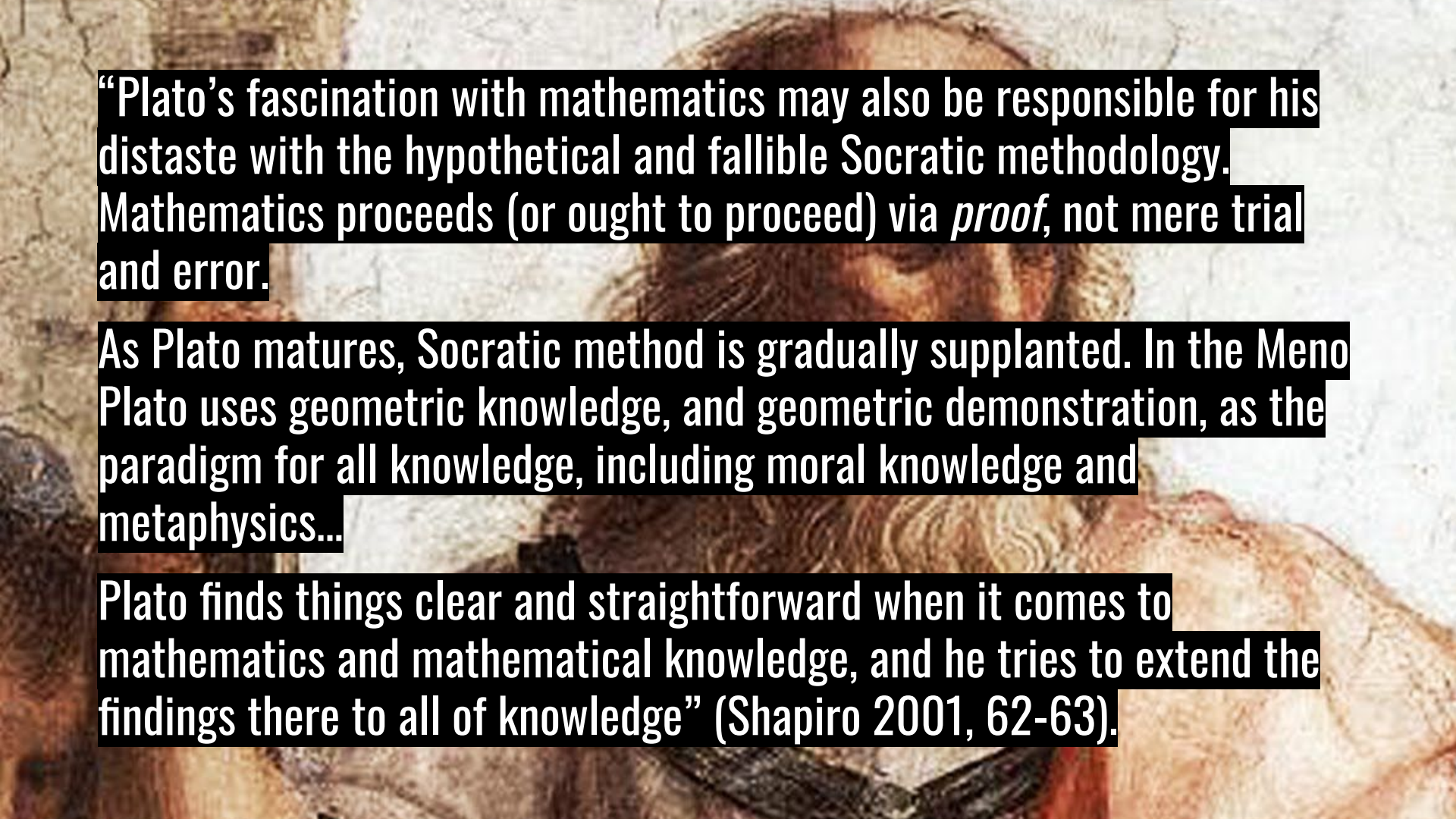
Fig. 3.1. The divided line





π





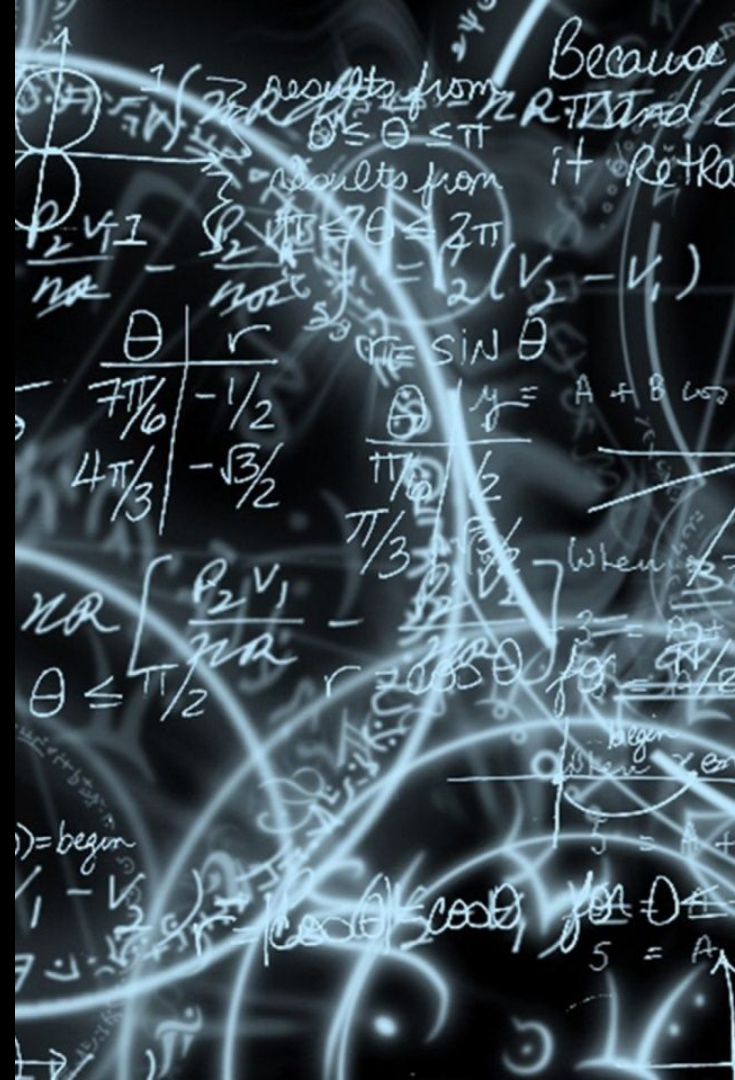
“Plato’s fascination with mathematics may also be responsible for his distaste with the hypothetical and fallible Socratic methodology. Mathematics proceeds (or ought to proceed) via *proof*, not mere trial and error.

As Plato matures, Socratic method is gradually supplanted. In the *Meno* Plato uses geometric knowledge, and geometric demonstration, as the paradigm for all knowledge, including moral knowledge and metaphysics...

Plato finds things clear and straightforward when it comes to mathematics and mathematical knowledge, and he tries to extend the findings there to all of knowledge” (Shapiro 2001, 62-63).



“[Plato’s mathematics] curriculum (Republic VII 521c-531c) is proposed as part of the education of future guardians of the state; it will occupy men from age twenty (537b-c) to thirty (537d)...





“It will be preceded by early training in childhood, imparted through play (536d-e), by sightseeing trips to the battlefield (537a), and by a two- or three-year break for gymnastics (537b), and only those who show promise will go on to study mathematics...

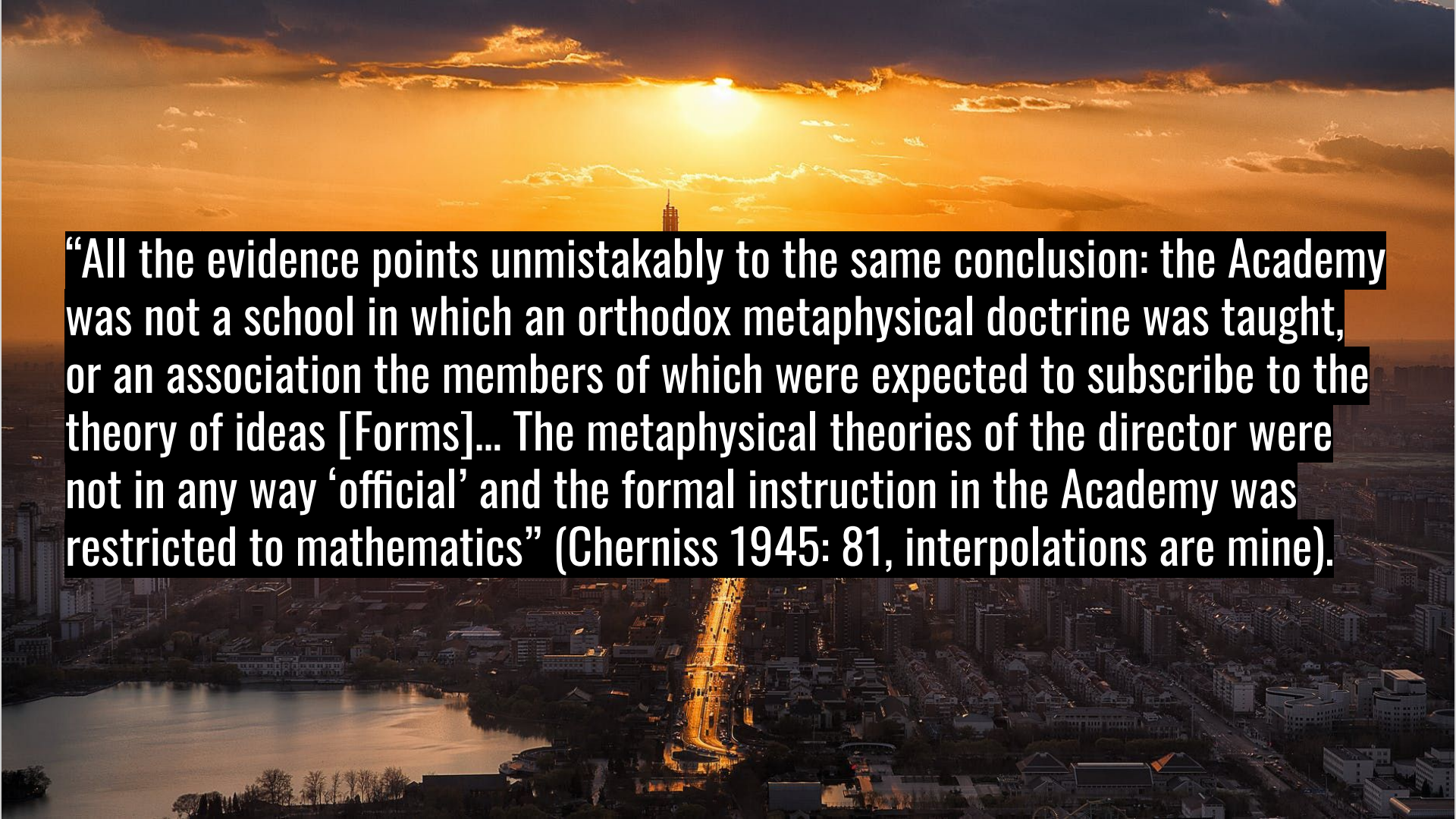
“At age thirty, and after a second selection, the students will pass on to a training in dialectic (537d-e) for five years (539e). They will be compelled ‘to hold commands in war and other offices suitable to youth’ for a further fifteen years, up to the age of fifty (539e-40a)...





“...and those who come through this programme of preparation will, from time to time for the rest of their lives, be called on to rule the state (540a-b)” (Fowler 1999: 107).

S | D E B A R

An aerial photograph of a city at sunset. The sun is low on the horizon, casting a golden glow over the sky and the city. The city is densely packed with buildings, and a large body of water is visible in the lower-left corner. A prominent road or bridge structure is illuminated in the center of the image. A large black text box is overlaid on the middle of the image, containing a quote in white text.

“All the evidence points unmistakably to the same conclusion: the Academy was not a school in which an orthodox metaphysical doctrine was taught, or an association the members of which were expected to subscribe to the theory of ideas [Forms]... The metaphysical theories of the director were not in any way ‘official’ and the formal instruction in the Academy was restricted to mathematics” (Cherniss 1945: 81, interpolations are mine).

A sunset over a city with a lake in the foreground. The sun is low on the horizon, casting a golden glow over the clouds and the city below. The city lights are visible, and the water in the lake reflects the sunset. The text is overlaid on the image in a black box with white text.

“It cannot be imagined that Plato *taught* any of these men mathematics...

Plato’s influence on these men, then, was that of an intelligent critic of method, not that of a technical mathematician with the skill to make great discoveries of his own; and it was by his criticism of method, by this formulation of the broader problems to which the mathematician should address himself, and , as the summary of Proclus says, by arousing in those who took up philosophy an interest in mathematics that he gave such a great impulse to the developments of the science” (Cherniss 1945: 65, italics in original).

Person of Interest: Plato



Occupation:
Philosopher

Known for:
Platonism
The Theory of Forms

Notable Work:
The Republic (~380 BCE)

Question:

Are we on the verge of a tyranny?



The Republic



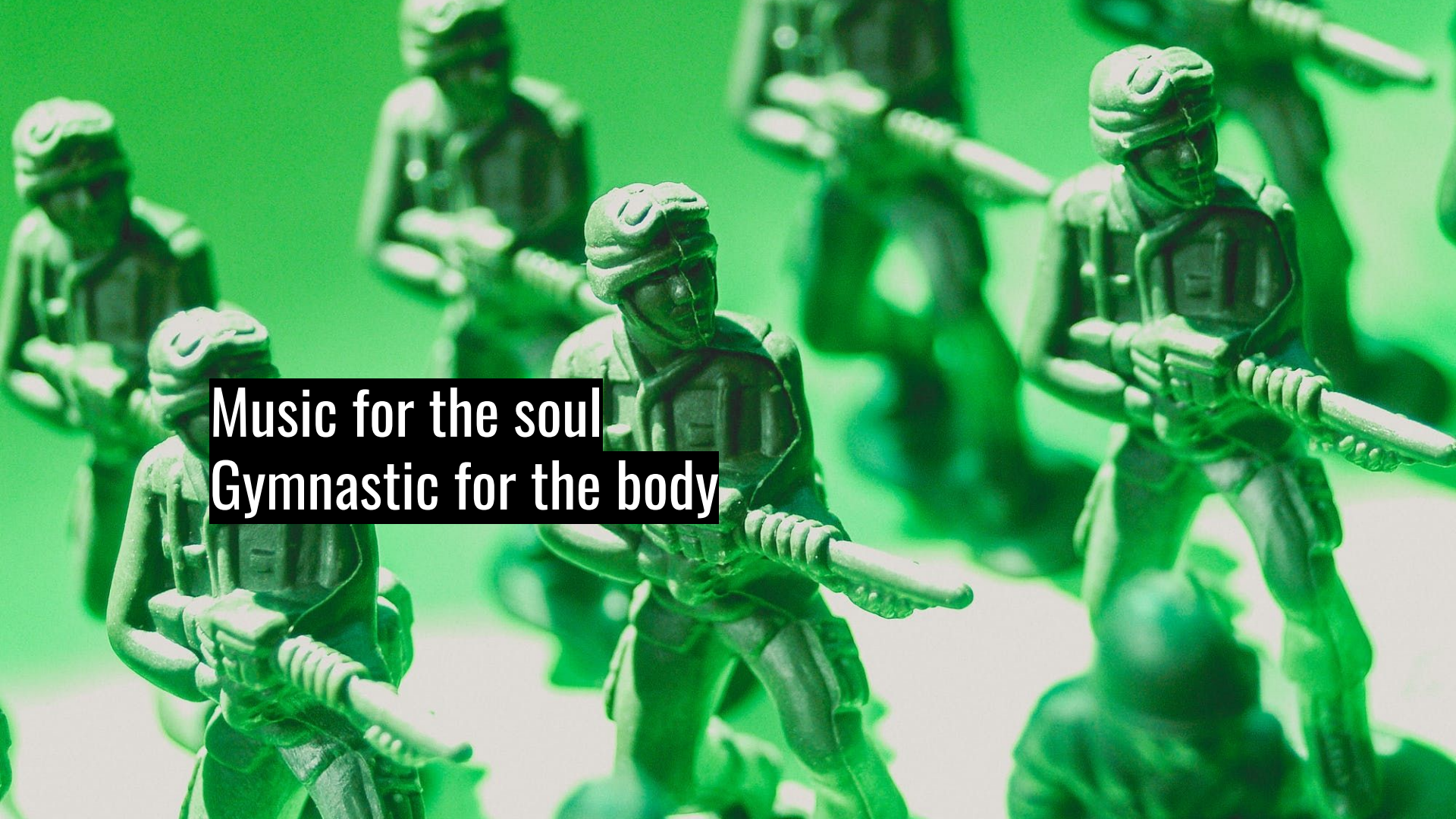
The Healthy City

But then Glaucon (see [The Mind's I](#)) interjects saying that this is a “City of Pigs” full of those who are satisfied with the bare minimum...



Question:

How shall we train the Auxiliaries?



**Music for the soul
Gymnastic for the body**

A group of young boys in traditional Indian attire, possibly performing a dance or play, with a green color overlay. The boys are wearing headgear and holding sticks or poles. The text is overlaid on the image in a black box with white text.

Stories
Music for the soul
Gymnastic for the body



SOCRATES:

Then shall we so easily permit the children to listen to haphazard stories made up by haphazard people?

...So the first thing for us to do, as it seems, is to take charge of those who make up the stories, and what they compose that's beautiful is to be accepted, but what isn't is to be rejected..

And those that are accepted, we'll persuade the nurses and mothers to tell their children, and mold their souls with stories much more than they massage their bodies with their hands.

But most of those they tell now are to be eliminated (377b-c).



Other things that ought be regulated...







BLACK LABEL

The MACALLAN
12

The MACALLAN
15

The MACALLAN
18

THE GLENLIVET
12

THE GLENLIVET
18

APHROAIG
10

Grand Marnier

RARE
J&B
SCOTCH WHISKY

RARE
J&B
BLENDED SCOTCH WHISKY

RED BREAST
12

JAMESON
WHISKY

BUSHMILLS
BLACK BUSH
IRISH WHISKY

BEEFEATER
LONDON

Tanqueray
IMPORTED
LONDON DRY GIN

BOMBAY
GIN

HE

1800
SILVER

1800
REPOSADO

TREST
AGAVES

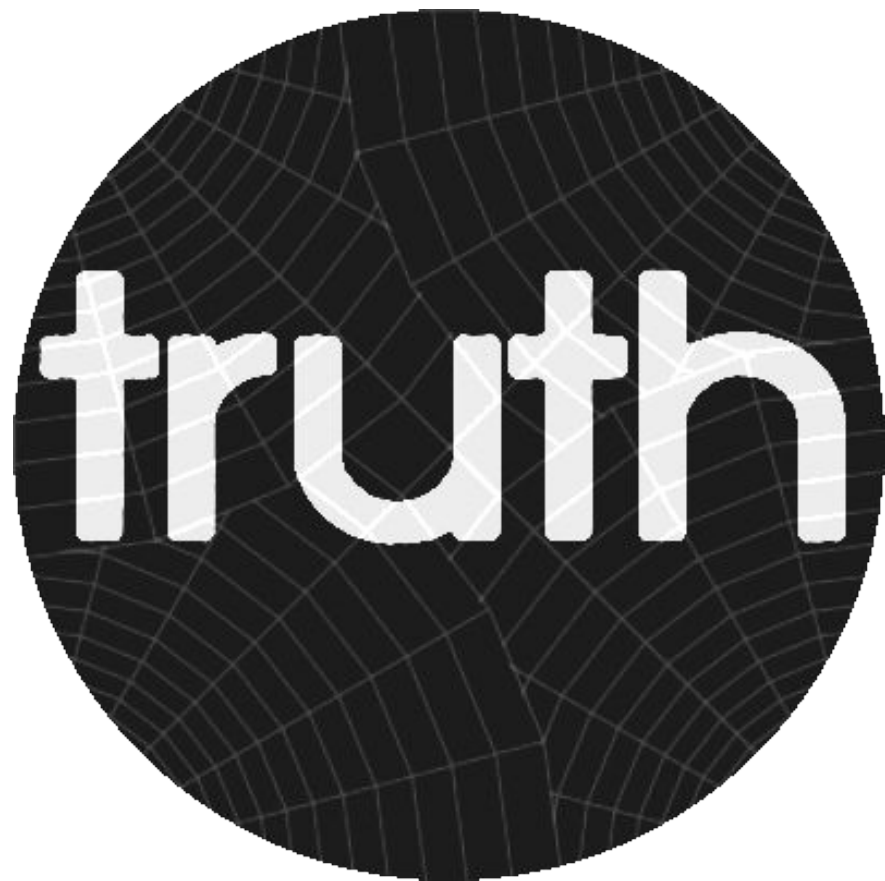
AVION
SILVER
TEQUILA

AVION
REPOSADO

Francisco

88







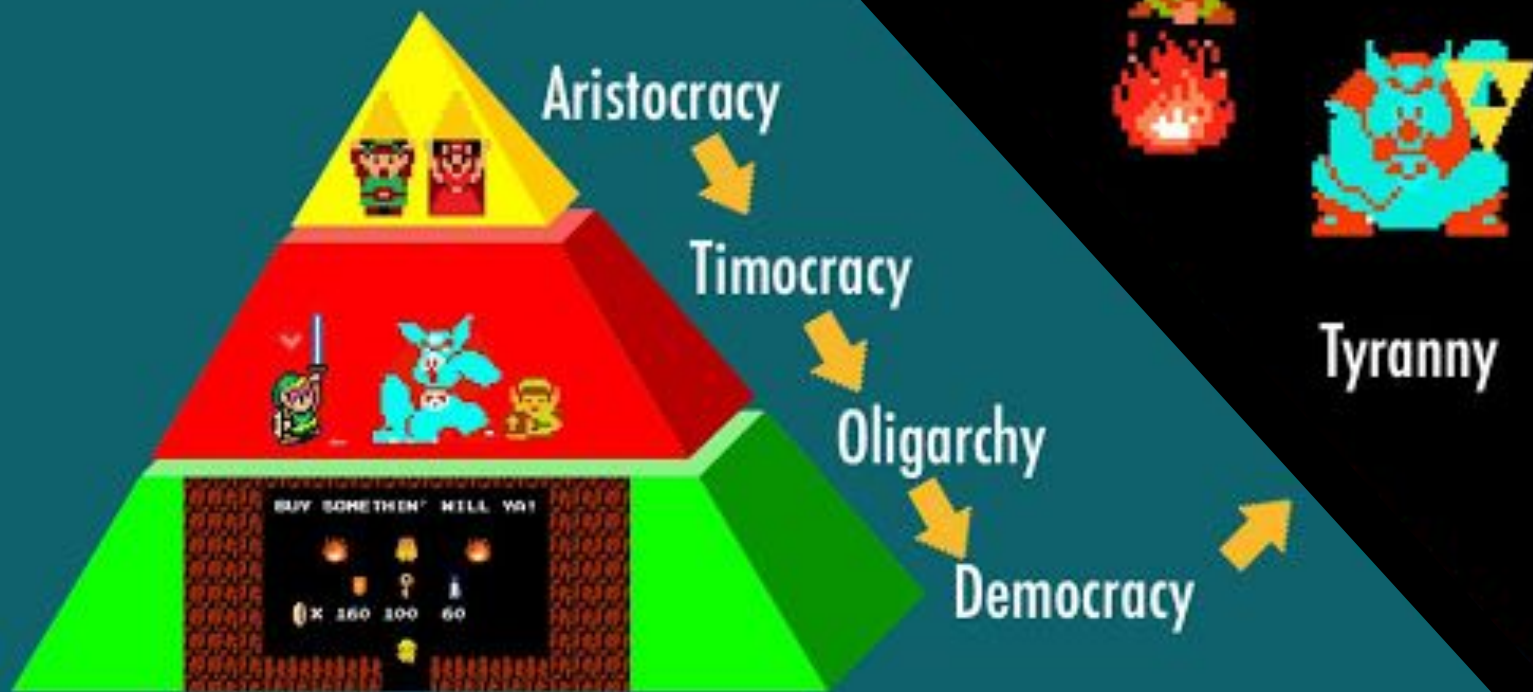
SOCRATES:

So it's appropriate for the rulers of the city, if for anyone at all, to lie for the benefit of the city as far as either enemies or citizens are concerned, but for everyone else, such a thing is not to be touched.

But we'll declare that, for a private citizen, to lie to the rulers is the same thing, and a greater fault, as for a sick person not to tell the truth about the things happening to his body to a doctor... (389b-c).

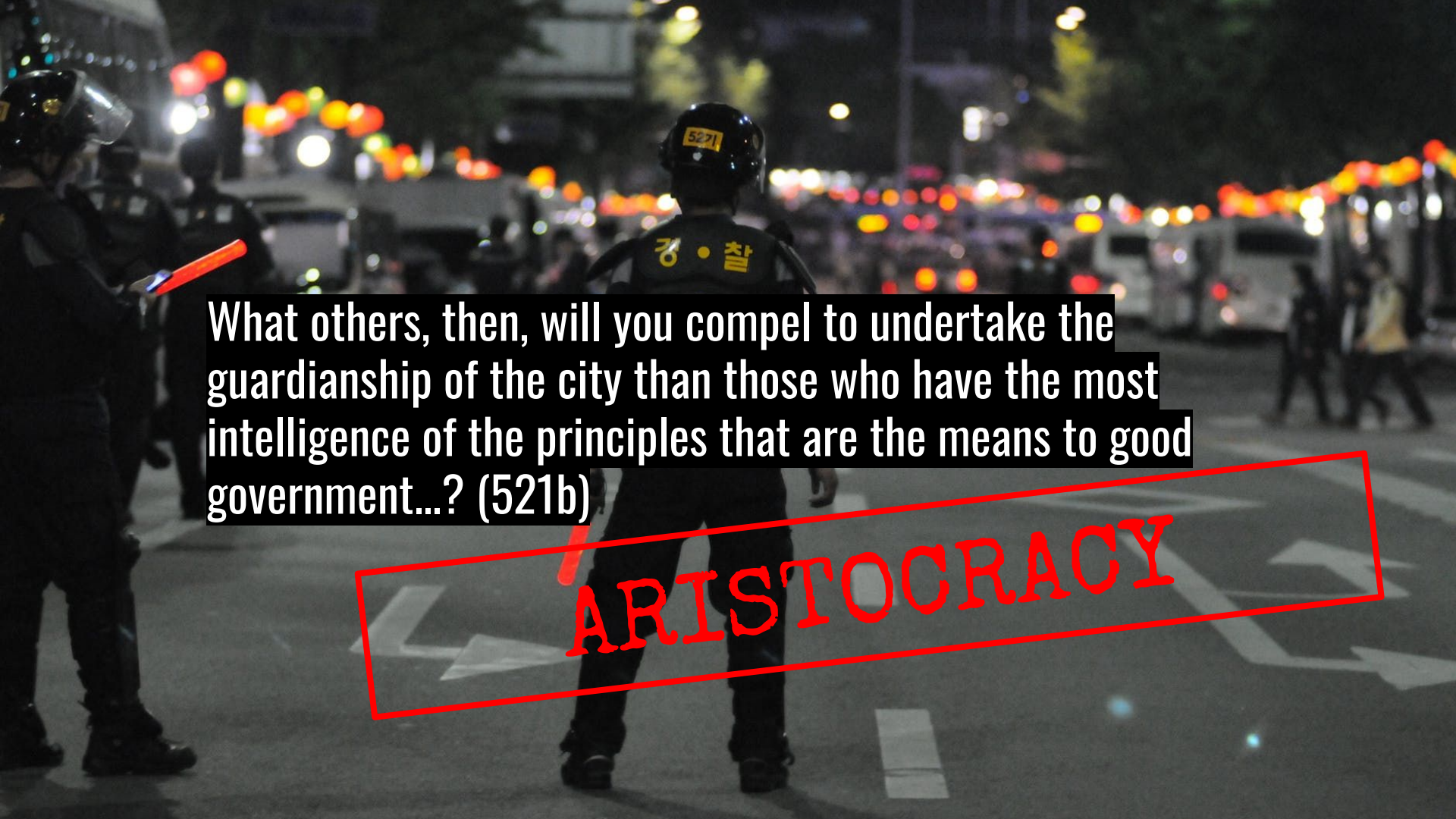
Plato's Political Theory

Plato's Five Regimes



Aristocracy

The best form of government, according to Plato, aristocracy is rule by the best; i.e., rule by those most knowledgeable on matters of governance.



What others, then, will you compel to undertake the guardianship of the city than those who have the most intelligence of the principles that are the means to good government...? (521b)

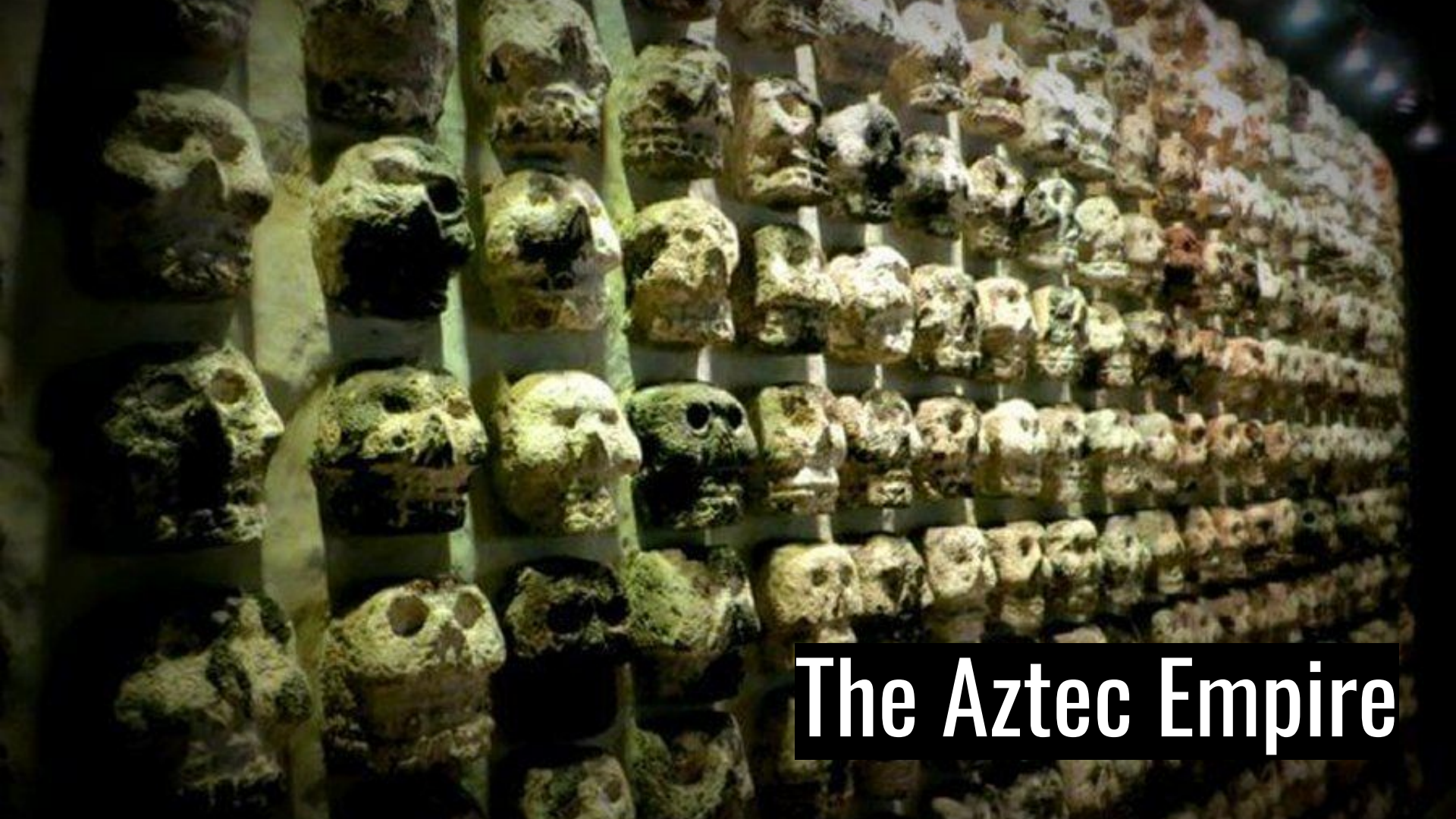
ARISTOCRACY

Timocracy

The fourth worst form of government, according to Plato, **timocracy** is rule by the military; i.e., rule by those most suited for war and other martial activities.



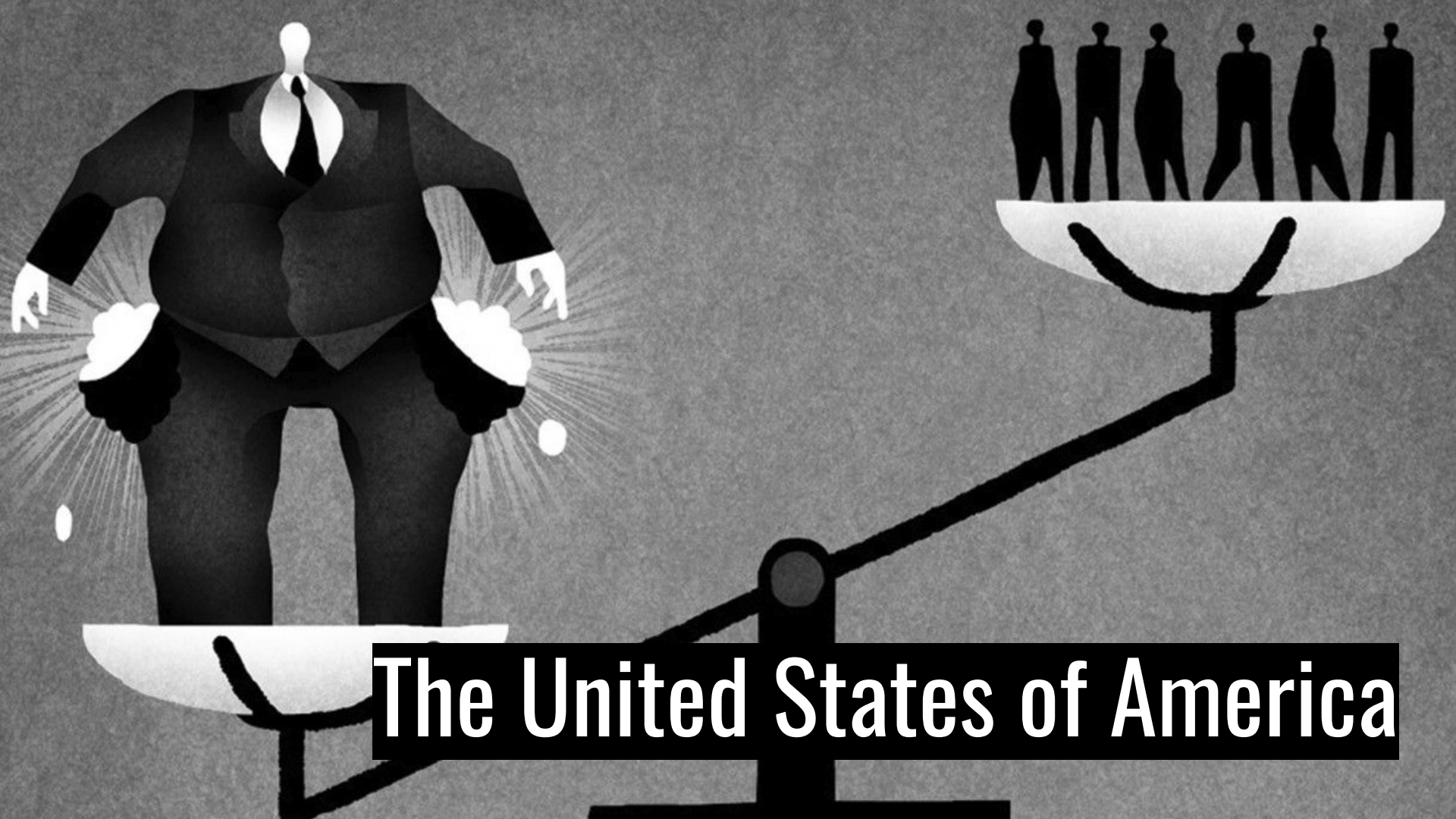
The Assyrian Empire



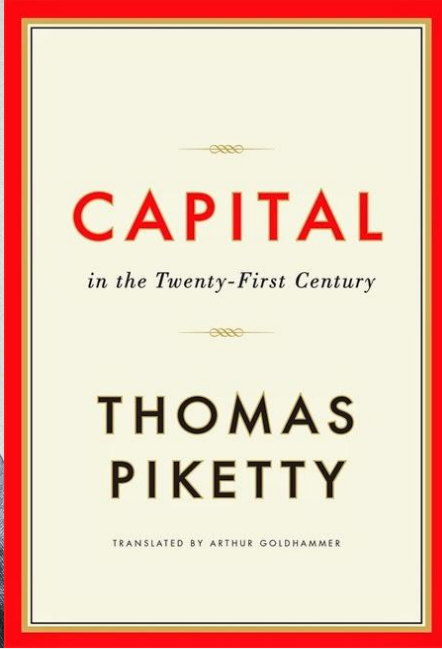
The Aztec Empire

Oligarchy

The third worst form of government, according to Plato, oligarchy is rule by the rich; i.e., rule by those who value money over all else, including virtue.



The United States of America



“In the United States... income from labor is about as unequally distributed as has ever been observed **anywhere**” (Piketty 2013: 257; **emphasis added**).



New Minimum Wage at

JP Morgan Chase:

\$29,640 per year

\$14.25/hr

Jamie Dimon's Salary:

\$27 million per year

\$13,500/hr

Time it takes Dimon to make the
annual income of one of his lowest
paid workers:

2 hours and 12 minutes



The Russian Federation

Democracy

The second worst form of government, according to Plato, **democracy** is rule by all; i.e., rule by those who value freedom over all else.



But for all Plato, freedom is also a form of slavery.

This is because the free person is free to do **anything**; they can indulge **every type of desire**.

This includes unnecessary and base desires.



**This causes democratic people
to be without moderation,
proportion, and orderliness
(see 560e).**



**“Accompanied by a vast chorus
singing their praises
and giving them pretty names...”**



“Calling insolence high education...”

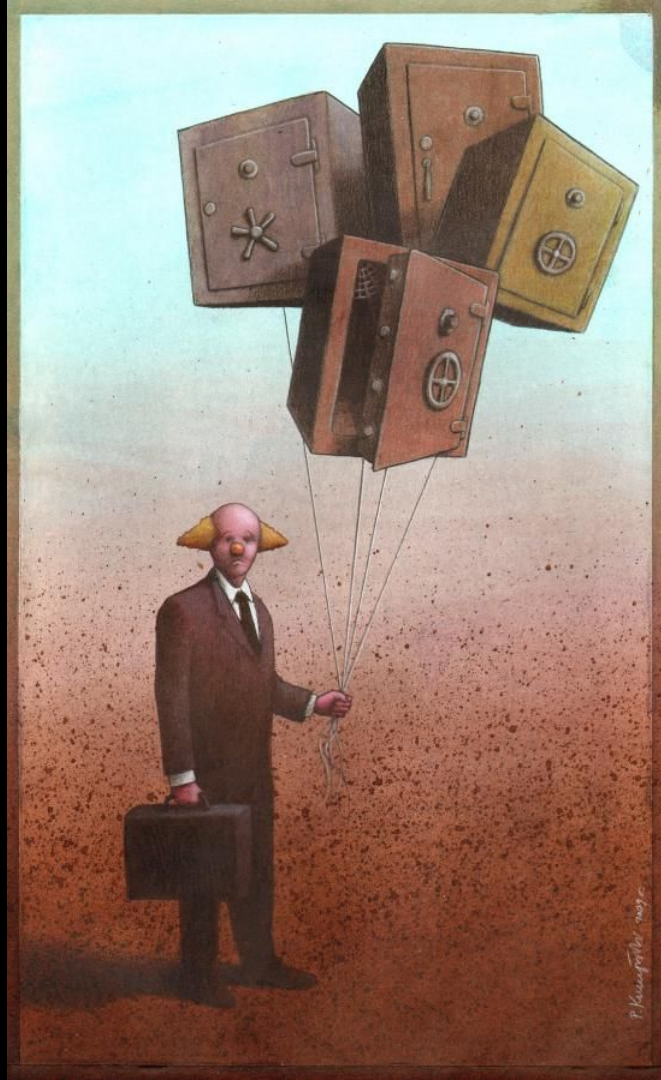


“anarchy freedom...”



“wastefulness flamboyant style...”

“...and shamelessness courage” (561a).

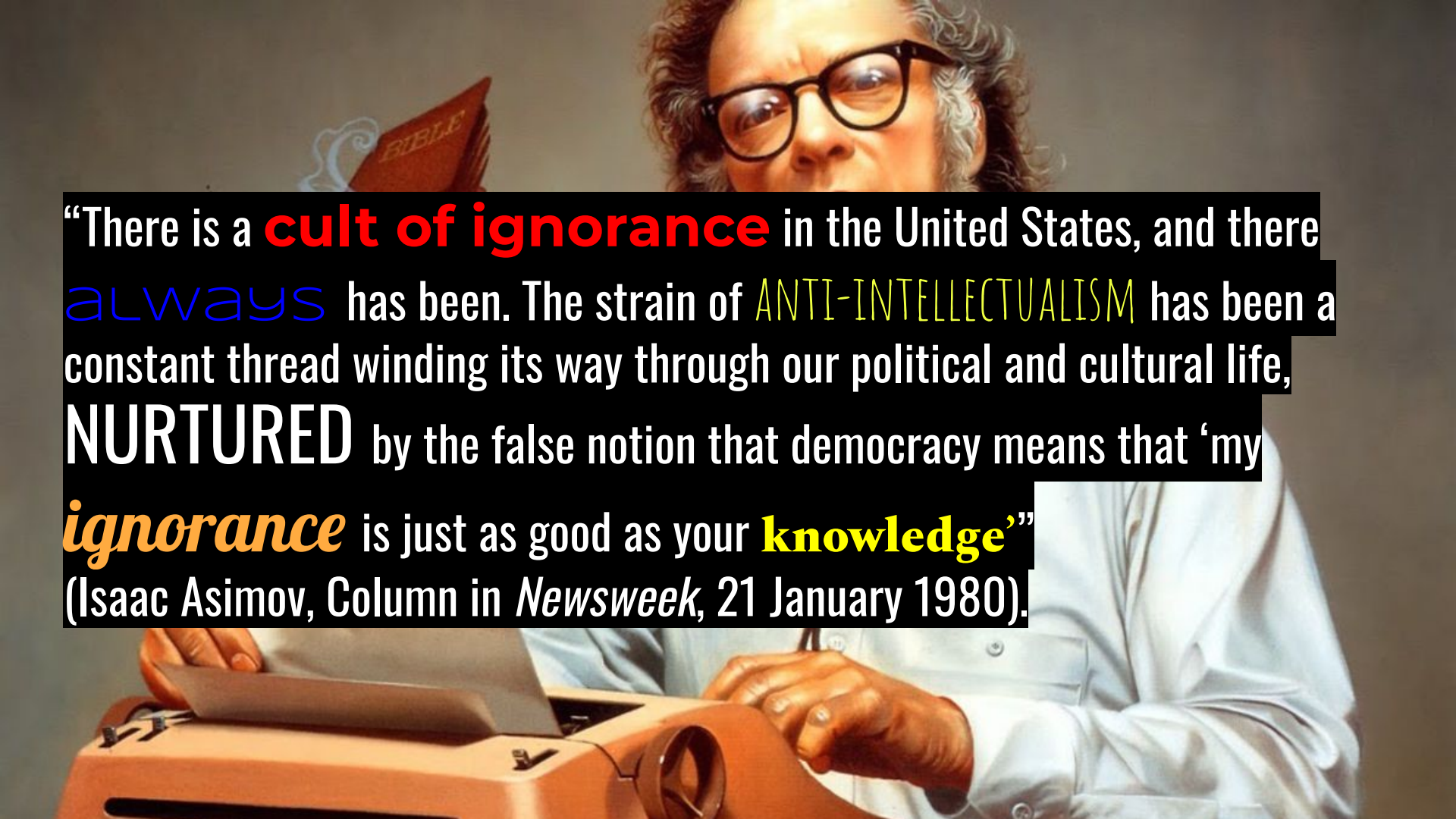




“...and shamelessness courage” (561a).



“If anyone says that some pleasures come from beautiful and good desires and others from worthless ones, and that one should engage in and honor the former but curb and enslave the latter, he shakes his head at all these things and insists all pleasures are alike and deserve to be honored equally” (561c).



“There is a **cult of ignorance** in the United States, and there **always** has been. The strain of **ANTI-INTELLECTUALISM** has been a constant thread winding its way through our political and cultural life, **NURTURED** by the false notion that democracy means that ‘my **ignorance** is just as good as your **knowledge**’”
(Isaac Asimov, Column in *Newsweek*, 21 January 1980).

“So he passes his life that way from day to day, gratifying the desire that turns up; at one time he gets drunk and has flute music played, but at another he drinks water and fasts; at one time he takes up gymnastic exercise, but there comes a time when he’s lazy and lets it all slide, and then he spends his time as though he’s engaged in philosophy...





**“Often he gets interested in politics,
and jumps up and says and does
random things; then if he feels envious
of any military men, he gets carried
away with that, or if he feels that way
about moneymakers, he’s carried in
that direction instead. There’s no order
or necessity present in his life, but he
calls this way of living sweet, free, and
blessed, and lives it throughout”
(561d).**

Tyranny

The worst form of government, according to Plato, tyranny is rule by a single tyrant; i.e., since chaos has taken over all power is handed over to **one** person, with total control, in order to restore society.



SOCRATES:

So impeachments come along, and convictions, and trials back and forth...

(565c).



Doesn't it happen the same too with anyone who's chosen leader of a people, when he gets an exceedingly tractable mob, and doesn't shy away from the blood of his own tribe, but makes unjust accusations, exactly the sort they tend to make, brings someone into court and stains it with blood?
(565e)

**Doesn't he hint at cancellations of
debts and a redistribution of land?
So he turns out to be the one who
starts the rebellion against those
who have wealth...
(566a)**







