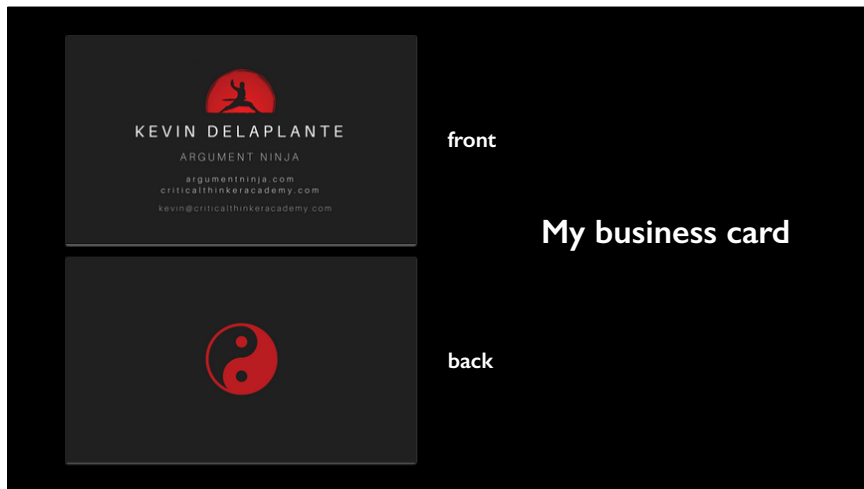


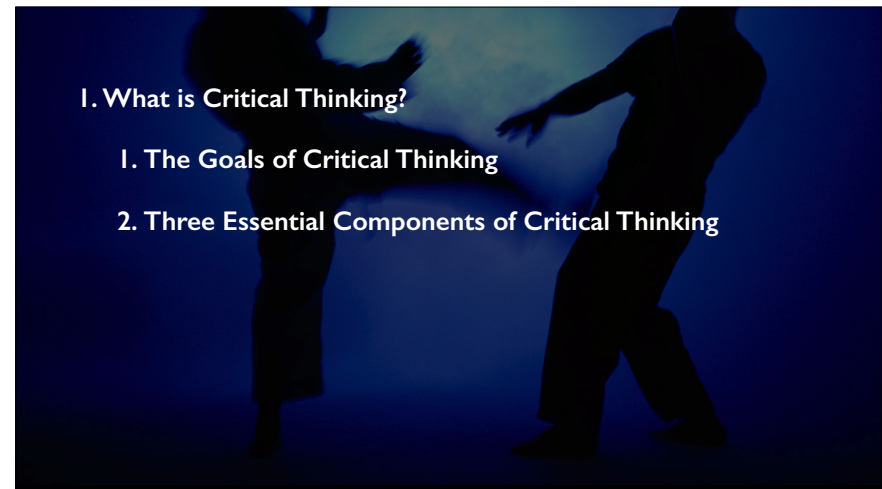
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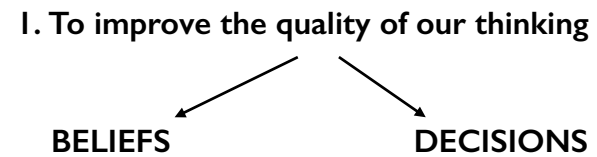
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What are the Goals of Critical Thinking?

- I. To improve the quality of our thinking
2. To learn to think for ourselves

5

What are the Goals of Critical Thinking?



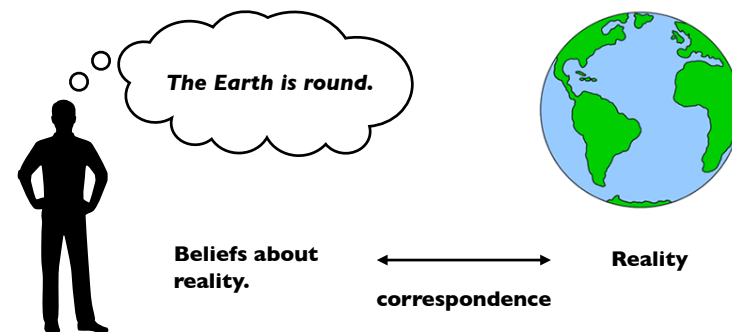
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What are the Goals of Critical Thinking?

- I. To improve the quality of our thinking
-
- ```
graph TD; A[I. To improve the quality of our thinking] --> B[BELIEFS]; A --> C[DECISIONS];
```
- The diagram shows the goal 'I. To improve the quality of our thinking' branching into two outcomes: 'BELIEFS' and 'DECISIONS'.
- correspond to the world (accept truths, reject falsehoods)
  - calibrated to the evidence (rational uncertainty)

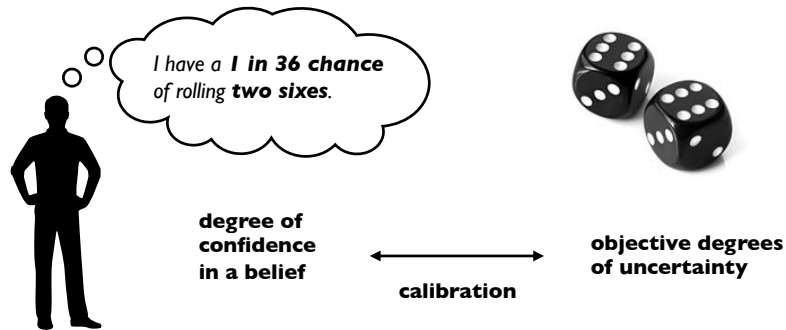
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## What are the Goals of Critical Thinking?



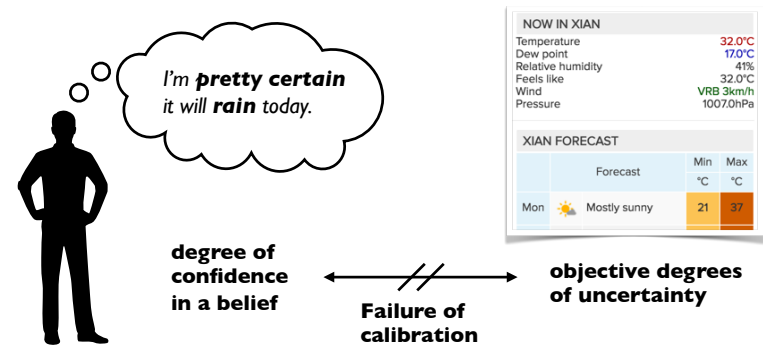
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## What are the Goals of Critical Thinking?



9

## What are the Goals of Critical Thinking?



10

## What are the Goals of Critical Thinking?

### I. To improve the quality of our thinking

#### BELIEFS

- correspond to the world (accept truths, reject falsehoods)
- calibrated to the evidence (rational uncertainty)

#### DECISIONS

11

## What are the Goals of Critical Thinking?

### I. To improve the quality of our thinking

#### BELIEFS

- correspond to the world (accept truths, reject falsehoods)
- calibrated to the evidence (rational uncertainty)

#### DECISIONS

- promote our best interests and the values we care about (wise choices)

12

## What are the Goals of Critical Thinking?

1. To improve the quality of our thinking
2. To learn to think for ourselves

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## What are the Goals of Critical Thinking?

1. To improve the quality of our thinking
2. To learn to think for ourselves
  - to **critically examine** beliefs, and **hold beliefs on the basis of reasons that we recognize for ourselves**, rather than relying merely on authority, tradition, socialization, etc.

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## What are the Goals of Critical Thinking?

2. To learn to think for ourselves



15

## I. What is Critical Thinking?

1. The Goals of Critical Thinking
2. Three Essential Components Critical Thinking

16



## Three Essential Components of Critical Thinking


1. Good Reasoning
2. Understanding and Managing Obstacles to Good Reasoning
3. Acquiring the Background Knowledge that Supports Critical Thinking

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## Three Essential Components of Critical Thinking

1. Good Reasoning ← standard approaches to critical thinking education are good at this ...
  2. Understanding and Managing Obstacles to Good Reasoning
  3. Acquiring the Background Knowledge that Supports Critical Thinking
- ... but poor at these

18

- 
1. What is Critical Thinking?
  2. Historical Development in the West ←
  3. Problems with Critical Thinking Education
  4. Solution: A Martial Arts Model of
    - Critical Thinking
    - Critical Thinking Skill Development
    - Critical Thinking Education

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## Historical Development

1. Greeks
2. Medieval Europe
3. Modern Period (16th - 18th century)
4. 19th century
5. 20th century

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## Historical Development

### I. Greeks

argumentation as a tool of **persuasion**  
(rhetoric, psychology)



argumentation as a tool of **inquiry**  
(philosophy)

(2500 year old split)

21

## Historical Development

### 2. Medieval Period

- classical "trivium" of liberal arts education - grammar, logic, rhetoric
- Greek sources are taken as authorities (a "golden age")
- philosophy is "the handmaiden" of Christian theology; atheism is unthinkable
- Christian influence: pessimism about progress; civilization is in decline; our sinful nature is the reason for our suffering; this will not end until God returns to judge us and cleanse the world of sin

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## Historical Development

### 3. Modern Period (16th - 18th century)

- new concerns with foundations for knowledge that do not rely on tradition or appeals to authority (Descartes)
- Scientific Revolution -- philosophy and science co-evolve over 200 years, each influenced by the other
- The Enlightenment (18th century Europe)
- important work of informal logic: *The Port Royal Logic* (1662), published in France

23

## Historical Development

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- new concerns with foundations for knowledge that do not rely on tradition or appeals to authority (Descartes)
- Scientific Revolution -- philosophy and science co-evolve over 200 years, each influenced by the other
- The Enlightenment (18th century Europe) expand on this
- important work of informal logic: *The Port Royal Logic* (1662), published in France

24

## Historical Development

### 3. Enlightenment Ideas (18th C)

- ideas of liberty, progress, tolerance, constitutional government, separation of church and state
- the rise of individualism in epistemology, ethics and politics
- the rise of religious rationalism, deism and atheism as live options
- increasing optimism in the power of human reason to understand nature and society, and our ability to make changes that improve the human condition

25

## Historical Development

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## Historical Development

### 4. 19th Century

- Gottlob Frege: great innovation in symbolic logic (predicate logic), motivated by a desire to formalize mathematical reasoning
- Richard Whatley: wrote texts on informal reasoning, argumentation and rhetoric

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## Historical Development

### 5. 20th Century

- **1900-1960:** dominated by interest in formal logic, foundations of mathematics, computation
- **1960s:** beginnings of "informal logic" and the "critical thinking movement" in the US, inspired by civil unrest of the 1960s
- **1970s-80s:** Critical Thinking Movement in education in the US
- **1990s-2000s:** growth of Informal Logic and Argumentation Studies
- **1970-present:** cognitive biases, new sciences of human reasoning

28

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29

## Historical Development

### 5. The Critical Thinking Movement (1970s-80s)

- a movement in US education that argued that the critical examination of our beliefs and assumptions, through the use of arguments and techniques of argument analysis, should be a fundamental goal of education.

30

## Historical Development

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- In 1980, California began requiring ALL colleges and universities in the public state system to require a course in critical thinking for ALL undergraduates.

31

## Historical Development

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- In 1980, California began requiring ALL colleges and universities in the public state system to require a course in critical thinking for ALL undergraduates.
- This caused a boom in critical thinking textbooks and courses that spread to other states (and Canada)

32

## Historical Development

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34

## Historical Development

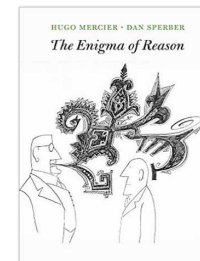
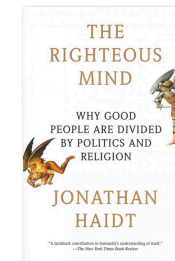
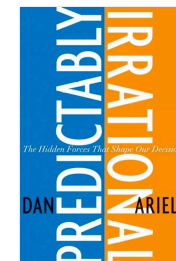
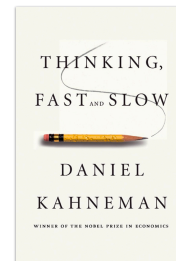
### 5. Cognitive Biases (1970 - present)

- new understanding of how human beings process information, form beliefs and make judgments and decisions.
- essential to modern views of human (ir)rationality

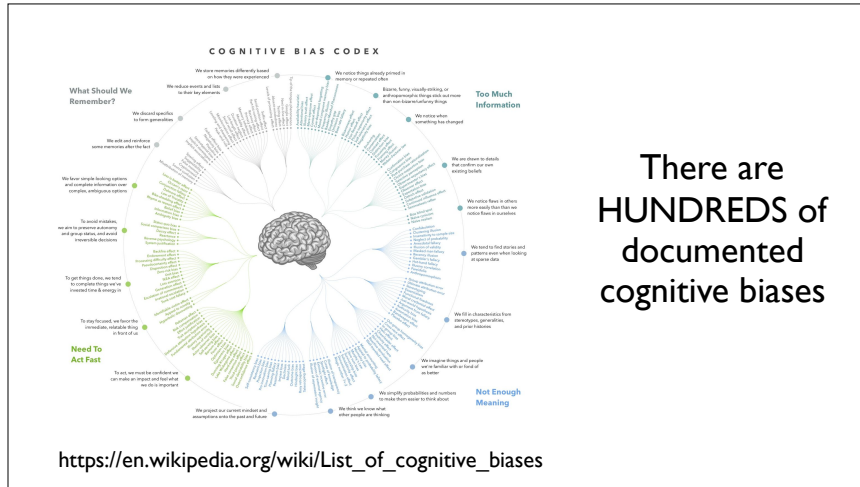
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## Historical Development

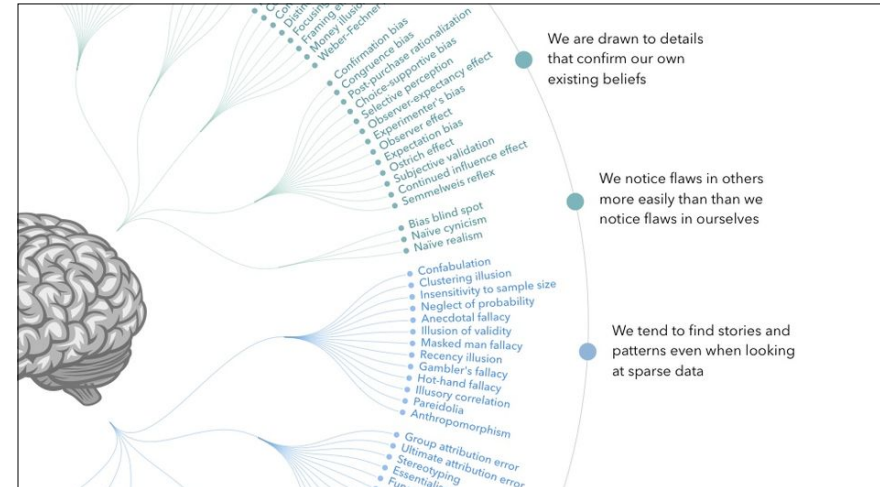
### 5. Cognitive Biases (1970 - present)



36



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## Three Essential Components of Critical Thinking

1. Good Reasoning
2. Understanding and Managing Obstacles to Good Reasoning
3. Acquiring the Background Knowledge that Supports Critical Thinking

(cognitive bias training is essential for THIS)

40



41

## Problems with Critical Thinking Education

Critical thinking textbooks and courses

... focus too much on principles of good reasoning, and not nearly enough on what we've learned about how human beings actually form beliefs and make decisions.

42

## Problems with Critical Thinking Education

Critical thinking textbooks and courses

... don't prepare students to engage effectively with people in the "real world" outside the classroom.

(e.g. most people don't react well when you point out where their reasoning is flawed. They react defensively.)

43

## Problems with Critical Thinking Education

Critical thinking textbooks and courses

... underestimate or ignore the many ways that we are vulnerable to manipulation and persuasion, by methods that bypass our conscious reasoning faculties.

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## Problems with Critical Thinking Education

### Critical thinking textbooks and courses

... underestimate or ignore how the "influence industry" (advertising, marketing, speech writing, public relations, etc.) intentionally exploits cognitive biases and the psychology of persuasion to influence our beliefs, values and behavior.

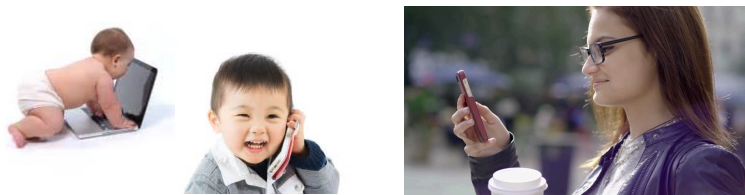
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## Problems with Critical Thinking Education



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## Problems with Critical Thinking Education



It is becoming increasingly difficult to avoid such persuasive messaging.

47

## Problems with Critical Thinking Education

Critical thinking education needs to address the fact that modern, technological societies have become increasingly hostile environments for critical thinking.

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## An Analogy: Trying to Hit a Target



closer to the center =

beliefs closer to the truth  
decisions more rational,  
reflect your true goals and values

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## An Analogy: Trying to Hit a Target

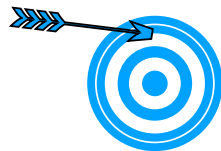


Even under good conditions,  
it still takes training and practice to  
learn how to hit the target.

How to aim. How to control your mind and  
body. How to adjust for gravity, wind  
speed, wind direction, etc.

50

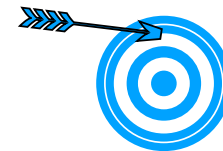
## An Analogy: Trying to Hit a Target



This is critical thinking training under  
good conditions.

51

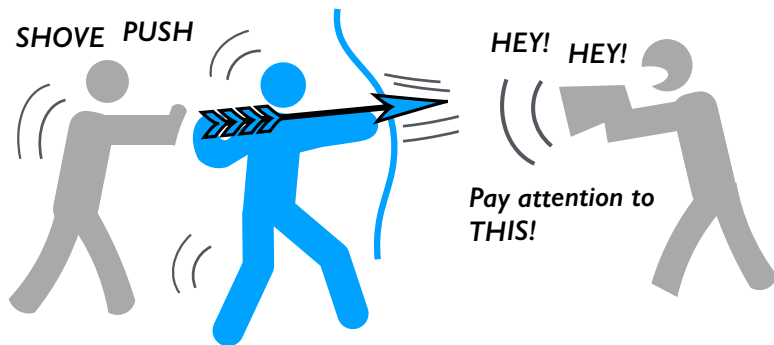
## An Analogy: Trying to Hit a Target



But in modern society the reality  
is more like this ...

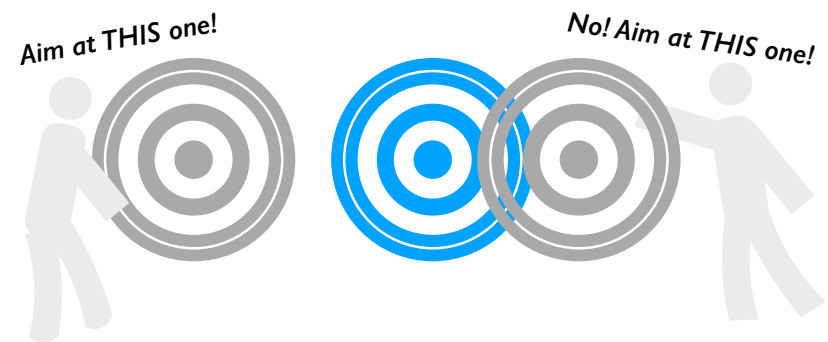
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## An Analogy: Trying to Hit a Target




53

## An Analogy: Trying to Hit a Target



54

1. What is Critical Thinking?
  2. Historical Development in the West
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  4. Solution: A Martial Arts Model of 
- Critical Thinking
  - Critical Thinking Skill Development
  - Critical Thinking Education

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## Critical Thinking as a Martial Art



How do we learn to think independently for ourselves?  
(given this hostile environment that we find ourselves in?)

56

## Critical Thinking as a Martial Art



How do we learn to argue persuasively in the real world?  
(where most people don't follow rules of good reasoning)

57

## Critical Thinking as a Martial Art

MARTIAL ARTS provides a model of how to train for

(1) self-awareness and mental/emotional discipline



(2) the reality of conflict and combat in the world outside the dojo.

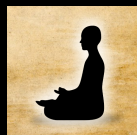


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59

## Critical Thinking as a Martial Art

However, you need a curriculum that includes training in a WIDER set of skills and background knowledge than logic and argument literacy.

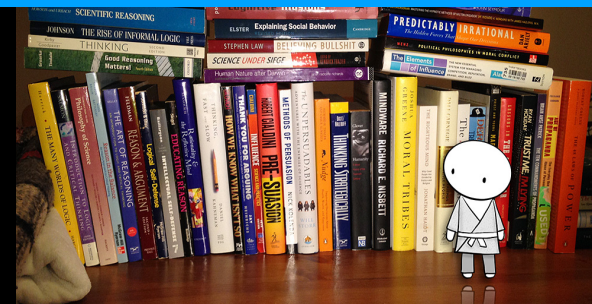
Need to include (among others) ...

PHILOSOPHY

PSYCHOLOGY

RHETORIC

STRATEGIC  
COMMUNICATION

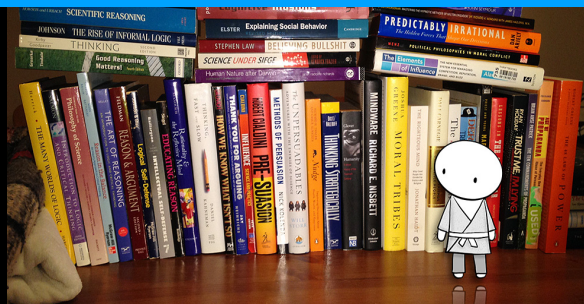


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## Critical Thinking as a Martial Art

However, you need a curriculum that includes training in a **WIDER** set of skills and background knowledge than logic and argument literacy.

Need to include (among others) ...



**MEDIA LITERACY**

**HOW TO LEARN**

**COMMITMENT TO  
LIFE-LONG LEARNING**

61

## Critical Thinking as a Martial Art

And you need to focus more on **SKILL DEVELOPMENT** and **THINKING HABITS** rather than rote learning of academic concepts.



**Awareness  
SKILLS**

**Argumentation  
SKILLS**

**Persuasion  
SKILLS**

**Communication  
SKILLS**

62

## Critical Thinking as a Martial Art

Martial arts training also has a **model of skill development** that can be adapted to this kind of training.



**Awareness  
SKILLS**

**Argumentation  
SKILLS**

**Persuasion  
SKILLS**

**Communication  
SKILLS**

63

## A Common Question



Doesn't this training give you the ability to manipulate and persuade others? Isn't there a risk of abuse?

If you must learn the secrets of the Dark Side to protect yourself, how do you resist the temptation to use it?

64

## Answer: Yes



YES. You can use this training for good or bad.

But this is an old problem for martial arts, or any combat art.

How do they handle it?

65

## Answer:

Higher Ideals, that have nothing to do with winning fights, are always kept in sight.

These ideals are part of the curriculum, reinforced in every aspect of the training.

Example:

### 5 TENETS OF TAEKWONDO



1. COURTESY
2. INTEGRITY
3. PERSEVERANCE
4. SELF-CONTROL
5. INDOMITABLE SPIRIT

66

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5. INDOMITABLE SPIRIT

  
**COURTESY**  
"A TREE IS KNOWN BY ITS FRUIT;  
A MAN BY HIS DEEDS.  
A GOOD DEED IS NEVER LOST;  
HE WHO SOWS COURTESY REAPS FRIENDSHIP,  
AND HE WHO PLANTS KINDNESS  
GATHERS LOVE."



67

## Answer:

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**INTEGRITY**  
"INTEGRITY IS NOT A CONDITIONAL WORD.  
IT DOESN'T BLOW IN THE WIND OR CHANGE  
WITH THE WEATHER.  
IT IS YOUR INNER IMAGE OF YOURSELF.  
BE TRUE AND HONEST WITH YOURSELF  
AND YOUR REWARD WILL BE GREAT."



68

### Answer:

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Example:

#### 5 TENETS OF TAEKWONDO

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1. COURTESY
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### PERSEVERANCE

"YOU MAY ENCOUNTER MANY DEFEATS,  
BUT YOU MUST NOT BE DEFEATED.  
IN FACT, IT MAY BE NECESSARY TO ENCOUNTER  
THE DEFEATS,  
SO YOU CAN KNOW WHO YOU ARE,  
WHAT YOU CAN RISE FROM."



AKROSS  
CANADA

69

### Answer:

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### SELF CONTROL

"WHEN AN INDIVIDUAL IS MOTIVATED BY  
GREAT AND POWERFUL CONVICTIONS OF TRUTH,  
THEN HE DISCIPLINES HIMSELF,  
NOT BECAUSE OF THE DEMANDS OF OTHERS,  
BUT BECAUSE OF THE KNOWLEDGE WITHIN  
HIS HEART."



AKROSS  
CANADA

70

### Answer:

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### INDOMITABLE SPIRIT

"THERE ARE NO CONSTRAINTS  
ON THE HUMAN MIND,  
NO WALLS AROUND THE HUMAN SPIRIT,  
NO BARRIERS TO OUR PROGRESS EXCEPT THOSE  
WE OURSELVES ERECT."



AKROSS  
CANADA

71

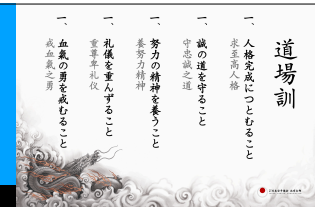
### Answer:

Higher Ideals, that have nothing to do with winning fights, are always kept in sight.

These ideals are part of the curriculum, reinforced in every aspect of the training.

Example: the "dojo jun" of Shotokan karate

- Each person must strive for the completion and perfection of one's character
- Each person must be faithful and protect the way of truth
- Each person must endeavor (fostering the spirit of effort)
- Each person must respect others and the rules of etiquette
- Each person must refrain from violent behavior (guard against impetuous courage)



72



**Answer:**  
Higher Ideals, that have nothing to do with winning fights, are always kept in sight.

These ideals are part of the curriculum, reinforced in every aspect of the training.

In my critical thinking “dojo”, my Argument Ninja Academy, I would put these five tenets on the wall.

None of these are about winning arguments.

Think for yourself.

Pursue truth and wisdom in belief and action.

Reason together toward the common good.

Strive for self-improvement.

Cultivate humility.


73

front

back

My business card

Why the Yin-Yang symbol?



74

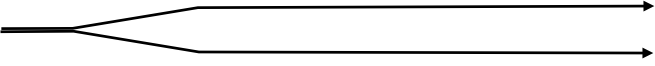
**Recall this Slide**

Greeks

argumentation as **persuasion**  
(rhetoric, psychology)

argumentation as tool of **inquiry**  
(philosophy)

(2500 year old split)



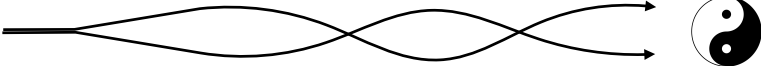
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**Recall this Slide**

argumentation as **persuasion**  
(rhetoric, psychology)

argumentation as tool of **inquiry**  
(philosophy)

**The Greek binary is a false binary.**  
**These are complementary dualities.**



76

**THANK YOU!**

argumentation as **persuasion**  
(rhetoric, psychology)



argumentation as tool of **inquiry**  
(philosophy)

The Greek binary is a false binary.  
These are complementary dualities.