

## **Belief and Doubt**

**A Guide to Critical Thinking  
2nd Edition**

By John Ammerman

### **Included in this preview:**

- **Copyright Information**
- **Table of Contents**
- **Introduction**
- **Chapter 1**

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**BELIEF AND DOUBT:  
A GUIDE TO CRITICAL THINKING**

**Dr. Kelley Wells**

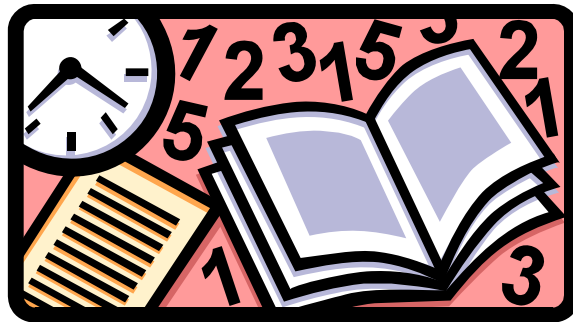
## TABLE OF CONTENTS

	Introduction	1
I.	What is Critical Thinking?	7
II.	Who we are and Critical Thinking	25
III.	Deduction	45
IV.	Deduction and Madness	71
V.	Identifying misaligned critical thinking	83
VI.	Induction	113
VII.	Scientific reasoning	141
VIII.	Four ways of believing	159
IX.	Weak arguments	167
X.	Fallacies	185
	Appendix	209

### **Let's get started!**

So you're taking a course in critical thinking. Sounds boring, huh? Got any idea why you have to do this? Well, let's talk about it a bit.

First of all, this course is supposed to help you with your thinking. Hmm. Perhaps you don't want help with your thinking. Or you didn't go to college to improve your thinking. Or what does your thinking have to do with getting good grades, getting a good job and making good money?



Well, actually quite a bit. You will be able to accomplish all of the above goals much more quickly with better critical thinking skills. Research has shown that people with higher critical thinking abilities have better jobs, make more money, and are happier. Sounds pretty good, huh?

Finally, we live in a democracy. (OK—a republic.) We rely on people being able to make intelligent voting decisions for the future of our country. Thomas Jefferson said

In a republican nation, whose citizens are to be led by reason and persuasion and not by force, the art of reasoning becomes of the first importance.

Thus, our country requires the moderating influence of reason to succeed. Indeed, the great ancient Greek philosopher, Plato believed that for the good life to be possible both the state and individual should be moderated by reason. In addition, the Greeks felt very strongly that democracy depended on participation for success. While voter eligibility was limited, those entitled to vote were expected to vote.

The first democracy was established in ancient Athens. The Athenian democracy was a democratic government in the city-state Athens and its surrounding lands in Attica, Greece; usually considered to have lasted from the late-6th to the late-4th century BC. During the 5th century BC, the population of Athens may well have comprised some 300,000 people. Athens provides the example of the first democracy, and of one of the most important in ancient times; Athenians invented the word “democracy” in order to define their regime.

Athenian democracy was based on selection of officers by lot, and decisions in other cases were made by majority rule. The assembly of all male citizens in Athens voted on decisions directly. Elected officials did not determine decision; the ancients did not consider such a system a democracy but an oligarchy. Democracy had the meaning of equality in decisions and of elections in decisions, not the election of persons charged to decide. Few checks on or limits to the power of the assembly existed, with the notable exception of the *Graphe paranomon* also voted on by the assembly, which made it illegal to pass a law that was contrary to another.

### **Voting**

As usual in ancient democracies, one had to physically attend a gathering in order to vote. Military service or simple distance prevented the exercise of citizenship. Voting took place in public, sometimes by physical division (“Everybody for Plan A go to the right....”) and sometimes by written ballot. Ostracism took place only by written ballot. Voters scratched a name on a potsherd or ostrakon. A potsherd is pottery vase and the ostrakon is an inscription on it.

Policy decisions were taken at a general Assembly at which only adult male citizens could vote. Women, children, slaves, foreigners, resident aliens—groups that together made up a majority of the city's population—had no voting rights at all. In comparison, modern democracy has its own limitations in comparison to the ancient model, as the right of voting is usually limited to once every several years, and voters merely get to choose their representatives in the legislative or executive branches with the exception of occasional referenda.

### **Participation matters**

In the Assembly, which occurred every nine days, those selected by lot had to participate, unless something very important got in their way.

### **Individualism in Athenian democracy**

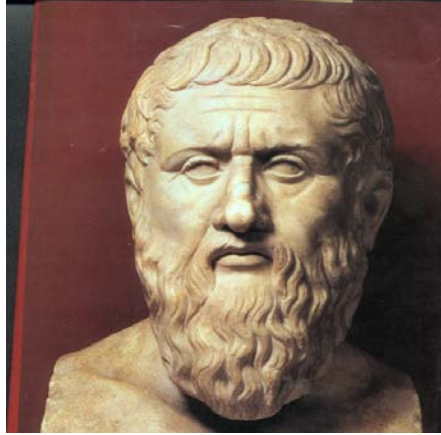
Another interesting insight from the Athenian democracy comes from the law that excluded from decisions of war those citizens that had property close to the city's wall on the basis that they had a personal interest in the outcome of such debates because the practice of an invading army was at the time to destroy the land outside the walls. Clearly, the first democrats understood politics as a process in the interests of the entire demos [people] where private interests had no place. This contrasts with current understanding that the pursuit of private or sector/professional/financial interests are an integral part of the political process. A good example of the contempt the first democrats felt for those who did not participate in politics can be found in the modern word 'idiot' which finds its origins in the ancient Greek word ἰδιώτης (idiy'tis) meaning a private person, a person who is not actively interested in politics; such characters were talked about with contempt and the word acquired eventually its modern meaning.<sup>1</sup>

### **Are you an idiot?**

As the ancient Athenians knew, successful democracy depends on participation. Yet today many students choose not to become involved. Involvement does not necessarily require participation in a campaign. Informed awareness of important issues and participation in a dialogue about them with others is enough. But few of us do. This is because we do not choose to inform ourselves. We do not read the news or editorial sections of newspapers. We do not watch news programs on television. We do not read books that examine issues. Most do not bother to vote. Those who do make superficial judgments based on emotion or self-interest. Many of us are idiots.

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<sup>1</sup> *Wikipedia*, Athenian Democracy.

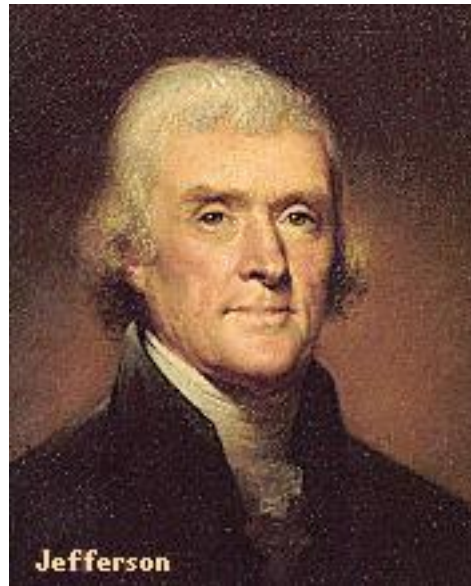


Bust of Plato

Plato, who lived in Athens in the fourth century B.C.E, opposed democracy. He based his opposition on the judgment that the majority of voters were idiots. Consequently, he believed that most democratic decisions would be poorly thought out and likely to be wrong. Plato proposed a state ruled by philosopher kings which he called the *The Republic*.<sup>2</sup> His republic was not a representative democracy as ours is, but a dictatorship ruled by those he thought most qualified to govern: intellectual men and women trained in the art of reasoning. Plato assumed that these individuals would protect the state from the decisions of idiots even if the idiots were the majority.

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<sup>2</sup> *The Republic* is the name of Plato's book length dialogue presenting his alternative to democracy. Plato's state was lead by a dictatorship of philosopher kings and queens whom Plato believed were not idiots. It was not a democracy. The term 'Republic,' however, has come to mean a form of government in which the people (demos) vote for representatives who make decisions on behalf of those who elect them. The United States is a republic and not a democracy.



Jefferson, on the other hand believed that, if educated, the people could be trusted to make the right decision. This is why he supported what was at the time a radical concept—free public education. He believed that farmers and common people had the native capacity to vote intelligently. Plato believed emotions or appetites dominate most of us. According to Plato, no amount of education can correct this.

Enhancing one's critical thinking can encourage the moderating influence of reason at a very personal level. Thus, the design of our government is based on the capacity of its citizen to reason. This was the goal of Jefferson and the founding fathers.

One of the most significant objectives of this text is to prove Plato wrong. Critical thinking is not merely learning the techniques of proper thinking, but includes a moral commitment to apply them to the larger community and nation. Living in a civil society has both a moral and intellectual dimension. The successful critical thinker will not be an idiot. Plato also believed that those who could reason had a responsibility to engage in dialogue with the larger community. But he thought this was extremely dangerous.<sup>3</sup>

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<sup>3</sup> Plato's mentor, Socrates, was convicted on trumped up charges of treason. The Greek demos had him put to death because he had tried to educate them.



David's "Death of Socrates"

For all these reasons, your most intimate (internal) rational calmness as well as your analytical thinking skills (external) will need to be developed. In *The Republic*, Plato tells us "higher order thinking requires movement of the whole soul." 'Higher order thinking' refers to critical thinking. Critical thinking is not superficial, but requires deep transformative change, both internal and external. It has emotional, moral, and intellectual components. Learning critical thinking is a challenge to us at every aspect of our existence.

Unfortunately for a lot of different reasons, most of us are deficient in our critical thinking abilities. Not only students but also many adults, including academics, have surprisingly weak critical thinking habits. Does this shock you? It shouldn't. You are about to have your critical thinking significantly fortified—if you dare. But first...

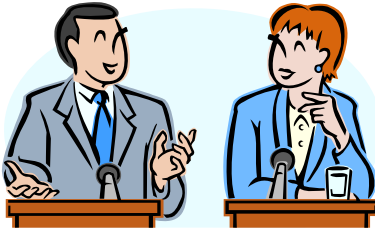
# CHAPTER I: WHAT IS CRITICAL THINKING?

## INTERNAL CRITICAL THINKING<sup>4</sup>

## AND EXTERNAL CRITICAL THINKING<sup>5</sup>

### What Is Critical Thinking?

So, now that we know how significant critical thinking is, what exactly is it? As we have suggested, there is much more than learning how to trip up your opponent in an argument.



In fact, there are two levels of critical thinking, External and Internal.

### ECT

The external aspects refer to what might be understood as the outward side of critical thinking. It is the side that reveals itself publicly. It is the visible display of either good or bad reasoning and includes logic, formal, and informal fallacies. The most basic point to understand about ECT is that it rarely affects ICT.

First of all, ECT need not be ‘critical’ in the sense that it is negative. It is not a way of knocking down ideas. It is not necessarily a way of attacking your ideas and making you feel stupid.

ECT refers to reason and commonsense habits of belief<sup>7</sup> necessary to establish disciplined inference from one belief or set of beliefs [premise] to another [conclusion]. It takes the form of an argument expressed publicly.

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<sup>4</sup> Hereinafter represented as ‘ECT.’

<sup>5</sup> Hereinafter represented as ‘ICT.’

Whew! This definition is not as difficult as it may sound. Let's take it apart word by word. Reasoning is the ability to reach a conclusion based on the evidence. An example of reason[ing] would be, "All philosophy professors are mad." (premise) "Dr. Wells is a philosophy professor." (premise) "Therefore, Dr. Wells is Mad." (conclusion) This is an example of reasoning taking the form of an argument.

Common sense is a whole group of beliefs that most of us share and that may not be provable but make little or no sense to doubt. [Sometimes these are called background beliefs or habits of belief.] For example, the beliefs that men have been to the moon, that there is a real world, that occult forces do not control the natural world, that causation is natural and not supernatural, are examples of commonsense beliefs.

ECT takes place within the context of these and many other reasonable beliefs. Moreover, a conclusion inconsistent with common sense beliefs would require extremely powerful evidence to justify it.

'Disciplined inference' is best understood in reverse order. 'Inference' means the thinking that relates evidence and conclusion. An example of 'inference' would be to imagine we see a school bus with "Holly Oak Elementary School" written on the side. It is filled with young children. A good inference would be to say that those children are "Holly Oak Elementary School" students. 'Disciplined' is here an adjective describing the quality of the inference. 'Disciplined Inference' means that the inference is well thought out and thorough. It includes consideration of possible objections and other points of view. It is neither hasty nor fallacious. (A fallacy is a mistake in reasoning.) It does not claim more than what the evidence will support. Because it involves very careful consideration or discipline, it is confident, calm, and reflective. It does not, unlike some political discourse, require screaming and yelling.

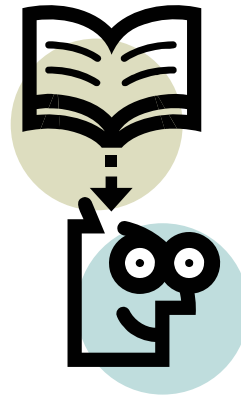
An example of disciplined inference is best understood by a comparison between an undisciplined inference and a disciplined inference. For instance, an undisciplined inference might be something like this: We are looking up in the sky at night and we observe some strange lights that do not appear to resemble any known aircraft or other object. We then infer that what we see is an instance of intelligent life from other

planets. An example of disciplined inference would be, in the same example, to withhold judgment until more evidence is available. It is extremely unlikely that what is observed is an example of intelligent life from other planets, but all the same we do not have enough evidence to reach ANY conclusion at this point. Therefore in this case, the disciplined inference is to draw no conclusion until more evidence is available.

Since we know the definition of ECT, how can we become skilled at applying it?

Good question! In order to understand what a critical thinking course is all about we need to understand the meaning of a few terms.

- **Logic**
- **Fallacy**
- **Formal fallacy**
- **Informal fallacy**



**Logic** is the branch of philosophy that deals with the theory of deductive and inductive arguments and aims to distinguish good reasoning from bad reasoning. [Deductive and inductive arguments are particular kinds of arguments that we don't need to worry about at this point.]

**Fallacy** is an error in reasoning or other extraneous factors.

**Formal fallacy** is an error in deductive or inductive reasoning.

**Informal fallacy** is an error involving factors extraneous to deductive or inductive reasoning.

So what's all this stuff mean when we put it together? Well, it's not really all that difficult. (Otherwise I wouldn't get it myself.)

As you can see, we keep talking about reasoning, inference, disciplined inference, argument, logic, so on and so forth. All of these words mean pretty much the same thing. In an argument, ‘therefore’ is a ‘because’ or ‘reason why’ followed by a conclusion. Reasoning, inference, disciplined inference, logic all refer to the movement of the mind from the ‘because’ or ‘reason why’ to the conclusion. The whole of the premise and conclusion and its relationship between the two is what is called an argument.

**‘BECAUSE,’ ‘REASON’ ‘EVIDENCE’ [PREMISE]**



**CONCLUSION**

Learning formal and informal fallacies is a necessary part of becoming an effective critical thinker. As was explained above, formal fallacies are outright errors in logic. A formal error in logic is illustrated as follows: if F (fire) then there must be O (oxygen) then if O (oxygen) then there must be F (fire). This is an example of an error in logic.<sup>6</sup> (Hey! I didn’t write these footnotes for my health. They are part of the book. Read all of them. )

Conversely, an example of an informal fallacy is the personal attack (ad hominem), “Joe: Let’s raise taxes .50 a gallon to discourage reliance on gas. Moe: You would say that. You don’t drive a car!” Here Moe is attacking Joe and is not responding to the merits of Joe’s proposal.

Students are taught to identify both formal and informal fallacies in the hope that they will apply this knowledge to their own day-to-day thinking. Unfortunately, even if

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<sup>6</sup> In propositional logic this is called *affirming the consequent*. Another example is ‘If a critical thinking student studies hard they will get a good grade. Therefore, if a student gets a good grade they must have studied hard.’ Some students *are* able to get a good grade without studying hard.

students do learn to successfully identify the fallacies, many do not internalize these skills. Something in their own preexisting habits of belief resists changing.

### **Pre-existing habits of belief**

As was stated earlier, Preexisting Habits of Belief represent what is normally thought of as ‘common-sense.’ For example, arguments rely on common-sense knowledge to fill in the missing gaps between the premise and conclusion. While the inference between the premise and conclusion acts as the focus of the argument, significant elements of the reasoning remains implied or unstated. This is illustrated in the following argument:

All Greeks are mortal. (universal)

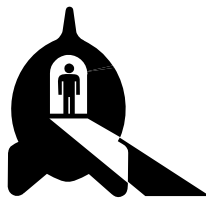
Aristotle is a Greek. (particular)

Aristotle is mortal. (conclusion)

This argument has an absolutely certain conclusion. Given the two premises, the conclusion must follow. The first premise, ‘All Greeks are mortal,’ makes a claim that applies to every individual Greek. ‘They are mortal.’ This is considered a universal because mortality applies to every Greek in the universe. Every Greek in the universe is mortal.

The second premise, ‘Aristotle is a Greek,’ asserts that a particular individual, Aristotle, is a member of the group of all Greeks. Since he is a particular individual belonging to the universe of all Greeks, he must also be mortal as well.

However, the argument assumes that Aristotle is one Greek individual able to be grouped with all other individual Greeks. Now of course, this seems perfectly obvious. Anyone would know this, right?



But if we are beings from another planet, this might not be so obvious. Aristotle's individuality or 'boundedness'<sup>7</sup> is an implied assumption that is necessary for the argument to make sense. As an individual, he can be grouped. We can speak meaningfully of all Greeks that must include the Greek Aristotle.

On the other hand for our otherworldly guests the notion of an individual may make no sense. Considered in this way "Aristotle" might not be a Greek individual at all, but the name of an 'unbounded' that cannot fit into any 'universal.' Our aliens may not comprehend the concept of 'individual.'

Reality for our friends from outer space may not consist of bounded individuals at all. All individuals lose their individuality or uniqueness. There is no individuality. For the aliens, to speak of an individual Greek is like saying the boundary of the boundless. Our visitors would see this concept as inherently self-contradictory.

But our common-sense based Habits of Belief make the necessary connection for us. The individual Greek Aristotle is bounded and can be grouped into "all Greeks." The belief that Aristotle is an individual Greek is a deeply embedded Habit of Belief. But the argument assumes that there are individuals that have boundaries. But the premises of the argument leave this assumption out.

To make sense of the argument for our alien friends and to distinguish it from the Tao, require additional premises:

Aristotle, and any Greek are bounded individuals.

Mortality is a predication of bounded individuals.

All Greeks are Mortal.

Aristotle is a Greek.

Aristotle is Mortal.

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<sup>7</sup> Boundedness refers to the fact that an individual must have a boundary. Aristotle is a person, not the whole universe. Aristotle has a boundary that separates him from everything that is not Aristotle.

But because of our habits of belief, we assume the first two premises to be the case. For us, they are so obviously true that they do not require mentioning. Thus, it is our habits of belief that make the argument intelligible without the additional premises. All arguments have gaps of this nature that rely on shared habits of belief.

There are many other habits of belief, so many that it is impossible to identify all of them. Essentially, habits of belief supply the assumptions necessary to make sense of arguments without interminable premises.

ECT requires a common or shared acceptance of these habits of belief. Without a common agreement of habits of belief, the public expression of argument, ECT, would be impossible.

### **ICT: Argument, Belief and Doubt**

ICT includes the dynamics (see definition of ‘dynamics’ below [I told you to read the footnotes!])<sup>8</sup> of belief and doubt. This dynamic of belief and doubt form the internal mental habits that motivate and direct our ECT. In addition, these habits of belief are largely responsible for the nature of our ECT. Since ICT is the more fundamental of the two and the most necessary to change in order to improve ECT, we shall spend the remainder of the chapter discussing it.

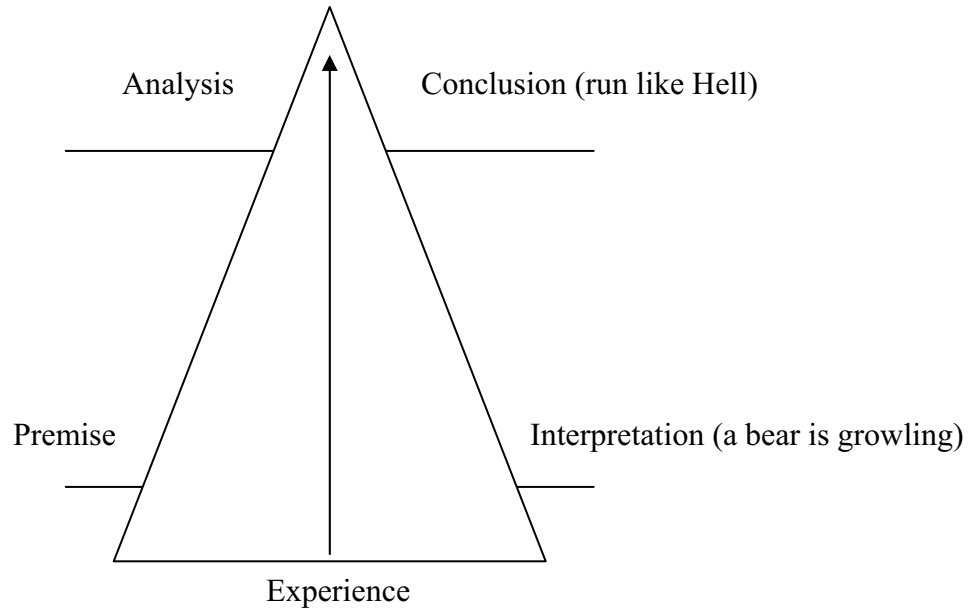
OK. You didn’t get it. We’ll give a lot more examples to help us understand this better. Don’t give up. It is much easier than it appears. [Don’t worry about the above. But, more carefully, reread the explanation of external and ICT.]

First, what is an argument? As was stated above, it’s a premise followed by a conclusion. In a good argument the premise supports the conclusion. In a bad argument the premise does not support the conclusion. Get it? No big deal, right?

OK. Now, take a look at the diagram below. [Don’t get hysterical.]

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<sup>8</sup> Dynamics in this context means interactions between belief and doubt that occur in predictable ways. For example, the force of belief ends doubt while the force of doubt ends belief. This is a simple relationship of dynamic opposition.



*Argument moves from bottom to top*

All right. The diagram can be understood as a model for an argument. Let's look at it from the bottom up. Say we're wandering around somewhere and we see something, but we don't know what it is. [We pass through this state in virtually no time at all.] OK. This is a raw experience. Now we look a bit closer and see that it is actually a brown bear growling at us. Yikes! That is our interpretation. Finally, we make a thoughtful and reflective analysis and decide to run like hell. If this were an argument it would go something like this: Premise (the premise is interpretation of experience) 'a bear is growling'--Conclusion (analysis) 'run like hell.' This is a good argument because the premise does support the conclusion.<sup>9</sup>

While this diagram illustrates an argument quite well it does not illustrate the distinction between internal and ECT. Indeed, it only shows one side—the external. In other words, ECT displays the results of ICT but does not disclose it. But, you may ask, what is left to reveal? The experience is interpreted to be a growling bear supplying the premise or 'reason' for the conclusion that is 'running like hell.' What sort of thinking, critical or otherwise, does ICT add to the argument? This is an excellent question.

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<sup>9</sup> In reality bears can outrun us. Consequently experts tell us that one should stand still when confronted by a growling bear. While this is true, the example is more humorous (and perhaps more realistic) with the conclusion to 'run like hell.'

ICT forms from within the habits of belief or general context of commonsense that we uncritically accept. The dynamics of belief and doubt within ICT quietly drive ECT. In addition, it determines the actual persuasiveness of the arguments publicly revealed in ECT. However, ECT shrouds it. It is usually associated with feelings or emotions. But ICT is not subjective<sup>10</sup>. It has its own rules and logic.

ICT has more influence over our beliefs than the analytical methods of ECT.



In fact, in order for us to successfully expose our beliefs to the critiques from ECT, we must synthesize the dynamics of our internal beliefs with the rationalism of our ECT. This does not mean that ECT is unilaterally imposed on ICT. It means that there must be a mutuality achieved between both kinds of thinking. ECT and ICT represent the yin and yang of the successful Critical Thinker.

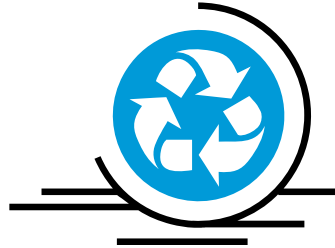


The male or yang of ECT is integrated with the female or yin of ICT.

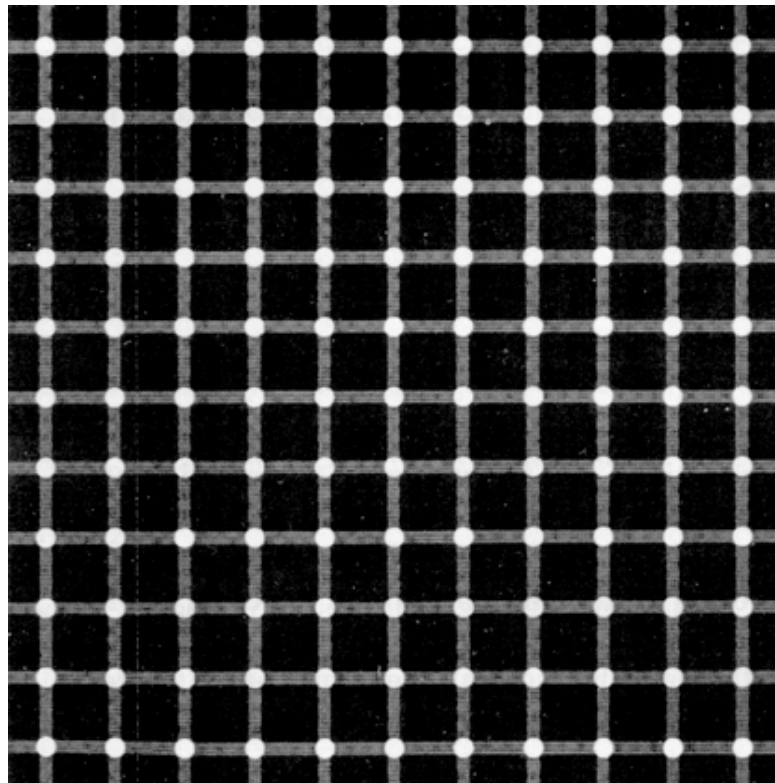
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<sup>10</sup> 'Subjective' means biased or opinionated.

Returning to our encounter with the bear, the interpretation of experience emerges from our habits of belief in turn are expectations shaped by prior experience that act as a guide or regulation of interpretation.



This notion of interpretation as the act of making sense of confused or disordered experience can be puzzling. It may help to think of it as something like looking at a photograph in a newspaper. For example, let's say we are looking at a photo of President George W. Bush. Now, what would we see if we were to look very, very closely or even through a magnifying glass at the picture? A group of tiny dots, right?



How do these dots become the image of President Bush?



This is the way experience is interpreted. Experience is like the tiny dots that can be seen only on extremely close examination. The image of George W. Bush is an interpretation of the dots. It is an interpretation because each dot individually represents nothing. It is raw uninterpreted experience.

But we quickly interpret the image of the president from the discovery of relationships between certain dots. These habits of belief direct us to do so because they select some relationships and exclude others. Similarly, we quickly interpret the initially confused sense experience as 'growling bear' because our habits of belief guide us to do so. As in the triangular diagram shown earlier, the organization of raw experience works upwardly, eventually becoming the premises of an argument made public in the form of ECT.

It might seem strange to think of the image of George W. Bush as the conclusion of an argument, but it can be understood that way. Here is the argument:

Premise: raw uninterpreted experience (dots)

Premise: interpretation of dots by habits of belief

Conclusion: image of George W. Bush

The argument regarding the growling bear is similar:

Premise: raw uninterpreted experience (sense data)

Premise: interpretation of sense data as bear

Conclusion: run like hell

(ICT: BEARS ARE DANGEROUS)

Now we can see that the premises of these arguments become so through habits of belief. As we grow and mature, we become practiced at rendering intelligible patterns from what to the inexperienced appears chaotic. We become skilled at drawing useful conclusions from confusing senses. These habits of interpretation become our habits of belief. But there is even more to the influence of these habits.



Think of our aliens again. They have never seen a bear and are unaware of the threat they can pose. If they saw a bear, they might pet it, thinking it to be a friendly animal. But we know differently. We reach a different conclusion because we have developed habits of belief regarding growling bears. Independent of these mental habits, there are no principles of logic requiring the conclusion, 'run like hell.'

This conclusion is logical only if we live in community sharing the belief that 'growling bears' are to be feared, making the near presence of one a cause to 'run like hell.' The

common mental habit that bears are to be feared makes the validation of ECT possible. Since the habit of belief that bears are dangerous is widely held, the public exposure of the argument having the conclusion 'run like hell' can be independently confirmed. All or nearly all share a similar understanding. Then the argument can be judged as a good one by others.

Consequently, mental habits not only produce the premises of an argument themselves, they also establish the basis for acceptable inferences or conclusions that follow from the premises.

Let's explain this a bit more slowly. We have a large number of beliefs. These beliefs arise for a number of different reasons. We might believe some things because of our own personal experience, others based on the authority or testimony of others, others in order to be consistent with social or cultural norms, others to contradict social and cultural norms, others for a whole variety of diverse reasons.

As opinions emerge they are usually regulated by prior habits of belief. In other words, the new belief is made to fit with past practices of thinking. New experiences may alter our habits of belief. But this is very rare. Furthermore, it is almost never because of the influence of reasoned argument. It is due to the emotional or spiritual impact of the content embedded within the new experiences. It is not due to the logic of abstraction, but the logic of emotional and physical survival.

To illustrate this, consider the following: Nina Rosenstand, author of *The Moral of the Story*, has stressed the importance of stories in altering one's ethical perspective. Stories are not reasoned arguments, but a sequence of objective and subjective experiences with a beginning, middle and end. Nina Rosenstand summarizes "Abandon Ship," a film released in 1957.

Based on a true story, this film opens during the aftermath of an explosion on a luxury liner far from shore. The ship sank so quickly that no S.O.S. signal was sent, and no lifeboats were lowered. Now, some twenty survivors are clinging to the one lifeboat that was launched. It is the captain's dinghy, and it can hold fourteen people maximum. The

captain is dying, and he transfers authority to his first officer Alec Holmes, admonishing him to “save as many as you can.” Holmes is hopeful that help may arrive, but when he realizes that no S.O.S. has been sent, he knows that their option is to row for the coast of Africa, fifteen hundred miles away. An officer and friend of Holmes, himself mortally wounded, tells Holmes that he won’t be able to make it if he tries to keep everyone alive—he must “evict some tenants” in order to save others. To emphasize his point, the officer throws himself overboard, because he would only be a hindrance to the survival of the “fittest.” Holmes first will hear nothing of this plan, but when a storm approaches, he realizes that he must choose between the death of them all and the death of those who are already hurt and can’t pull their own weight. Under protest and at gunpoint, the others comply by forcing the wounded passengers and crewmen, who are wearing life preservers, overboard, setting them adrift in shark-infested waters. One professor remarks, “This is an interesting moral problem,” and insists that it is barbarism—the civilized thing to do would be to choose to die together.<sup>11</sup>

This story brings to head two conflicting ethical theories. One is Utilitarianism, the view that right action is determined by choosing ‘the greatest good for the greatest number.’ In other words, some must die so that more may live. This is the position of the dying captain. On the other hand, the professor argues that allowing some to die in order that some others may live is ‘barbarism. This is based on belief that each life is sacred and that it is wrong to allow some to die in order to save others. Kant’s duty based or deontological ethics underlies the professor’s position.



Rather than a dry discussion of the logical differences between these competing ethical theories, the emotional or spiritual context is experienced directly. It reaches directly into ICT. The question left for individuals is to integrate this experience into their habits of belief.

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<sup>11</sup> Rosenstand, Nina, The Moral of the Story, McGraw Hill, fourth edition, p. 249.

From an evolutionary perspective, the story provides an obvious survival situation. Both ethical theories are means of adaptation and have emerged as the distillation of years of evolutionary experience. Both Deontology and Utilitarianism are abstractions of habits of belief. Each approach has been successful but from different perspectives.

Utilitarianism emerges from habit of belief that protects the community or larger number over the individual or individuals. Deontology, on the other hand, respects the sanctity of each individual. According to it, the individual is an end in him or herself and cannot be used as a means to saving the larger community. To use some as a means to saving others does not treat those who die in order to save the others as an end in themselves. Consequently allowing all to die is the only way to respect Kant's categorical imperative, "never treat anyone as a means only but as always as an end in himself." Thus, according to Kant, universal "good will" requires that not one individual be treated as a means only.

Deontology acts as a brake on what could be the totalitarian dominance of the community or greater good over the individual. While Deontology is concerned with intention only and not consequences, it must in the long run be judged as community perpetuating. And respecting each individual as an end in himself or herself does strengthen the larger community. Our fitness<sup>12</sup> is maintained when both habits of belief are seen as complimentary to one another. Reason is necessary to find what Aristotle would call the "golden mean" between the two habits of belief. Developing the facility to balance Deontology with Utilitarianism requires skillful critical thinking. Indeed, one could conceive of critical thinking as a form of evolutionary adaptation.

In order to understand why this is the case we will need to understand the nature and function of belief. Charles Sanders Peirce, founder of American Pragmatism, explains that belief is not simply an opinion but a state of mind that opposes doubt.

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<sup>12</sup> 'Fitness' is the ability of an organism to adapt to an environmental or in our case social challenge. The final measure of ethical principles is their ability to preserve human beings.



Peirce at Harvard - 1865

If one has a belief, he or she no longer doubts (at least regarding the same matter). According to Peirce, belief is comfortable while doubt is irritating. Consequently, in addition to the hope of being true, beliefs provide a psychological service—they end the worry of doubt. Doubt is difficult and unpleasant. In fact doubt is so unpleasant it can cause us to seek any belief that some how will return us to comfort. Peirce says that doubt stimulates inquiry while belief terminates it. If we think that we know the answer, why continue looking for one?

But doubt causes us to adjust to change. Beliefs that do not adapt to novelty lead to rigidity and if perpetuated long enough, extinction.



Comfort before belief is challenged  
(We are wandering around somewhere.)



Belief is challenged causing doubt and inquiry  
Very uncomfortable  
(A Bear is growling at us!)



New belief is achieved—inquiry ended.

Comfortable

(We are running like hell and get away from the Bear!)