

The Thinker's Guide
to

Intellectual Standards:

The Words That Name Them
And the Criteria That Define Them

By Dr. Linda Elder and Dr. Richard Paul

The Foundation for Critical Thinking

Contents

Introduction. 3

Humans routinely assess thinking – their own thinking, and that of others. And yet they don't necessarily use standards for thought that are reasonable, rational, sound. To think well, people need to routinely meet intellectual standards, standards of clarity, precision, accuracy, relevance, depth, logic, and so forth.

The Concept of Intellectual Standards.....13

Intellectual standards are cultivated conceptualizations that result from the proper uses of intellectual standard words in context. The term ‘intellectual standards’ can be analyzed by carefully considering educated uses of ‘intellectual’ and ‘standards’ and what those uses imply.

Intellectual Standard Words Form a System of Interrelated Meanings.....17

Intellectual standard words are found throughout natural languages and are regularly used by disciplined reasoners in every culture. When we study intellectual standard words, we find that many have overlapping meanings and uses, and therefore form clusters. We find that there are various nuances between and among intellectual standards. To fully understand intellectual standard terms, we must have command of their opposites. Furthermore intellectual standards can be divided into micro and macro intellectual standards, micro intellectual standards referring to those standards more “pointed” and specific (as in the standards of ‘relevance’ and ‘accuracy’), macro intellectual standards referring to “more general” standards (as in the standards of ‘reasonability’ or ‘soundness’), standards that presuppose one or more micro intellectual standards.

Intellectual Standards are Presupposed in Every Subject and Discipline. 34

Professionals within every subject and discipline assent (theoretically) to intellectual standards. Yet it appears that some professionals do not have a clear conception of intellectual standards and the role they play in assessing reasoning within their disciplines. A lack of explicit awareness of intellectual standards and/or pursuit of vested interests can lead to the violation of intellectual standards. Those working within the disciplines are well-advised to explicitly articulate the intellectual standards essential to reasoning well within their disciplines. We offer a few examples.

The Proper Use of Intellectual Standard Terms Requires Cultivation. 43

Cognition is natural to the human mind. But cognitive processes (like analysis, synthesis, and comparison) do not necessarily entail the meeting of intellectual standards. These processes can be done well or poorly. Because most people are not explicitly aware of intellectual standards, and because the use of intellectual standards is not natural to the mind, people often fail to meet them. Instead, egocentric and sociocentric standards are common in human life (standards that enable people to get what they want and maintain self and group-centered biases). To develop as reasoners, people need to study and practice using and meeting intellectual standards.

Other Important Distinctions and Understandings. 50

In addition to the multiplicity of intellectual standards extant in natural languages, there are a plethora of terms that presuppose one or more intellectual standards (terms such as ‘integrity,’ ‘honesty,’ ‘humility’). Similarly, there are many terms that imply a failure to meet appropriate intellectual standards (terms such as ‘chicanery,’ ‘deceitful,’ ‘hypocritical’). We should also be aware that words are sometimes used to imply the fulfillment of intellectual standards not justified in context. Finally, intellectual standards are best understood in connection with a substantive conception of critical thinking.

Appendix. 66

Introduction

Man, n. *An animal so lost in rapturous contemplation of what he thinks he is as to overlook what he indubitably ought to be.*

Ambrose Bierce, The Devil's Dictionary, 1906

[Critical thinking is] . . . the examination and test of propositions of any kind which are offered for acceptance, in order to find out whether they correspond to reality or not. The critical faculty is a product of education and training. It is a mental habit and power. It is a prime condition of human welfare that men and women should be trained in it. It is our only guarantee against delusion, deception, superstition, and misapprehension of ourselves and our earthly circumstances.

William Graham Sumner, 1906

Humans live in a world of thoughts. We accept some thoughts as true. We reject others as false. But the thoughts we perceive as true are sometimes false, unsound, or misleading. And the thoughts we perceive as false and trivial are sometimes true and significant.

The mind doesn't naturally grasp the truth. *We don't naturally see things as they are.* We don't automatically sense what is reasonable and what unreasonable. Our thought is often biased by our agendas, interests, and values. *We typically see things as we want to.* We twist reality to fit our preconceived ideas. Distorting reality is common in human life. It is a phenomenon to which we all unfortunately fall prey.

Each of us views the world through multiple lenses, often shifting them to fit our changing feelings. In addition, much of our perspective is unconscious and uncritical and has been influenced by many forces – including social, political, economic, biological, psychological, and religious influences. Social rules and taboos, religious and political ideologies, biological and psychological impulses, all play a role, often unconscious, in human thinking. Selfishness, vested interest and parochialism, are deeply influential in the intellectual and emotional lives of most people.

We need a system for intellectual intervention, a method for pre-empting bad thinking. We need to take rational command of our cognitive processes in order to rationally determine what to accept and what to reject. In short, we need *standards for thought*, standards that guide us to consistently excellent thinking – standards we can count on to keep our thinking on track, to help us mirror in our minds what is happening in reality, to reveal the truth in situations, to enable us to determine how best to live our lives.

As it happens, all modern natural languages¹ provide their users with a wide range of intellectual standard words, terms which, when appropriately used, serve as plausible guides for assessing reasoning. For example, the following words name intellectual standards in the English Language: ‘clarity,’ ‘accuracy,’ ‘precision,’ ‘relevance,’ ‘depth,’ ‘breadth,’ ‘logicalness,’ ‘significance’ and ‘fairness’.² There are synonyms for them, we suggest, in every natural language (German, French, Spanish, Korean, Chinese, Turkish, and so on). The same words in French, for instance, are ‘clarté,’ ‘exactitude,’ ‘précision,’ ‘pertinence,’ ‘profondeur,’ ‘ampleur,’ ‘logique,’ ‘signification,’ ‘impartialité’ and in German are: ‘klarheit,’ ‘richtigkeit,’ ‘exaktheit,’ ‘relevanz,’ ‘tiefgang,’ ‘vernetzung,’ ‘logik,’ ‘fokussierung,’ ‘fairness’.

Understanding how to apply intellectual standard words appropriately to cases is essential to thinking well in every language.

In other words, to live reasonably, humans need to construct their thinking so as to be *clear, accurate, relevant, significant, logical* and so forth. They also need to *clarify* the thinking of others, to check for accuracy, logic, significance and so on. Routine use of these nine intellectual standards is essential to thinking well within every domain of human life. And these standards are part of a much broader set of intellectual standards humans need to draw upon regularly as part of their everyday life.

Our goal in this guide is to provide a conscious foundation for thinking about intellectual standards, and the words that name them. Ultimately, such consciousness will enable those proficient in the use of intellectual standard words to think more effectively in every domain and subject in which, or about which, they think. Of course, in this brief space, we can provide merely the *beginnings* of a systematic analysis of standards for thought. In doing so, we open the door to the development of a broad and integrated view of intellectual standards.

Our fundamental objective is to illuminate the importance of explicitly mastering intellectual standards, and the words that name them, with a view to improving our thinking across the multiple domains of our lives. Otherwise the quality of our thinking, and our actions, is left to chance, intuition, or some other automatic mode of functioning.

¹ Natural languages are languages used in the conduct of daily life (languages such as English, German, French, Arabic, Japanese). They are used in ordinary communication by those who share the language. Natural languages emerge from repositories of terms and phrases that have developed over thousands of years by people who share a region and who communicate with one another. Natural languages contrast with artificial languages, which are created by specialties to facilitate a domain of study or interest (such as science, psychology, mathematics, baseball, the various technologies ...). Of course, artificial languages share some terms with natural languages, but should not be confused with natural languages. Any conflict between natural and specialized languages must be settled case by case.

² These nine standards have been at the center of the work of Paul and Elder during the past decade or more. In this guide, we go beyond these nine to a general exploration of the logic of intellectual standards.

In conceptualizing intellectual standards, we hypothesize the following:

1. that intellectual standard terms are rooted in the language we use every day and are presupposed in every subject, discipline and domain of human thought.³
2. that there is a rich variety of intellectual standard terms extant in natural languages from which we can draw to discipline our thinking.⁴
3. that intellectual standards form constellations of interrelated meanings that can be placed into categories with heads such as ‘clarity,’ ‘accuracy,’ ‘precision,’ ‘relevance,’ ‘importance’ and ‘fairness.’
4. that there are numerous concepts (such as ‘integrity,’ ‘empathy,’ ‘fairmindedness’) in natural languages which, though they are not themselves intellectual standards, presuppose intellectual standards.
5. that for humans to use intellectual standard words at a high level of skill requires systematic cultivation.
6. that though every subject and discipline implicitly presupposes the need to fulfill intellectual standards, in most cases these standards need to be explicit (in order to be properly monitored).
7. that the consistent and explicit satisfaction of intellectual standards is important to commanding the quality of one’s life and, more generally, to creating societies that genuinely value critical thinking.

In sum, we offer a brief analysis of some of the most important intellectual standards in the English language. We look at their opposites. We argue for their contextualization within subjects and disciplines. And, we call attention to the forces that undermine their skilled use in thinking well.

³ In speaking of “intellectual standards,” it may often be more accurate to say “intellectual standard words.” For purposes of simplicity and ease of reading, we often use the shorter term ‘intellectual standards.’ The relationship between concepts and word use is complicated. It would be difficult to understand or explain intellectual standards without using and talking about intellectual standard words. The critical analytic vocabulary of the English language, rightly used, is the key to command of intellectual standards for English speakers. The standards may go beyond present usage in that they may encompass implications of which we are not aware. But without cultivated command of intellectual standards, the foundations cannot be laid. This is a point that has been illuminated by Wittgenstein and many of those influenced by his thought. In short, when we use the term “intellectual standards,” we generally mean “intellectual standard words established by educated use.” Intellectual standards, as we understand them, are conceptualizations [in disciplined human minds] of possible strengths and weaknesses in thinking. They are embodied in the proper use of intellectual standard words in context.

⁴ Though we focus here on intellectual standards available in the English language, we hypothesize that similar webs of intellectual standards exist in every natural language, though perhaps with differing nuances.

Intellectual Standards



Intellectual standards are given in the uses of intellectual standard words (when properly applied in context).

Intellectual standards are necessary for cultivating the intellect and living a rational life.

Essential intellectual standards are part of a much larger set of intellectual standards that form constellations of similar meanings and are prevalent throughout natural languages.

To properly conceptualize any given intellectual standard, it is important to conceptualize its opposite.

To properly conceptualize any given intellectual standard, we must also conceptualize its nuanced differences in a variety of contexts.

Intellectual standards are presupposed in many concepts in modern natural languages.

Intellectual standards are presupposed in every subject and discipline.

By way of introduction, we will begin with some essential intellectual standards.

Some Essential Intellectual Standards

We postulate that there are at least nine intellectual standards important to conducting affairs of everyday life. These are, again, clarity, precision, accuracy, relevance, depth, breadth, logicalness, significance, and fairness. The importance of these intellectual standards is given in their indefeasibility. We suggest, in other words, that it is unintelligible to claim that any instance of reasoning is both sound and yet in violation of these standards. To see this, suppose someone were to claim that her/his reasoning is sound regarding “x,” though, at the same time, admittedly unclear, inaccurate, imprecise, irrelevant, narrow, superficial, illogical, trivial and unfair with respect to “x.” Beginning with these nine intellectual standards will help set the stage for conceptualizing intellectual standards (more broadly) and for appreciating the essential role of intellectual standards in human reasoning.

An explication of these essential intellectual standards follow:⁵

Clarity: Understandable, the meaning can be grasped; to free from confusion or ambiguity, to remove obscurities.

Clarity is a ‘gateway’ standard. If a statement is unclear, we cannot determine whether it is accurate or relevant. In fact, we cannot tell anything about it because we don’t yet know what it is saying. For example, the question “What can be done about the education system in America?” is unclear. In order to adequately address the question, we would need to have a clearer understanding of what the person asking the question is considering the “problem” to be. A clearer question might be “What can educators do to ensure that students learn the skills and abilities which help them function successfully on the job and in their daily decision-making?”

Thinking is always more or less clear. It is helpful to assume that we do not fully understand a thought except to the extent that we can elaborate, illustrate, and exemplify it. Questions that focus on clarity in thinking include:

- Could you elaborate on that point? or Do I need to elaborate on that point?
- Could you express that point in another way? or Can I express that point differently?
- Could you give me an illustration? or Should I give an illustration?
- Could you give me an example? or Should I provide an example?
- Let me state in my own words what I think you just said. Am I clear about your meaning?
- I hear you saying “ ____.” Am I hearing you correctly, or have I misunderstood you?

⁵ Throughout this essay we explore a variety of intellectual standards as they are implied in the everyday use of words. However, most words in everyday use have more than one meaning and sometimes have meanings irrelevant to the assessment of intellectual quality. Be advised, therefore, that when we refer to a term as an intellectual standard or to a term presupposing intellectual standards we are referring exclusively to those uses of the word or term relevant to the proper assessment of reasoning.

Accuracy: free from errors, mistakes or distortions; true, correct.

A statement can be clear but not accurate, as in “Most dogs weigh more than 300 pounds.”

Thinking is always more or less accurate. It is useful to assume that we have not fully assessed it except to the extent that we have checked to determine whether it represents things as they really are. Questions that focus on accuracy in thinking include:

- How could we check that to see if it is true?
- How could we verify these alleged facts?
- Can we trust the accuracy of these data given the source from which they come?

Precision: exact to the necessary level of detail, specific.

A statement can be both clear and accurate, but not precise, as in “Jack is overweight.” (We don’t know how overweight Jack is, one pound or 500 pounds.)

Thinking is always more or less precise. We can probably assume we do not fully understand it except to the extent that we can specify it in detail. Questions that focus on precision in thinking include:

- Could you give me more details about that?
- Could you be more specific?
- Could you specify your allegations more fully?

Relevance: bearing upon or relating to the matter at hand; implies a close logical relationship with, and importance to, the matter under consideration.

A statement can be clear, accurate, and precise, but not relevant to the question at issue. For example, students often think that the amount of effort they put into a course should be used in raising their grade in a course. Often, however, “effort” does not measure the quality of student learning, and when this is so, effort is irrelevant to their appropriate grade.

Thinking is always capable of straying from the task, question, problem, or issue under consideration. It is useful to assume we have not fully assessed thinking except to the extent that we have considered all issues, concepts, and information relevant to it. Questions that focus on relevance in thinking include:

- I don’t see how what you said bears on the question. Could you show me how it is relevant?
- Could you explain the connection between your question and the question we are addressing?
- How does this fact bear upon the issue?
- How does this idea relate to this other idea?
- How does your question relate to the issue we are dealing with?

Depth: containing complexities and multiple interrelationships, implies thoroughness in thinking through the many variables in the situation, context, idea, question.

A statement can be clear, accurate, precise, and relevant, but superficial (that is, lack depth). For example, the statement “Just Say No,” which was used for a number of years to discourage children and teens from using drugs, is clear, accurate, precise, and relevant. Nevertheless, those who take this injunction to solve the social problem of unhealthy drug use fail to appreciate the true complexities in the problem. Their thinking is superficial at best.

Thinking can either function at the surface of things or probe beneath that surface to deeper matters and issues. We can assume we have not fully assessed a line of thinking except to the extent that we have fully considered all the important complexities inherent in it. Questions that focus on depth in thinking include:

- Is this question simple or complex? Is it easy or difficult to answer well and truly?
- What makes this a complex question?
- How are we dealing with the complexities inherent in the question?

Breadth: encompassing multiple viewpoints, comprehensive in view, wide-ranging and broadminded in perspective.

A line of reasoning may be clear, accurate, precise, relevant, and deep, but lack breadth (as in an argument from either the conservative or liberal standpoints which details the complexities in an issue, but only recognizes insights from one perspective).

Thinking can be more or less broad-minded (or narrow-minded) and breadth of thinking requires the thinker to reason insightfully within more than one point of view or frame of reference. We can assume we have not fully assessed a line of thinking except to the extent that we have determined how much breadth of thinking is required (and how much has in fact been exercised). Questions that focus on breadth in thinking include:

- What points of view are relevant to this issue?
- What relevant points of view have I ignored thus far?
- Am I failing to consider this issue from an opposing perspective because I am not open to changing my view?
- Have I entered the opposing views in good faith, or only enough to find flaws in them?
- I have looked at the question from an economic viewpoint. What is my ethical responsibility?
- I have considered a liberal position on the issue. What would conservatives say?

Logic: the parts make sense together, no contradictions; in keeping with the principles of sound judgment and reasonability.

When we think, we bring a variety of thoughts together into some order. When the combination of thoughts is mutually supporting and makes sense in combination, the thinking is logical. When the combination is not mutually supporting, is contradictory, or does not make sense, the combination is not logical.

Thinking can be more or less logical. It can be consistent and integrated. It can make sense together or be contradictory or conflicting. Questions that focus on logic include:

- Does all this fit together logically?
- Does this really make sense?
- Does that follow from what you said?
- Does what you say follow from the evidence?
- Before you implied this and now you are saying that, I don't see how both can be true. What exactly is your position?

Significance: having importance, being of consequence; having considerable or substantial meaning.

When we reason through an issue, we want to concentrate on the most important information (relevant to the issue) and take into account the most important ideas or concepts. Too often we fail to recognize that, though many ideas may be relevant to an issue, they may not be equally important. Similarly, we may fail to ask the most important questions and instead become mired in superficial questions, questions of little weight. In college, for example, few students focus on important questions such as, "What does it mean to be an educated person? What do I need to do to become educated?" Instead, students tend to ask questions such as, "What do I need to do to get an A in this course? How many pages does this paper have to be? What do I have to do to satisfy this professor?"

Thinking can be more or less significant. It can focus on what is most substantive, what is of the highest consequence, what has the most important implications. Or it can focus on the trivial and superficial. Questions that focus on significance include:

- What is the most significant information we need to address this issue?
- How is that fact important in context?
- Which of these questions is the most significant?
- Which of these ideas or concepts is the most important?

Fairness: free from bias, dishonesty, favoritism, selfish-interest, deception or injustice.

We naturally think from our own perspective, from a point of view which tends to privilege our position. Fairness implies the treating of all relevant viewpoints alike without reference to one's own feelings or interests. Because we tend to be biased in favor of our own viewpoint, it is important to keep the intellectual standard of fairness at the forefront of our thinking. This is especially important when the situation may call on us to see things we don't want to see, or give something up we would rather hold onto.

Thinking can be more or less fair. Whenever more than one point of view is relevant to the situation or in the context, the thinker is obligated to consider those relevant viewpoints in good faith. To determine the relevant points of view, look to the question at issue. Questions that focus on fairness include:

- Does a particular group have some vested interest in this issue that causes them to distort other relevant viewpoints?
- Am I sympathetically representing the viewpoints of others?
- Is the manner in which we are addressing the problem fair - or is our vested interest keeping us from considering the problem from alternative viewpoints?
- Are concepts being used justifiably (by this or that group)? Or is some group using concepts unfairly in order to manipulate (and thereby maintain power, control, etc.?)
- Are these laws justifiable and ethical, or do they violate someone's rights?

Here is a useful diagram which can be used as a quick reference for these nine foundational intellectual standards.

Clarity

Could you elaborate further?
Could you give me an example?
Could you illustrate what you mean?

Accuracy

How could we check on that?
How could we find out if that is true?
How could we verify or test that?

Precision

Could you be more specific?
Could you give me more details?
Could you be more exact?

Relevance

How does that relate to the problem?
How does that bear on the question?
How does that help us with the issue?

Depth

What factors make this a difficult problem?
What are some of the complexities of this question?
What are some of the difficulties we need to deal with?

Breadth

Do we need to look at this from another perspective?
Do we need to consider another point of view?
Do we need to look at this in other ways?

Logic

Does all this make sense together?
Does your first paragraph fit in with your last?
Does what you say follow from the evidence?

Significance

Is this the most important problem to consider?
Is this the central idea to focus on?
Which of these facts are most important?

Fairness

Do I have any vested interest in this issue?
Am I sympathetically representing the viewpoints of others?

These important intellectual standards provide a good starting place for understanding intellectual standards; yet they represent only some of the many intellectual standards extant in the English language. Before we further explore intellectual standard terms, let us first step back a moment to briefly analyze the concept of intellectual standards itself.

The Concept of Intellectual Standards

The Idea of Intellectual Standards is Rooted in Natural Languages

Every term in the English language has established uses which are found in well-researched dictionaries. Thus to conceptualize intellectual standards, it is important to consider established uses of the terms ‘intellectual’ and ‘standards’ (as well as related terms). We need then to integrate insights from this analysis to formulate a reasonable conception of intellectual standards.

Exploring the Concept of Standards

Let us begin then with the term ‘standard’ or its synonym ‘criterion.’ Consider the following definitions:

Standard applies to some measure, principle, model, etc. with which things of the same class are compared in order to determine their quantity, value, quality, etc. [**standard** of purity for drugs]; **Criterion** applies to a test or rule for measuring the excellence, fitness, or correctness of something [mere memory is no accurate *criterion* of intelligence].⁶

Thus *standards* and *criteria* are rules or principles used to determine the quality of something, and accordingly whether to accept or reject it. They are used to judge or decide upon something, and can usually be used synonymously for this purpose.

Standards are Prevalent in Everyday Life

As humans we routinely use our judgment in determining what to accept and what to reject. We cannot do this without standards or criteria. Consider the following examples, paying particular attention to the “standards” used to determine quality in each case:

- To determine whether a loaf of bread is of acceptable quality, we might use the following standards, among others: the degree of rise of the loaf, inside texture, outside crust texture, thickness, lightness, and so forth. If we were pastry chefs creating recipes, we would use not only global standards, such as these, for assessing the quality of bread, but more precise and particular standards relevant to our taste and situation. These standards might include a specific degree of rise of the loaf, specific consistency of inner and outer texture, specific taste and weight of the loaf, and so forth. Once we settled on the particular standards for our recipe, each loaf baked thereafter would be compared with our set criteria. *The quality of each loaf would be judged based on these standards.*

⁶ Webster's New World College Dictionary, Fourth Edition, Wiley Publishing, 2007.

- To determine whether a tennis player under our direction (were we his or her coach) was likely to compete well at a particular level of play, we might first look at the average skill level of top players and use that skill level to formulate a set of standards by which to judge the competitiveness of our player's skills. In determining our standards, we would consider back court performance, net court performance, fitness level, mental stamina under pressure, average first and second serve percentages, ratios of winners to errors, our player's "track record" against established players, and so on. We would then compare our player's skills in these categories with the standards set by the top players at the level of play in question.
- To assess the quality of an actor auditioning for a play (were we the directors) we might consider the quality and intonation of voice, as well as the ability of the actor to deliver the lines in a convincing manner, to portray a given character accurately, to connect emotionally with the audience, and so forth. We would have standards in mind for each of these categories and compare audition performance with these standards. Some of our standards might be based in personal judgment given our analysis of the play and the role of various characters in it.

The use of standards in human life, we are arguing, is routine and pervasive, from deciding what to eat, to determining how to spend one's spare time, to choosing a career. Everywhere in human life, we construct and use standards. Consider for example, the following quote, (found on a coffee package in a hotel room):

“This estate grown coffee is my personal recipe, crafted with distinctive and exotic coffee beans and roasted in small batches to my exact standards.”

...Wolfgang Puck

In short, we make judgments every day; and when we do we use standards. We can't form judgments without, at least, presupposing standards.

Moreover, for every skill area, there are standards to which people attempting to develop those skills aspire – in music, art, sports, parenting, marriage, public speaking, theatre, science, literature, architecture, indeed in every domain of human thought and action. The standards for excellence are set by those functioning at the highest levels.

Of course, people are differently motivated and have varying capacities for development in any particular skill area. Some can and do reach for the highest levels of performance. But many settle for lower standards of performance.

It might, perhaps, behoove us all to consider the standards we strive to fulfill in living our lives, and to raise these standards to the conscious level. For when we take command of these standards, we take command of the thoughts, desires and emotions that determine the quality of our lives.

Exploring the Term 'Intellectual'

Now that we have an idea of the common uses of the term 'standards' and some sense of the role that standards play in human life, let us consider the term 'intellectual.' Grasping the meaning of this term is somewhat more complex as it requires that we consider not only the term 'intellectual,' but related terms such as 'intelligent' and 'the intellect.' Moreover, such an analysis requires that we trace some important meanings implied by these terms, and then interrelate these meanings. This will be made more clear presently.

Let us first consider the terms 'intellectual,' 'intellect' and 'intelligent.'

The term 'intellectual' often means requiring the intellect, or having or showing a high degree of intelligence. The term 'intellect' implies the ability to reason or understand or to perceive relationships, differences, etc. It refers to that part of the mind which knows or understands. It may also imply the power of thought, great mental ability, or a high degree of intelligence. The terms 'intelligent' or 'intelligence' imply having or showing an alert mind, bright, perceptive, informed, clever, wise. They also generally imply the ability to learn or understand from experience, the ability to acquire and retain knowledge, the ability to respond quickly and successfully to new situations. They also characteristically imply or presuppose use of the faculty of reason in solving problems, directing conduct successfully, and making sound judgments.⁷

Note that within these meanings are several important concepts whose meanings are essential to our conception of intellectual standards – including 'to reason,' 'to know or comprehend,' and 'to make sound judgments.'

'To reason' entails the power to think rationally and logically and to draw inferences.

'To understand' is the faculty by which one understands, often together with the resulting comprehension. It entails superior power of discernment; enlightened intelligence. 'To make sound judgments' is the ability to assess situations or circumstances logically or accurately and draw reasonable conclusions. 'To know or comprehend' means to have a clear perception or understanding of; to be sure of. It entails clear and certain mental apprehension.⁸

The term 'intellectual,' when integrated with related terms, thus entails the use of sound reasoning and judgment in the pursuit of knowledge. It typically implies the superior powers of the intellect as well as the ability to use one's mind to make intelligent decisions, to use the faculty of reason in solving problems and directing conduct successfully. Finally, it suggests clear perception and the logical drawing of inferences.

⁷ These definitions are taken or slightly modified from those found in *Webster's New World College Dictionary, Fourth Edition*, Wiley Publishing, 2007.

⁸ Ibid.

The Concept of 'Intellectual Standards'

Taking into account the meanings and analysis above, we conceptualize intellectual standards in the following way:

the standards necessary for making sound judgments or for reasoning well, for forming knowledge (as against unsound beliefs), for intelligent understanding, for thinking rationally and logically.

In short, we use the term 'intellectual standards' to mean standards that further good judgment and rational understanding.⁹ They are essential for our mind's on-going awareness and assessment of the strengths and weaknesses in our thinking, and in the thinking of others. Whether focused on the inner structure of thought or its global qualities, intellectual standards are essential to functioning as reasonable, fairminded persons. We have no choice as to whether we use standards to assess thinking and perception; everyone does. Where we do have a choice is in the standards we use. Most people rarely seem to reflect upon the standards they use. Consequently, and because the fulfillment of intellectual standards is not natural to the mind, people tend to use default standards, ones that are often highly egocentric and sociocentric.

Skilled thinkers recognize the critical role of meeting intellectual standards in living a successful and rational life. They therefore routinely satisfy intellectual standards. They typically recognize when they, or others, are failing to meet them.

⁹ We believe that our conception of 'intellectual standards' is in keeping with educated uses of the terms 'intellectual' and 'standards' when joined. We realize that other defensible uses of the term 'intellectual standards' may well exist, or that the term (as any term) may change to serve additional purposes in the future.

Intellectual Standard Words Form Systems of Interrelated Meanings

Intellectual standards are best understood as a network of ideas that interconnect in various ways, that sometimes overlap, and that often vary along a continuum (serving a range of purposes). They help us make reasonable judgments and assess reasoning in ways that make most sense.

Intellectual standard terms can be specific or general in nature. They can entail other intellectual standard terms. They can have limited or broad use.

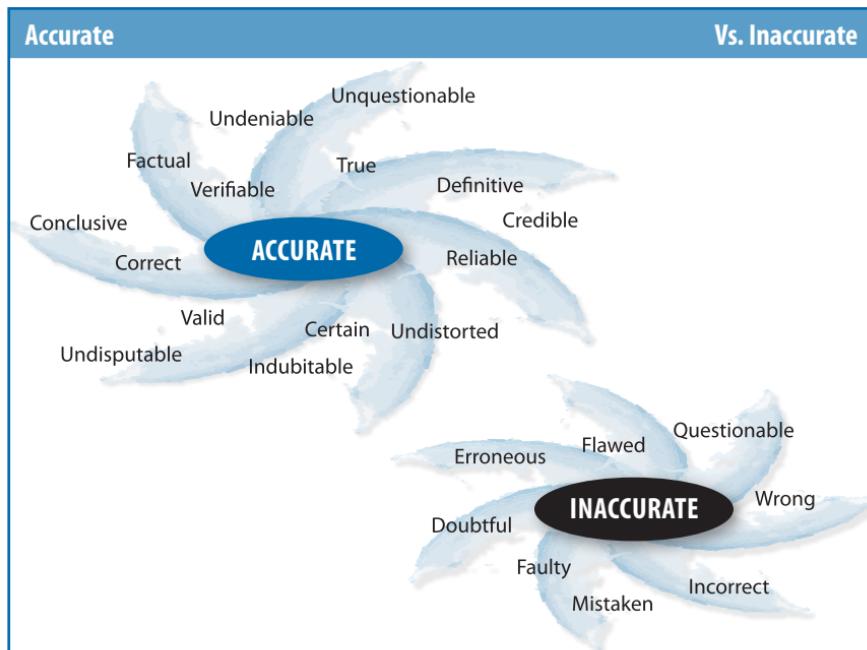
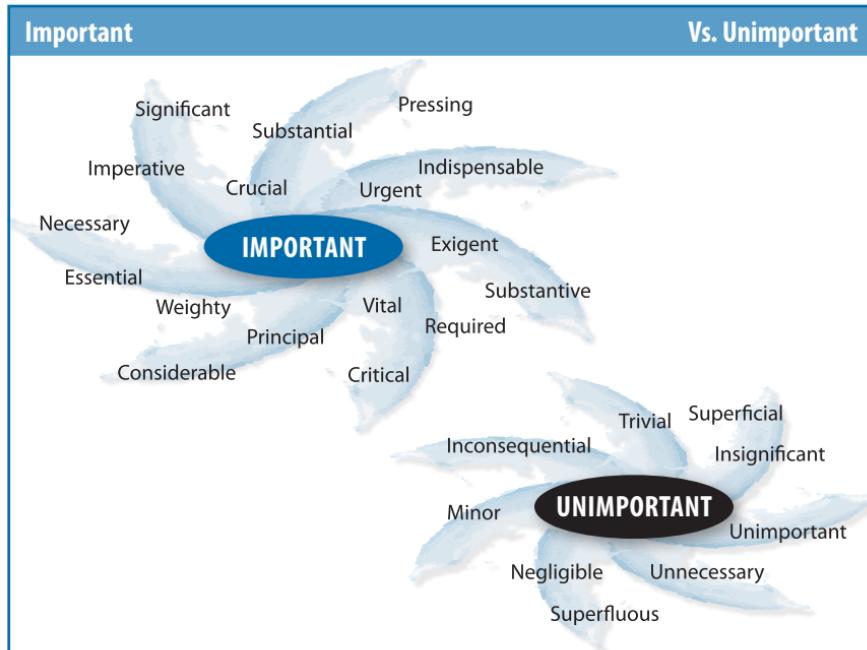
In this section we exemplify some of the ways in which intellectual standard words form what we might term ‘constellations.’ We focus on some of the most important and powerful intellectual standards in the English language. Realize that our examples are just that, a small set of cases from the vast array of intellectual standards in the language. We focus on standards that, if used regularly, will significantly improve the quality of human judgments and decisions. We present these standards in groupings with what might be considered the ‘paradigm’ concept in the middle, and related and similar concepts around that central concept.¹⁰ Each constellation contains a range of nuanced meanings within a central concept. Some may be used synonymously.

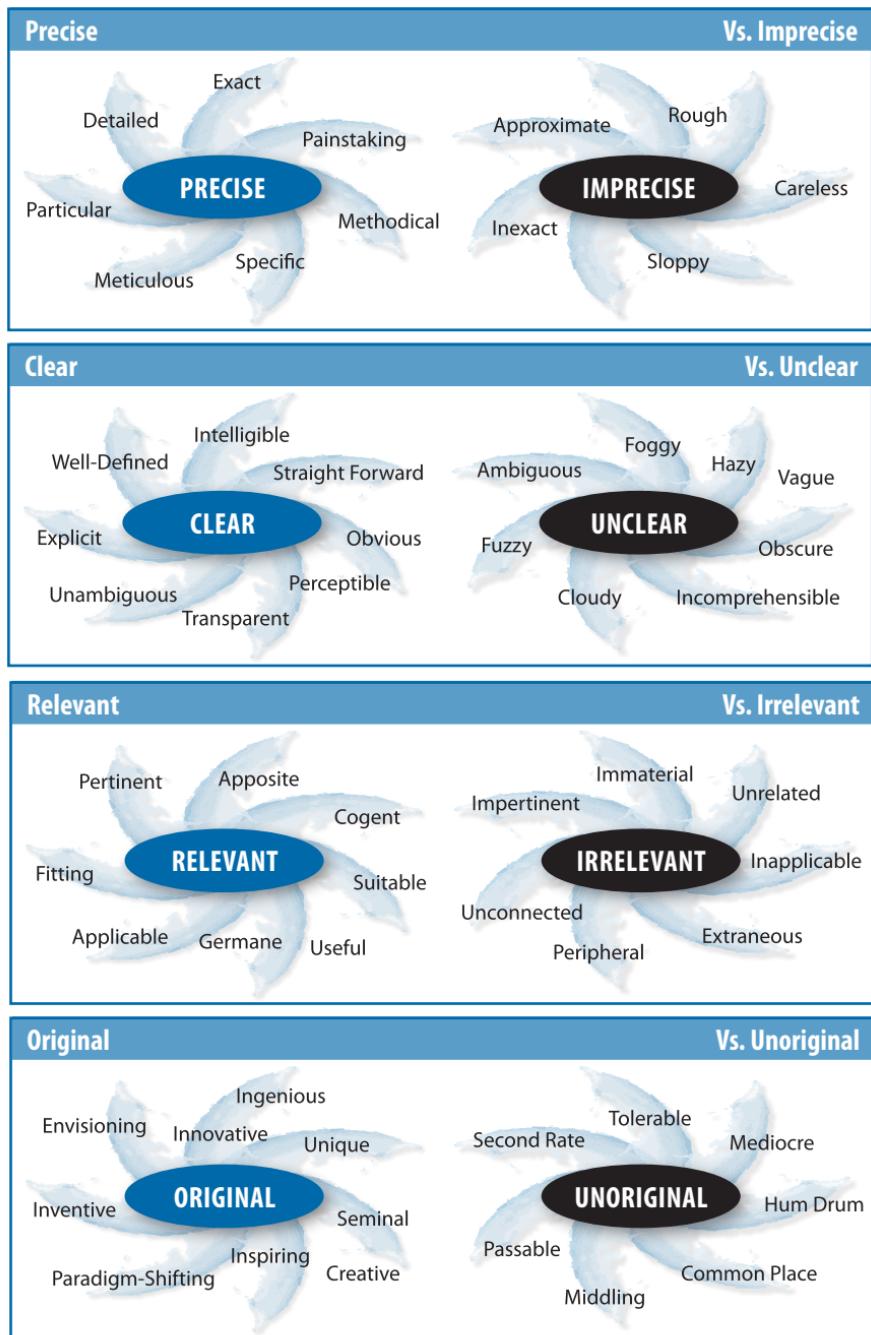
To the right of each constellation of intellectual standards you will find their opposites. To fully conceptualize any particular intellectual standard requires an understanding of how that standard can be violated in multiple contexts. This is most easily understood by studying intellectual standards in relationship with their opposites.

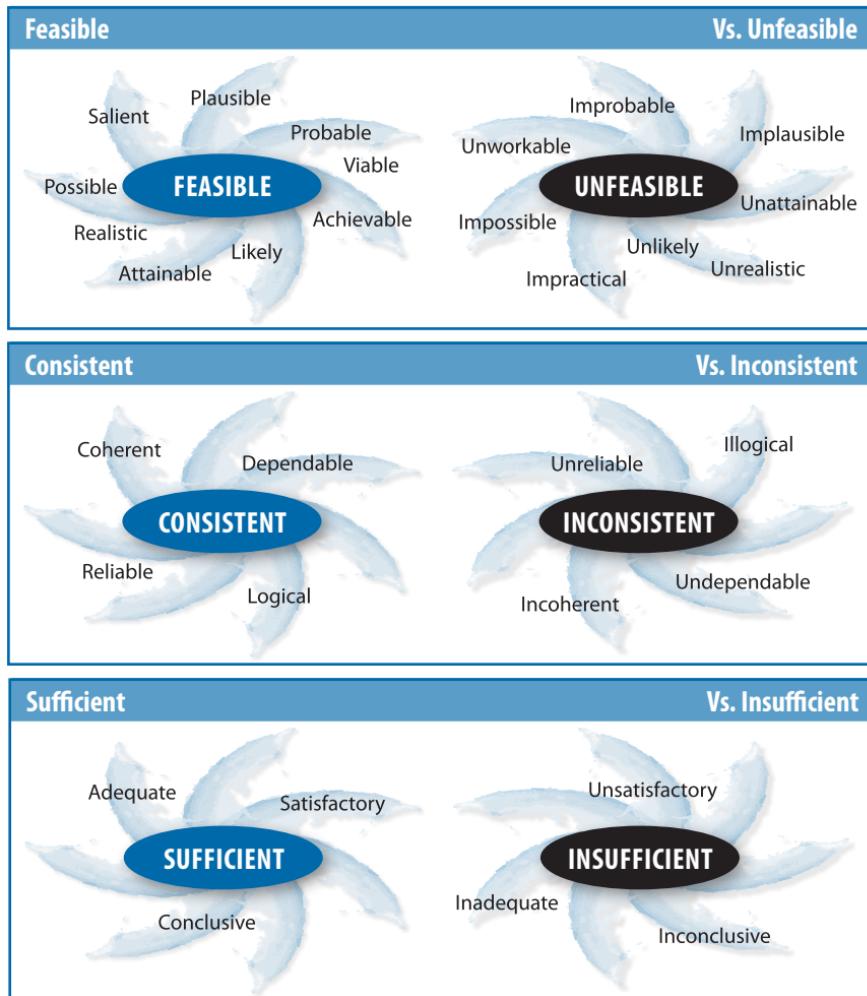
Again, our analysis represents a raw beginning, as there are at least hundreds of words in the English language that qualify as intellectual standard terms in particular contexts. Many additional terms presuppose the proper use of one or more intellectual standard. Our purpose, then, is not to generate an exhaustive list of intellectual standards - that might be encyclopedic in scope. Rather our aim is more modest, namely, to exemplify a rich tapestry of some of the most important interrelated intellectual standards in use in our language (whose criteria of fulfillment we can call upon to assess any instance of reasoning).

In this spirit, we have tried to stick to paradigm, not borderline cases.

¹⁰ As you view our “constellations,” realize that there are multiple forms which these constellations can take, with different terms being placed in the center, depending on the “job” required of the words in specific contexts.







General Intellectual Standards Presuppose Specific Intellectual Standards

The standards we have considered thus far might be termed “micro intellectual standards,” as they pinpoint specific aspects of intellectual assessment. For example: Is the thinking *clear*? Is the information *relevant*? Is the thinking *consistent*? Though essential to skilled reasoning, meeting one or more micro standards does not necessarily fulfill the intellectual task at hand. Remember, thinking can be clear but not relevant; it can be relevant but not precise; it can be accurate but not sufficient, and so forth.

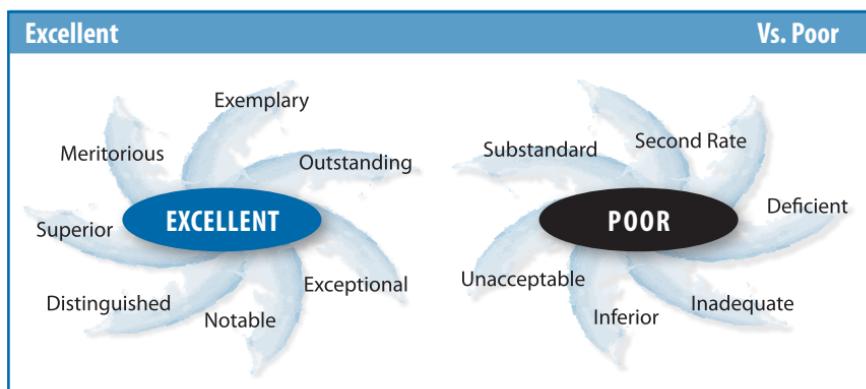
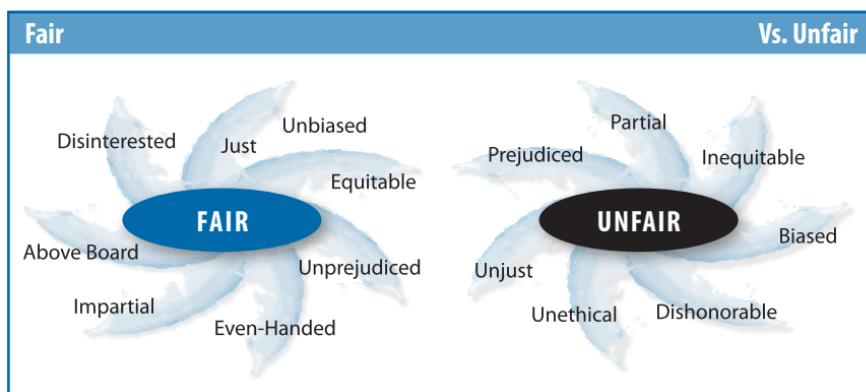
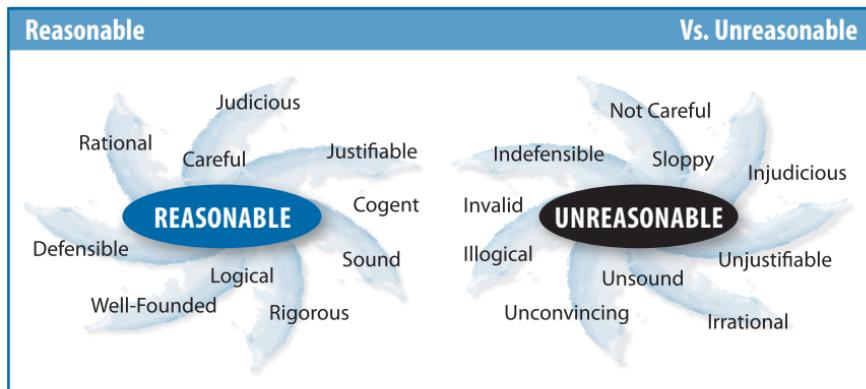
When the reasoning we need to engage in is monological, (that is, focused on a question with an established settlement procedure), micro intellectual standards may suffice. But to reason well through multilogical issues, (that is, problems or issues that require that we reason within conflicting points of view), we need not only micro, but ‘macro’ intellectual standards.’ Macro intellectual standards are broader in scope; they integrate our use of micro standards; they expand our intellectual understandings. For example, when reasoning through a complex issue, we need our thinking to be *reasonable* or *sound* (satisfying, in other words, broad intellectual standards). For thinking to be *reasonable* or *sound*, it needs, at minimum, to be *clear*, *accurate* and *relevant*. Moreover, when more than one viewpoint is *relevant* to an issue, we need to be able to compare, contrast, and integrate insights from relevant viewpoints before taking a position on the issue ourselves. Thus the use of macro intellectual standards (such as *reasonability* and *soundness*) help guide the reasoning toward depth, comprehensiveness and integration of thought.

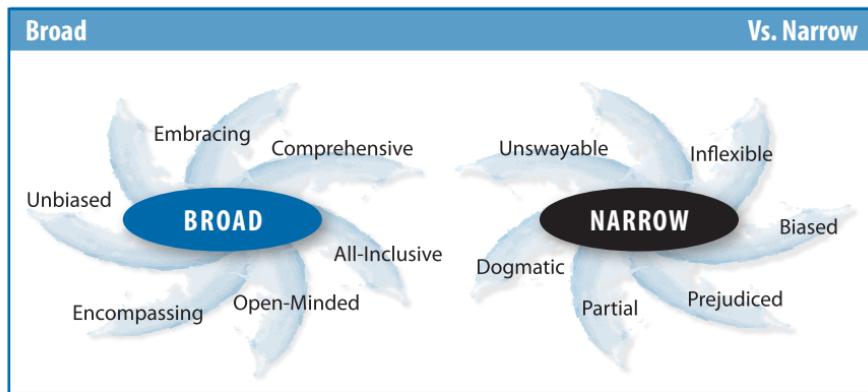
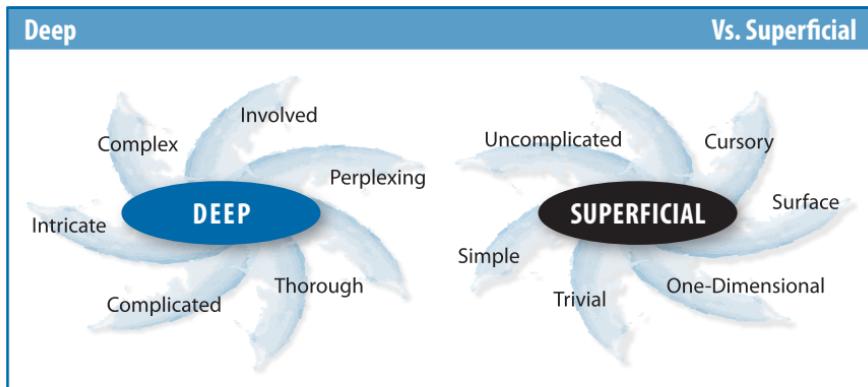
When we understand the importance of macro intellectual standards in human thought, we can explicitly guard against the selective use of micro intellectual standards.

Micro Intellectual Standards, Macro Intellectual Standards and the Problem of Vested Interest

Insofar as humans use intellectual standards, we tend to use those standards that enable us to maintain and forward our own self-serving agendas and vested interests. For instance, when reasoning through an issue, we tend to consider that information (though perhaps accurate and relevant) that supports our selfish or group interests. Simultaneously, we tend to ignore relevant information and distort (or inaccurately represent) viewpoints which differ from our own. We tend to see our own desires as more *important* than the needs and desires of others. We therefore require sensitivity to macro intellectual standards to help us move beyond the selective, narrow and biased use of micro intellectual standards. Put another way, when we use intellectual standards in a *strong-sense*, we strive to use them fairly, with as much concern with the rights and needs of others as with our own rights and needs. When we use them in a *weak-sense*, we pick and choose those standards which serve our desires without concern for how pursuit of those desires might impact others.

Consider the following macro or multilogical intellectual standards and their opposites.





Consider the following brief definitions of these unifying standards. Note how they overlap and presuppose micro intellectual standards:¹¹

Cogent: Appealing to the intellect or powers of reasoning; to the point; relevant; pertinent.

Convincing: Appearing worthy of belief; plausible; persuading or assuring by evidence.

Careful: Solicitously mindful; taking pains in one's work; exact; thorough.

Forceful: Powerful; vigorous; effective because it is based in sound reasoning and evidence.

Justifiable: That which can be shown to be or can be defended as being valid, fair, warranted; well-grounded or defensible, given the evidence.

¹¹ All dictionary definitions used in this section come from one or more of the sources included in the references section at the end of this document and can be found in any well-researched dictionary.

Judicious: Having, exercising, or characterized by discerning or discriminating judgment; wise, sensible, or well-advised.

Powerful: Having great effectiveness, as a speech, speaker, description, reason, etc. because it is based in sound reasoning and/or evidence.

Rational: Having or exercising reason, sound judgment, or good sense; having its source in or being guided by the intellect (as distinguished from experience or emotion).

Reasonable: Governed by or being in accordance with reason or sound thinking; supported or justified by facts; capable of rational behavior, decisions, etc.

Rigorous: Strict attention to thoroughness, precision, accuracy and logic.

Sound: Competent, sensible, or valid; having no defect as to truth, justice, wisdom, or reason; based on valid reasoning; free from logical flaws; thorough; complete; marked by or showing common sense and good judgment; levelheaded.

Macro intellectual standards are given specific criterial meaning by the intellectual demands implicit in the logic of the question at issue. A reasonable answer to a scientific question, for example, will be very different from a reasonable approach to a system of justice or a philosophy of parenting. It follows, then, that the extent to which a person displays *reasonability* will be determined by the extent to which she or he thinks critically through the questions at issue *within a given context*. In other words, it will be determined by the degree to which s/he gathers information relevant to the issue, checks the information for accuracy, considers the strengths and weaknesses in the important viewpoints relevant to the issue, and so forth. Thus the micro intellectual standards presupposed by each macro intellectual standard will largely be determined by situation and context.

In other words, the demands of a scientific question are very different from ethical or psychological or economic questions. How macro intellectual standards interface with these demands must be determined in context question by question.

One final point. Depending on context, those terms we list here as macro intellectual standards may function in some situations as micro intellectual standards. For example, the standard of *logic* is sometimes used in a narrow, specific sense to mean *consistent* (as in – Is this information consistent with that information?). Or it might be used in a broader sense (as in – Given all the evidence, is this a *logical* conclusion?). The point is not to be overly concerned with definitely placing intellectual standards in either the category of micro or macro intellectual standards, but to focus on the standards in context, to appropriately determine whether they should be used micro-logically or macro-logically.

There are Nuanced Similarities and Differences Between and Among Intellectual Standards

As we have said before, intellectual standards are best understood as a network of interconnected, overlapping concepts, rather than a list of atomic disconnected ideas. A well-researched dictionary will sometimes illuminate the nuances among them, as well as identify how some intellectual standards imply other intellectual standards, as in the following examples:¹²

The following adjectives describe what relates to and has a direct bearing on the matter at hand.

Something **relevant** is connected with a subject or issue: *performed experiments relevant to her research.*

Pertinent suggests a logical, precise relevance: *assigned pertinent articles for the class to read.*

Germane implies close kinship and appropriateness: “*He asks questions that are germane and central to the issue*” (Marlin Fitzwater).

Something **material** is not only relevant but also crucial to a matter: *reiterated the material facts of the lawsuit.*

Apposite implies a striking appropriateness and pertinence: *used apposite verbal images in the paper.*

Something **apropos** is both to the point and opportune: *an apropos comment that concisely answered my question.*

The following nouns refer to the quality of being in accord with fact or reality.

Truth is a comprehensive term that in all of its nuances implies accuracy and honesty: “*We seek the truth, and will endure the consequences*” (Charles Seymour).

Veracity is adherence to the truth: “*Veracity is the heart of morality*” (Thomas H. Huxley).

Verity often applies to an enduring or repeatedly demonstrated truth: “*beliefs that were accepted as eternal verities*” (James Harvey Robinson).

Verisimilitude is the quality of having the appearance of truth or reality: “*merely corroborative detail, intended to give artistic verisimilitude to an otherwise bald and unconvincing narrative*” (W.S. Gilbert).

¹² Ibid.

The following adjectives mean free from favoritism, self-interest, or preference in judgment.

Fair is the most general: *a fair referee; a fair deal.*

Just stresses conformity with what is ethically right or proper: “*a just and lasting peace*”(Abraham Lincoln).

Equitable implies justice dictated by reason, conscience, and a natural sense of what is fair: *an equitable distribution of gifts among the children.*

Impartial emphasizes lack of favoritism: “*the cold neutrality of an impartial judge*” (Edmund Burke).

Unprejudiced means without preconceived opinions or judgments: *an unprejudiced evaluation of the proposal.*

Unbiased implies absence of a preference or partiality: *gave an unbiased account of her family problems.*

Objective implies detachment that permits impersonal observation and judgment: *an objective jury.*

Dispassionate means free from or unaffected by strong emotions: *a dispassionate reporter.*

Now let us consider the relationship between natural thought processes and the use of intellectual standards.

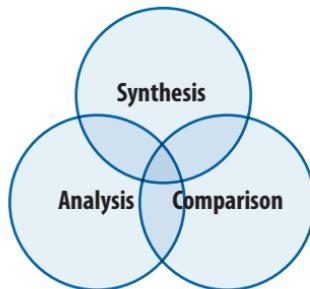
Natural Cognitive Processes Do Not Necessarily Presuppose the Proper Use of Intellectual Standards

Cognitive processes are important in human thought – processes such as classifying, inferring, assuming, planning. However it is important to guard against the assumption that engaging these processes automatically ensures skilled and disciplined reasoning. For example, whenever we plan, we do not necessarily plan well. Sometimes we plan poorly. The mere fact of planning does not automatically carry with it high quality cognition.

To ensure excellent thought, we need to meet intellectual standards when engaging in cognitive processes. Here are some cognitive processes naturally occurring in the human mind (with similar terms grouped together):

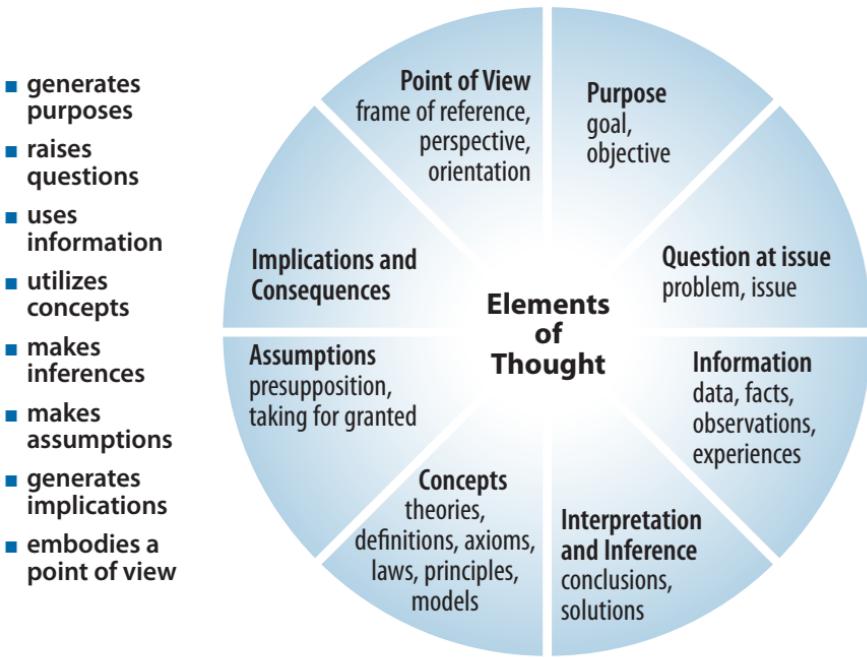
- Analyzing
- Synthesizing, integrating
- Comparing, contrasting
- Inferring, interpreting, concluding, deducing
- Assuming, presuming
- Conceptualizing
- Evaluating
- Planning
- Monitoring
- Reviewing
- Reflecting
- Gathering (e.g. information)
- Recognizing
- Classifying, grouping, sorting
- Distinguishing
- Sequencing
- Perceiving cause and effect
- Predicting
- Focusing attention
- Committing to memory
- Testing ideas and hypotheses

In-and-of-themselves, none of these processes is guaranteed to automatically function at a high level of skill in the human mind. Critical scrutiny using intellectual standards is often required. To exemplify, let us consider three cognitive processes:



Excellent Intellectual Analysis Requires Intellectual Standards

To analyze thought, we must take it apart and examine each of the parts. There are eight basic structures present in all thinking: Whenever we think, we think for a purpose within a point of view based on assumptions leading to implications and consequences. We use concepts, ideas and theories to interpret data, facts, and experiences in order to answer questions, solve problems, and resolve issues. Thinking, then:



Analysis of thought, like any other cognitive process, can be done well or poorly. Just because we pursue purposes doesn't mean our purposes are fair. Just because we make inferences doesn't mean our inferences are logical. Thus as we analyze thought, we must at every step apply relevant intellectual standards to that analysis.

Consider the following checklist for assessing reasoning. See if you can identify the intellectual standards in this list:

A Checklist for Reasoning

1) All reasoning has a PURPOSE.

- Take time to state your purpose clearly.
- Distinguish your purpose from related purposes.
- Check periodically to be sure you are still on target.
- Choose significant and realistic purposes.

2) All reasoning is an attempt to figure something out, to settle some QUESTION, to solve some PROBLEM.

- State the question at issue clearly and precisely.
- Express the question in several ways to clarify its meaning and scope.
- Break the question into sub-questions.
- Distinguish questions that have definitive answers from those that are a matter of opinion and from those that require consideration of multiple viewpoints.

3) All reasoning is based on ASSUMPTIONS.

- Clearly identify your assumptions and determine whether they are justifiable.
- Consider how your assumptions are shaping your point of view.

4) All reasoning is done from some POINT OF VIEW.

- Identify your point of view.
- Seek other points of view and identify their strengths as well as weaknesses.
- Strive to be fairminded in evaluating all points of view.

A Checklist for Reasoning (cont.)

5) All reasoning is based on DATA, INFORMATION and EVIDENCE.

- Restrict your claims to those supported by the data you have.
- Search for information that opposes your position as well as information that supports it.
- Make sure that all information used is clear, accurate and relevant to the question at issue.
- Make sure you have gathered sufficient information.

6) All reasoning is expressed through, and shaped by, CONCEPTS and IDEAS.

- Identify key concepts and explain them clearly.
- Consider alternative concepts or alternative definitions of concepts.
- Make sure you are using concepts with precision.

7) All reasoning contains INFERENCES or INTERPRETATIONS by which we draw CONCLUSIONS and give meaning to data.

- Infer only what the evidence implies.
- Check inferences for their consistency with each other.
- Identify assumptions underlying your inferences.

8) All reasoning leads somewhere or has IMPLICATIONS and CONSEQUENCES.

- Trace the implications and consequences that follow from your reasoning.
- Search for negative as well as positive implications.
- Consider all possible consequences.

In sum, though analysis entails an important set of cognitive processes, without intellectual standards we cannot effectively judge or assess that analysis.¹³

Excellent Intellectual Synthesis Requires Intellectual Standards

To synthesize ideas we bring them together and interrelate them. In the process, we make sense of the whole. We integrate ideas, information, experiences, viewpoints, and so forth in ways that seem logical to us. But again, this can be done well or poorly. For example, in thinking through a philosophy of nursing, we may read different ideas on the subject and then bring them together in an organized whole. But it doesn't follow that our philosophy of nursing will then be among the best of the possibilities. The quality of our "synthesized" philosophy will depend on the clarity and significance of the ideas we use to formulate it, on their soundness and reasonability, on their relevance to nursing in our particular context, and so forth. It will depend, in short, on the extent to which we call upon and fulfill intellectual standards as we gather and synthesize the ideas.

If we begin with a biased perspective based in prejudicial assumptions, we will synthesize information and ideas in keeping with this biased perspective. We will see things the way we want to see them, however distorted our perception might be. At the same time, our perception will seem perfectly reasonable to us.

If, for instance, in formulating a philosophy of parenting, we begin with the assumption that spanking is the best form of punishment for children, we will seek out and synthesize information that coincides with this assumption. We will look for examples of how, when and where spanking helps children. At the same time, we will avoid considering perspectives that argue against this practice. In other words, in formulating our philosophy, we will build upon the beliefs we take for granted at the outset when synthesizing new information.

In short, a biased perspective can be synthesized and integrated, using one-sided information, distorted conceptualizations, unjustifiable assumptions and a narrow viewpoint. An unbiased perspective, through proper use of intellectual standards, will enable us to synthesize and integrate the relevant and important ideas rationally, reasonably, comprehensively.

Excellent Intellectual Comparison Requires Intellectual Standards

Similarly, in comparing (and contrasting) ideas and viewpoints, we need suitable intellectual standards. We need to examine the ideas and viewpoints for relevance,

¹³ The analysis of reasoning is an essential understanding in critical thinking. For more on this, see Linda Elder and Richard Paul, *The Thinker's Guide to Analytic Thinking* (Foundation for Critical Thinking Press, 2008) www.criticalthinking.org. See also Richard Paul and Linda Elder, *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life* (Upper Saddle River, NJ: Pearson Prentice Hall, 2006).

logicalness, justifiability, significance, soundness, etc. Otherwise we may inadvertently use inappropriate standards in our comparisons.

For example, we may judge ideas or practices in accordance with whether we subjectively like them (comparing the ideas with what feels good to us), whether they fit our preconceived notions (comparing them with what we already believe), whether they make us look good (comparing them with ideas that might make us look better), and so forth. In fact one primary (and problematic) way in which people compare ideas is through the use of egocentric or sociocentric standards.¹⁴

In short, cognitive processes naturally occur in the human mind. But they do not inevitably fulfill intellectual standards. They are not naturally intellectually disciplined, and therefore may be of high, low or mixed quality. When we deeply understand and appropriately use intellectual standards during these processes, we achieve higher levels of quality.

Relevant Intellectual Standards Are Determined by the Context and Question at Issue

As we have mentioned, reasoning of any sort must be guided by a question at issue, which emerges, implicitly, from something we are trying to figure out, a problem we are attempting to solve, or an issue we are trying to resolve. The intellectual standards relevant to that process are ultimately connected with the question being addressed and the proper means for addressing it. Expressed in slightly different terms, the situation, context and, more pointedly, the question at issue will determine the intellectual standards necessary for keeping the reasoning on track. Still, except perhaps in dealing with the simplest issues, skilled reasoning generally calls for certain common applications of intellectual standards, such as:

- *Clarification* of the question at issue and the purpose of the reasoning.
- The gathering and utilization of information that is both *accurate* and *relevant* to the question.
- *Clarification* of whatever is being taken for granted, or assumed, in the reasoning process.
- *Clarification* and analysis of the key concepts guiding the reasoning.
- *Consideration* of the logical implications of the reasoning.
- *Clarification* of the inferences being made and the assessment of those inferences for logic, accuracy, or justifiability.

Moreover, the context and question at issue may require the reasoner to apply intellectual standards in any number of additional ways to ensure that the reasoning is adequate for the task at hand.

¹⁴ See the section *Egocentric and Sociocentric Standards Are Commonly Used in Human Life*, pp. 45-46.

For example, the following questions call upon the reasoner simply to identify *accurate* data or information:

- According to available statistics, how many people die each year as a result of complications from AIDS?
- According to available statistics, how many children are annually sold into slavery?
- Is there an effective vaccination for polio?
- What are the major ways that electricity is generated?

Conversely, the following complex questions require the reasoner to think through the difficulties in them, to consider the *important* viewpoints *relevant* to the issue, to consider the key concepts at the heart of the question and to formulate justifiable or *reasonable* conceptualizations, and so on:

- How can we best address the most basic and significant economic problems of the nation today?
- How can we balance business interest and environmental preservation?
- What economic system is the most fair to the greatest number of people?
- What philosophy of medicine makes best sense in the light of our knowledge of health problems and available solutions?
- To what extent is it ethically justifiable to subject animals to pain and suffering in experiments?
- What can we do about the problem of hunger in a world of plenty?
- What can we do about the problem of big money in politics?
- How can we create a world in which critical thinking is a fundamental social value?
- How can we create a world where the use and fulfillment of intellectual standards is highly valued?

In short, application of intellectual standards always occurs in some human context and should be ultimately guided by demands of the question at issue.

Intellectual Standards are Presupposed in Every Subject and Discipline

All academic subjects and disciplines presuppose the use and fulfillment of intellectual standards. This follows from the fact that reasoning lies at the heart of every subject and discipline. Where there is reasoning, there is a need to analyze the component structures of reasoning, and then, ultimately to assess those structures using intellectual standards. This should become clear presently.

When we recognize that every academic discipline is a mode of thought, we recognize that all thinking within a discipline can be analyzed according to its essential logic.

We recognize, in other words, that all thinking within a discipline:

- generates purposes
- makes inferences
- raises questions
- makes assumptions
- uses information
- generates implications
- utilizes concepts
- embodies a point of view

To learn any subject, then, is to learn how to reason within that subject, and to analyze the structures embedded in it. It is to learn to think within its logic with skill and discipline, to (for example):

- raise vital questions and problems within it, formulating them clearly and precisely;
- gather and assess information, using ideas to interpret that information insightfully;
- come to well-reasoned conclusions and solutions, testing them against relevant criteria and standards;
- adopt the point of view of the discipline, recognizing and assessing, as need be, its assumptions, implications, and practical consequences;
- communicate effectively with others using the language of the discipline and that of educated public discourse; and
- relate what one is learning in the subject to other subjects and to what is significant in human life.

All subjects and modes of human thought thus take for granted essential intellectual standards. In other words, those who think with skill within disciplines recognize the importance of *clarifying* and exploring key concepts, of identifying *relevant* information when reasoning through problems and issues and checking that information for *accuracy*, of reasoning through the complexities in issues, of reasoning within alternative *relevant* and *significant* viewpoints, and so on.

Conversely, no subject or discipline could exist without holding to essential intellectual standards. No scientist, for instance, would argue that it is just as well for scientists to think unclearly as clearly, to think inaccurately as accurately, to think irrelevantly as relevantly. Foundational intellectual standards are thus assumed within the logic of every subject and discipline. In short, intellectual standards are indefeasible when it comes to reasoning through and issues in the disciplines; they are unavoidable.

Mistakes in Thinking and Vested Interest Often Lead to the Violation of Intellectual Standards

Yet people who think and work within the disciplines sometimes violate intellectual standards. One reason for this, we suggest, is a lack of explicit awareness of intellectual standards and their importance to thinking well within the disciplines. Another, we propose, is vested interest (when ‘professionals’ have a personal interest in violating one or more intellectual standards).

Within the field of medicine, for example, the importance of *gathering relevant information and accurately diagnosing patients* is presupposed. Yet, an individual doctor may misdiagnose a patient by failing to consider some important relevant information or by making some other mistake in thinking. In his book, *How Doctors Think* (2007), Jerome Groopman, M.D. links the problem of medical misdiagnosis to what he terms ‘cognitive errors’:

Misdiagnosis...is a window into the medical mind. It reveals why doctors fail to question their assumptions, why their thinking is sometimes closed or skewed, why they overlook the gaps in their knowledge. Experts studying misguided care have recently concluded that the majority of errors are due to flaws in physician thinking, not technical mistakes. In one study of misdiagnoses, that caused serious harm to patients, some 80 percent could be accounted for by a cascade of cognitive errors...putting [clients] into a narrow frame and ignoring information that contradicted a fixed notion. Another study of one hundred incorrect diagnoses found that inadequate medical knowledge was the reason for error in only four instances. The doctors didn't stumble because of their ignorance of clinical facts; rather they misdiagnosed because they fell into cognitive traps. Such errors produce a distressingly high rate of misdiagnosis. As many as 15 percent of all diagnoses are inaccurate... (p. 24).

Consider, as well, the number of people injured each year due to receiving incorrect dosages or types of medicine, a significant issue linked to problems in reasoning:

“At least 1.5 million Americans a year are injured after receiving the wrong medication or the incorrect dose, according to the Institute of Medicine, part of the National Academies of Science. Such incidents have more than doubled in the past decade. The errors are made when pharmacists stock the drugs improperly, nurses don’t double-check to make sure they are dispensing the proper medication or when

doctors' illegible handwriting results in the wrong drug being dispensed, among other causes (*Press Democrat*, November 23, 2007)."

Such problems as these, which can occur in any profession, may well result from simple mistakes in thinking. But they may also result from a more complex root problem.

For example, a doctor may be tacitly *motivated* to diagnose a patient with a particular condition because the doctor specializes in that condition. He therefore may seek only that information *which happens to lead* to a diagnosis within his specialty. He may do this because it serves his interest (landing him additional patients and therefore more money) or, more likely, simply because he interprets the information through the lens of his own specialty. When vested interest is the culprit, we suggest that it is coupled with self-deception. The doctor would need to actually believe in his diagnosis, and systematically fail to notice his narrow-mindedness. For example, he might deceive himself into believing that he has gathered all the significant *relevant* information (when he has not), that there is only one *reasonable* diagnosis (when there is more than one), that he is unbiased in his orientation to the problem (when, in fact, he is prejudiced).

Indeed, wherever the pursuit of vested interest is likely, we might expect possible violations of intellectual standards in reasoning. Consider the following example of a potential conflict of interest seen in child psychiatry with important implications for the increasing number of children being diagnosed with "bipolar disorder." The phenomenon exemplified here is that of researchers being paid by medical companies that develop products to 'solve' the problems researchers 'uncover.' It is unfortunately part of the much larger issue of vested interest potentially influencing medical decision-making (thereby causing errors in human judgment):

A world-renowned Harvard child psychologist whose work has helped fuel an explosion in the use of powerful antipsychotic medicines in children earned at least \$1.6 million in consulting fees from drug makers from 2000-2007 but for years did not report much of this income to university officials, according to information given to Congressional investigators... Dr. Biederman is one of the most influential researchers in child psychiatry... Although many of his studies are small and often financed by drug makers, his work helped to fuel a controversial 40-fold increase from 1994 to 2003 in the diagnosis of pediatric bipolar disorder, which [has led to] a rapid rise in the use of antipsychotic medicines in children... it is far from clear that the medications improve children's lives, experts say... In the last 25 years, drug and device makers have displaced the federal government as the primary sources of research financing, and industry support is vital to many university research programs. But as corporate research executives recruit the brightest scientists, their brethren in marketing departments have discovered that some of these same scientists can be terrific pitchmen... Many researchers strongly disagree over what bipolar looks like in youngsters, and some now fear the definition has been expanded unnecessarily, due in part to the Harvard group... Dr. E. Fuller Torrey, executive director of the Stanley Medical Research Institute, which finances psychiatric studies, [contends] "In the area of child psychiatry in particular, we know much less than we should, and we desperately

need research that is not influenced by industry money (*The New York Times*, June 8, 2008)."

If it is in a researcher's financial interest to find that a behavioral problem exists for which medicine can be prescribed, a medicine developed by the company funding the research, it is only reasonable to question whether and to what extent such studies can be said to be *unbiased*.

Or consider an example in the field of agriculture. For decades, the primary form of vegetable farming has been large crop farming with mass use of chemical pesticides. In the meantime, scientists have become increasingly aware of the myriad problems caused by overuse of pesticides. Two of the most significant of these problems include ecological destruction and human disease escalation (caused by pesticide exposure through ingestion and inhalation). For many years, eminent scientists world-wide have spoken out against these destructive practices. And yet the problem largely remains. By continuing to overuse pesticides, the agricultural community sanctions reasoning, tacitly or explicitly, that violates intellectual standards. By ignoring relevant and significant information, by failing to think through logical implications, by covering up or ignoring important evidence, agriculturalists violate some of the very ideals they advance. It seems reasonable to link this failure to the problem of vested interest - the simple fact that farming with pesticides is cheaper than farming without them.

Intellectual Standards Most Relevant to Reasoning Within the Disciplines Need to Be Articulated

As we have said, every field of study presupposes and strives to meet basic and essential intellectual standards such as *accuracy*, *relevance*, and *logicalness*. However some intellectual standards may be more important to reasoning well within any given field than other intellectual standards. Therefore, it is up to those working within each discipline to articulate the intellectual standards most important to reasoning through the problems and issues in the discipline, to detail how the standards should be contextualized within the field.

By explicitly contextualizing intellectual standards within the disciplines, we raise our awareness of them; we are more likely to consistently meet them; we are more likely to see when they are being ignored or violated.

As we have mentioned, careful analysis of any discipline helps illuminate the intellectual standards most necessary to thinking well within it. To lay bare this logic, and keeping in mind the elements or structures of thought embedded in every discipline, we can begin with the following questions:

- What is the main purpose or goal of studying this subject? What are people in this field trying to accomplish?
- What kinds of questions do they ask? What kinds of problems do they try to solve?

- What sorts of information or data do they gather?
- What types of inferences or judgments do they typically make? (Judgments about...)
- How do they go about gathering information in ways that are distinctive to this field?
- What are the most basic ideas, concepts or theories in this field?
- What do professionals in this field take for granted or assume?
- How should studying this field affect my view of the world?
- What viewpoint is fostered in this field?
- What implications follow from studying this discipline? How are the products of this field used in everyday life?

Once we have answered these questions, we can then begin to apply intellectual standards to the logic of the discipline and to see how intellectual standards are most usefully contextualized within it. To exemplify this, we will introduce some of the ways in which intellectual standards are essential to careful reasoning within two disciplines: ecology and electrical engineering. We will first lay out the essential logic of the discipline as seen through its component parts.¹⁵ We will then briefly comment on some of the intellectual standards essential to skilled reasoning within that logic.

The Logic of Ecology

Purposes of Ecologists: Ecologists seek to understand plants and animals as they exist in nature, with emphasis on their interrelationships, interdependence, and interactions with the environment. They work to understand all the influences that combine to produce and modify an animal or given plant, and thus to account for its existence and peculiarities within its habitat.

Questions that Ecologists Ask: How do plants and animals interact? How do animals interact with each other? How do plants and animals depend on one another? How do the varying ecosystems function within themselves? How do they interact with other ecosystems? How are plants and animals affected by environmental influences? How do animals and plants grow, develop, die, and replace themselves? How do plants and animals create balances between each other? What happens when plants and animals become unbalanced?

Information that Ecologists Use: The primary information used by ecologists is gained through observing plants and animals themselves, their interactions, and how they live within their environments. Ecologists note how animals and plants are born, how they reproduce, how they die, how they evolve, and how they are affected by environmental

¹⁵ Again, for a deeper understanding of the analysis of thought, see Linda Elder and Richard Paul, *The Thinker's Guide to Analytic Thinking* (Foundation for Critical Thinking Press, 2007), www.criticalthinking.org

changes. They also use information from other disciplines including chemistry, meteorology and geology.

Judgments that Ecologists Make: Ecologists make judgments about how ecosystems naturally function, about how animals and plants within them function, about why they function as they do. They make judgments about how ecosystems become out of balance and what can be done to bring them back into balance. They make judgments about how natural communities should be grouped and classified. They must also make judgments about how best to inform and guide public policy, where relevant and possible.

Concepts that Guide Ecologists' Thinking: One of the most fundamental concepts in ecology is ecosystem, defined as a group of living things dependent on one another and living in a particular habitat. Ecologists study how differing ecosystems function. Another key concept in ecology is ecological succession, the natural pattern of change occurring within every ecosystem when natural processes are undisturbed. This pattern includes the birth, development, death, and then replacement of natural communities. Ecologists have grouped communities into larger units called biomes, regions throughout the world classified according to physical features, including temperature, rainfall and type of vegetation. Another fundamental concept in ecology is balance of nature, the natural process of birth, reproduction, eating and being eaten, which keeps animal/plant communities fairly stable. Other key concepts include imbalances, energy, nutrients, population growth, diversity, habitat, competition, predation, parasitism, adaptation, coevolution, succession and climax communities and conservation.

Key Assumptions that Ecologists Make: Patterns exist within animal/plant communities; these communities should be studied and classified; animals and plants often depend on one another and modify one another; and balances must be maintained within ecosystems.

Implications of Ecology: The study of ecology leads to numerous implications for life on Earth. By studying balance of nature, for example, we can see when nature is out of balance, as in the current population explosion. We can see how pesticides, designed to kill pests on farm crops, also lead to the harm of mammals and birds, either directly or indirectly through food webs. We can also learn how over-farming causes erosion and depletion of soil nutrients.

Point of View of Ecologists: Ecologists look at plants and animals and see them functioning in relationship with one another within their habitats, and needing to be in balance for the earth to be healthy and sustainable.

Application of Intellectual Standards in Ecology:

To comprehend how intellectual standards are essential to reasoning through questions and issues within ecology, consider the following examples, noting the intellectual standards in *italics*:

- Reasoning within the logic of ecology depends upon one's ability to formulate *clearly* and *precisely* the questions at the heart of the discipline. Thus ecologists must be able to identify and formulate *seminal* questions within the field.
- Ecologists must think *comprehensively* about the questions at the heart of the discipline.
- Ecologists must think *deeply* about ecological issues so as not to oversimplify their approach to them.
- Through their questions, ecologists must draw links between ecology and other modes of thought, questions that seek *relevant* understandings from other subjects and disciplines (such as botany, zoology, ethics).
- Ecologists must ensure that the information they use in reasoning through ecological issues is *accurate* and *relevant* to the questions being addressed. They must include information about all *relevant* parts of the interconnected system.
- Though ecologists draw from a large body of facts, they must make many judgments utilizing those facts, many of which come from observations and which lend themselves to more than one *reasonable* interpretation. Ecologists must therefore be careful to draw the most logical inferences in observing plant and animal life as they attempt to understand *complexities* in ecological systems.
- Ecologists must think *comprehensively* in making judgments about ecological systems.
- Ecologists must also make *logical* judgments about how best to help guide public policy.
- Ecologists must have a rich and *deep* understanding of concepts outside ecology which influence or affect ecological realities (concepts such as political power, economic power, vested interest, politics, population control) to make reasonable judgments about how to best foster protection of ecological systems.
- Ecologists must be able to follow out the *logical* implications of their observations and interpretations - decades and even centuries into the future. Largely because of the prominence of the human species on the planet, because of its inordinately high population in comparison with other mammals, the earth is an ecosystem out of balance. Couple this with the fact that many human behaviors lead to devastating effects for other animals and plants living on the planet and the importance of ecological thinking seems apparent. Our very survival may well depend upon it. Thus ecologists need to reason well through the most *important logical* implications of ecosystems out of balance, and they need to educate people about the problem and what can be done about it.

The Logic of Electrical Engineering¹⁶

Now let us consider the logic of electrical engineering, followed by some of the important ways in which intellectual standards must be contextualized in assessing reasoning within that logic.

Purposes of Electrical Engineers: Electrical engineers develop electrical and electronic systems for public, commercial, and consumer markets. The field of Electrical Engineering is tremendously broad, spanning many domains including recreational electronics, residential lighting, space communications, and electrical utilities.

Questions that Electrical Engineers Ask: What are the detailed design features of the system that best satisfy the stated mission or market requirements? How will we conceive, design, implement, and operate electrical and electronic products and systems?

Information that Electrical Engineers Use: Electrical engineers employ experimental and computational data, legacy designs, regulatory requirements, market studies or mission needs statements.

Judgments that Electrical Engineers Make: Electrical engineers make judgments about the systems that will best fit their purposes and that solve the problems they are called upon to address within the discipline. The final conclusion of most electrical engineering activity is a product ready for delivery to a customer.

Concepts that Guide the Thinking of Electrical Engineers: The most fundamental concepts within Electrical Engineering include electromagnetism (Maxwell's equations), electrochemical properties of materials, discrete and analog mathematics, resistance, current, charge, voltage, fields and waves, and so on. Electrical engineers must also conceptualize complex systems and how those systems will be perceived by clients and in some cases the general public.

Key Assumptions that Electrical Engineers Make: The assumptions made by electrical engineers are in part shared by all scientists and engineers. One assumption is that the universe is controlled by pervasive laws that can be expressed in mathematical terms and formulas, and that those principles can be used to model electrical systems. Electrical engineers assume that some important market needs can be best met through electrical and electronic products. Additionally, electrical engineers frequently assume that their work must be integrated with other engineering disciplines (such as mechanical, chemical, and so forth) in the design and implementation of a product.

Implications of Electrical Engineering: Electrical engineering products and services have wide-ranging implications that span global, national, and local economics, public

¹⁶ For a more detailed view of how intellectual standards apply to the field of Engineering, see Richard Paul, Rob Niewohner, and Linda Elder, *The Thinker's Guide to Engineering* (Foundation for Critical Thinking, 2006), www.criticalthinking.org

infrastructure, health care, and communications, with potential for positive and negative quality of life impacts on communities and regions.

Point of View of Electrical Engineers: The point of view of the electrical engineer is primarily that of the design and manufacturing team. Other relevant points of view include the customer, stockholders, marketing, maintainers, or operators.

Application of Intellectual Standards in Electrical Engineering:

To understand how intellectual standards are essential to reasoning through questions and issues within electrical engineering, consider the following examples, noting the intellectual standard words in *italics*:

- Electrical engineers must be clear about their purposes and ensure that their purposes are *justifiable*.
- When working on complex projects with multiple purposes, electrical engineers must check their purposes for *compatibility* and *consistency*.
- Electrical engineers must ensure that their purposes are *feasible*.
- Where clients are involved in projects, electrical engineers should consider the purposes of their clients.
- Electrical engineers must be *clear* about the questions at the heart of their work.
- Electrical engineers must be able to think within the complexities in the issue (*depth*).
- Electrical engineers must be able to identify and gather the information *relevant* to the questions at issue, and then check that information for *accuracy*. They must gather and utilize the *important relevant* information, *sufficient* to make logical judgments. Much of the information used by electrical engineers comes from mathematics and physics and is often needed at the level of very fine details or *precision*.
- Electrical engineers must come to *logical* conclusions about how the systems and products they are creating will function in real life contexts.
- They must also make judgments which are *fair* and *equitable* where more than one viewpoint is *relevant* to the issue.
- Most of the concepts in electrical engineering are mathematical or scientific in nature and can be understood as monological, or not open to debate. Electrical engineers must be *clear* about the concepts guiding the discipline and use them in keeping with mathematical or scientific usage (or *accurately*).
- Electrical engineers need to follow out the *logical* implications of their decisions before finalizing projects. They need to think through (*logically*) how their projects will impact users.
- Electrical engineers need to be able to think within multiple viewpoints *fairly* and in good faith.

The Proper Use of Intellectual Standard Terms Requires Cultivation

Unfortunately, though most people use intellectual standards episodically, at present few people have *explicit* knowledge of them or skill in using them. It seems that most people have little or no awareness of either the idea of intellectual standards, or of the specific standards essential in rational discourse.

Most people draw a blank when asked what intellectual standards they use to assess the quality of reasoning. In other words, most people do not see a connection between skilled reasoning and the proper use of intellectual standards. Faculty in higher education are no exception. Consider results of a large study (Paul, et. al., 1997) of 38 public colleges and universities and 28 private ones focused on the question: To what extent are faculty fostering critical thinking? The study included randomly selected faculty from colleges and universities across California, and encompassed prestigious universities such as Stanford, Cal Tech, USC, UCLA, UC Berkeley, and the California State University System.

By direct statement or by implication, most faculty in the study claimed that they permeated their instruction with an emphasis on critical thinking and that the students internalized the concepts in their courses as a result. Yet only the rare interviewee mentioned the importance of students thinking clearly, accurately, precisely, relevantly, or logically, etc... Very few mentioned any of the basic skills of thought such as the ability to clarify questions; gather relevant data; reason to logical or valid conclusions; identify key assumptions; trace significant implications, or enter without distortion into alternative points of view. Intellectual traits of mind, such as intellectual humility, intellectual perseverance, intellectual responsibility, etc . . . were rarely mentioned by the interviewees. Some key results from the study include the following:

1. Though the overwhelming majority of faculty claimed critical thinking to be a primary objective of their instruction (89%), only a small minority could give a clear explanation of what critical thinking is (19%). Furthermore, according to their answers, only 9% of the respondents were clearly teaching for critical thinking on a typical day in class.
2. Though the overwhelming majority (78%) claimed that their students lacked appropriate intellectual standards (to use in assessing their thinking), and 73% considered that students learning to assess their own work was of primary importance, only a very small minority (8%) could enumerate any intellectual criteria or standards they required of students or could give an intelligible explanation of those criteria and standards.
3. When asked how they conceptualized truth, a surprising 41% of those who responded to the question said that knowledge, truth and sound judgment are fundamentally a matter of personal preference or subjective taste.

4. From either the quantitative data directly, or from minimal inference from those data, it is clear that a significant percentage of faculty interviewed (and, if representative, most faculty):
- do not understand the connection of critical thinking to intellectual standards.
 - are not able to clarify major intellectual criteria and standards.
 - are not able to name specific critical thinking skills they think are important for students to learn.
 - do not think of reasoning within disciplines as a major focus of instruction.
 - cannot specify basic structures essential to the analysis of reasoning.
 - cannot give an intelligible explanation of basic abilities either in critical thinking or in reasoning.
 - do not distinguish the psychological dimension of thought from the intellectual dimension.

When asked the question, “What is your personal conception of intellectual criteria or standards?, many gave answers that were either vague or inadequate. Consider the following sample responses. Note our comments in parentheses¹⁷:

- “What is considered honest in one culture is considered dishonest in another.” (*This seems to imply that any conception of what it means to be honest is as good as any other conception. If this were true, then, by implication, there could be no established meanings of terms. Thus communication would be impossible.*)
- “I’m frightened anytime I hear the word standards because standards come from larger social/political/cultural contexts in which we try to maintain what is normal. How do things get normalized?” (*This seems to imply that there are no established universal standards for thinking. Following this line of reasoning, to figure out whether a given practice is acceptable, one need only determine the norm in any particular culture.*)
- “That’s a hard question to answer. I don’t think I see an answer to it.”
- “It depends on level and context to some extent...Show facility between generalizing and abstraction, and details.” (*Unclear*)
- “My point of view comes from whether I have looked at all sides...looking at cultural differences. I base my standards on observing other people.” (*Does this mean that one should judge one’s behavior by the behavior of others, that if others are doing something, it is acceptable?*)
- “...this is something I haven’t thought about.” (*If faculty have not thought about intellectual standards, how can we expect students to do so? How then can students learn what standards they should use to determine when to accept and when to reject something?*)

¹⁷ For more examples, see the Appendix.

In short, we suggest that few people think about the standards they use to accept or reject ideas, information, assumptions, viewpoints, etc. The result is that most people reason with little sense of the standards they are attempting to meet in the process.

The fact is that when we are reasoning poorly, we nevertheless believe we are thinking well. The human mind lacks a natural inner judge for assessing the quality of thought. When our thinking is unclear, it usually seems clear; when our thinking is inaccurate, it seems accurate; when our thinking is biased, it seems fair and objective. This illuminates the importance of cultivating explicit awareness of intellectual standards.

Egocentric and Sociocentric Standards Are Commonly Used in Human Life

Rather than using intellectual standards to determine what to accept or reject, humans often use egocentric or sociocentric standards.

Egocentric thinking results from the unfortunate fact that humans do not naturally consider the rights and needs of others. We do not naturally appreciate the point of view of others, nor the limitations in our own point of view. We become explicitly aware of our egocentric thinking only if trained to do so. We do not naturally recognize our egocentric assumptions, the egocentric way we use information, the egocentric way we interpret data, the source of our egocentric concepts and ideas, the implications of our egocentric thought. We do not naturally recognize our self-serving perspective and its many implications.

Similarly, sociocentric thinking results from the fact that humans do not naturally consider the rights and needs of *outgroups*. We think of our own groups as better, unique, special. We see our groups as more deserving than other groups. We do not naturally empathize with groups whose beliefs differ from those of our own. We become explicitly aware of our sociocentric thinking only if trained to do so. We do not naturally recognize our sociocentric assumptions, the sociocentric way we use information, the sociocentric way we interpret data, the sources of our sociocentric concepts and ideas, the implications of our sociocentric thought. We do not naturally recognize our group-serving perspective and its many implications.¹⁸

When we are seeing the world through egocentric and sociocentric lenses, we perceive our thinking to be impartial and disinterested. We are confident that we have fundamentally figured out the way things actually are, and that we have done this objectively. We naturally believe in our intuitive perceptions—however inaccurate. Thus, instead of intellectual standards, we often use self-centered psychological standards to determine what to believe and what to reject.

¹⁸ For a more in-depth understanding of the barriers of egocentric and sociocentric thinking to critical thought, see Richard Paul and Linda Elder, *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*, 2nd Edition, (Upper Saddle River, New Jersey: Pearson Prentice Hall, 2006).

Here are the most commonly used psychological standards in human thinking.

"IT'S TRUE BECAUSE I BELIEVE IT." *Innate egocentrism:* I assume that what I believe is true even though I have never questioned the basis for many of my beliefs.

"IT'S TRUE BECAUSE WE BELIEVE IT." *Innate sociocentrism:* I assume that the dominant beliefs of the groups to which I belong are true even though I have never questioned the basis for those beliefs.

"IT'S TRUE BECAUSE I WANT TO BELIEVE IT." *Innate wish fulfillment:* I believe in whatever puts me (or the groups to which I belong) in a positive light. I believe what feels good, what does not require me to change my thinking in any significant way, what does not require me to admit I have been wrong.

"IT'S TRUE BECAUSE I HAVE ALWAYS BELIEVED IT." *Innate self-validation:* I have a strong desire to maintain beliefs I have long held, even though I have not seriously considered the extent to which those beliefs are justified by the evidence.

"IT'S TRUE BECAUSE IT IS IN MY SELFISH INTEREST TO BELIEVE IT." *Innate selfishness:* I believe whatever justifies my getting more power, money, or personal advantage, even though these beliefs are not grounded in sound reasoning or evidence.

"IT'S TRUE BECAUSE IT IS IN OUR SELFISH INTEREST TO BELIEVE IT." *Innate group selfishness:* I believe whatever justifies my group getting more power, money, or personal advantage, even though these beliefs are not grounded in sound reasoning or evidence.

Why People Fail to Use and Appreciate Intellectual Standards

Anyone is capable of making mistakes. Anyone's thinking can be unclear, inaccurate, irrelevant, and so forth simply because they are unskilled at thinking and hence not aware of the importance of intellectual standards in human thinking. When people become aware of intellectual standards and begin explicitly trying to meet them, they are less likely to make these kinds of mistakes. Yet anyone, even the most skilled thinker, will sometimes fail to use intellectual standards appropriately and well.

However, there is another, perhaps more important, reason why people fail to use intellectual standards, and this is because they are motivated by some self-serving, or group-serving agenda. To adhere to intellectual standards would force them to take a broader view, to consider viewpoints they have an interest in avoiding, either because they benefit from maintaining their view, or are trapped in an ideology they are unwilling to question. For example, people often fail to think accurately when they have a vested interest in distorting the truth. They often fail to think relevantly when they have a vested interest in excluding relevant information. They often fail to think broadly when they have a vested interest in seeing things from a narrow perspective. They often fail to think deeply when they have a vested interest in oversimplify an issue. They often fail to think fairly when they have a vested interest in placing their desires ahead of the rights and needs of relevant others.

When people think in irrational and self-serving ways, it isn't that they know they are failing to meet intellectual standards. Rather they see themselves as disinterested persons seeking the truth. They unconsciously perceive their thinking to be sound.

The Effective Use of Intellectual Standards and the Development of the Mind Require Practice and Skilled Reasoning¹⁹

People who seek to become skilled at playing the violin have some sense of the struggle entailed in doing so. They don't expect to just pick up the instrument and start playing well. They deliberately study and routinely practice. Basketball players who seek to be highly skilled at basketball do not generally take their development for granted. They don't believe it will automatically happen. They deliberately study and routinely practice.

Architects study architecture to become skilled architects. Veterinarians study veterinary practice to become skilled veterinarians. Oceanographers study oceanography. And on it goes, in practically every domain of human life - recognition of the skill set to be obtained, deliberate study, and routine practice to develop and improve.

And yet the one area of human life more important than any other – everyday reasoning - is taken for granted – by academicians, scholars, professionals, activists, indeed by most everyone. Few people study thinking or deliberately practice thinking well. Few people read about thinking; few study where and how it tends to go wrong.

And yet there are myriad ways in which our thinking is flawed. Consider, our thinking gets us into trouble because we often:

¹⁹ In this guide, we deal exclusively with intellectual standards, one essential dimension of critical thinking. The other four essential dimensions include the parts of reasoning, the intellectual dispositions of mind, the abilities of mind, and the barriers to the development of reasoning. Taken together, all five dimensions interrelate to form a systematic and powerful approach to cultivating the human mind. For a comprehensive view of critical thinking, see The Thinker's Guide Library and other resources at www.criticalthinking.org

Thinking Gets Us Into Trouble Because We Often:

- are unclear, muddled, or confused
- jump to conclusions
- fail to think-through implications
- lose track of our goals
- are unrealistic
- focus on the trivial
- do not notice contradictions
- accept inaccurate information
- ask vague questions
- give vague answers
- ask loaded questions
- ask irrelevant questions
- confuse questions of different types
- answer questions we are not competent to answer
- come to conclusions based on inaccurate or irrelevant information
- ignore information that does not support our view
- make inferences not justified by our experience
- distort data and state it inaccurately
- fail to notice the inferences we make
- come to unreasonable conclusions
- fail to notice our assumptions
- make unjustified assumptions
- miss key ideas
- use irrelevant ideas
- form confused ideas
- form superficial concepts
- misuse words
- ignore relevant viewpoints
- cannot see issues from points of view other than our own
- confuse issues of different types
- are unaware of our prejudices
- think narrowly
- think imprecisely
- think illogically
- think one-sidedly
- think simplistically
- think hypocritically
- think superficially
- think ethnocentrically
- think egocentrically
- think irrationally
- fail to reason well through problems
- make poor decisions
- are poor communicators
- have little insight into our ignorance

In sum, few people are articulate about the strengths and weaknesses of their own thinking. We generally take our thinking for granted. We see it as something that comes natural. Yet, if we look closely at the quality of people's lives, we will see that many have little command of the thinking that is running their lives. Many are unhappy in their marriages, unfulfilled in their work, inadequate as parents.

We need, then to see the development of the mind as a process requiring intellectual discipline and cultivation, as a complex set of interconnected skills that develop, if at all, deliberately, methodically, over time.

When We Consistently Work Toward the Development of Our Thinking, We:

- are more clear, precise and unambiguous in our use of terms
- are less likely to jump to conclusions
- think-through logical implications
- keep track of our goals
- are realistic
- focus on the significant
- notice contradictions
- refuse to accept inaccurate information
- ask clear questions
- give clear answers
- are careful not to ask loaded questions
- ask relevant questions
- do not confuse questions of different types
- do not answer questions we are not competent to answer
- come to conclusions based only on accurate or relevant information
- consider all relevant information, without regard to whether it supports our view
- make only those inferences justified in context
- do not distort data and or state it inaccurately
- notice the inferences we make
- come to reasonable conclusions
- notice our assumptions
- make only justifiable assumptions
- notice key ideas
- use only relevant ideas
- form clear ideas
- form deep concepts
- use words with care
- fully consider relevant viewpoints
- can see issues from points of view other than our own
- can clearly distinguish between issues of different types
- are aware of our prejudices
- think openmindedly
- think precisely
- think logically
- think multilogically
- think deeply
- think with integrity
- think broadly
- think within broad and multilogical worldviews, rather than being trapped within narrow parochial views
- think fairmindedly
- think rationally
- reason well through complexities in problems
- make good decisions
- are effective communicators
- have insight into our ignorance

Other Important Distinctions and Understandings

In studying natural languages, for the purpose of understanding what words mean and their proper uses, we enter a world of subtlety and complexity requiring skill and careful analysis. For example, to understand appropriate uses of any particular term often requires understanding and appropriately using other terms. For instance, to grasp a rich conception of democracy is to understand the concepts of equality, politics, government, and so on. And it entails understanding opposing forms of government like plutocracy, oligarchy and tyranny.

Thus, for a rich understanding of the role played by intellectual standards in natural languages, it is important to comprehend, not only intellectual standard words themselves, and all the terms presupposed in those words, but also to grasp the *implicit* relationships between many terms in natural languages and intellectual standard terms. In this section, we introduce a few of these important relationships. We do no more than scratch the surface.

Many Words Presuppose Intellectual Standards

It should be clear, now, that there are hundreds of intellectual standard terms in educated usage. But in addition there are many words in natural languages that presuppose intellectual standards, terms that require consideration of or adherence to one or more intellectual standards.

Consider, for example, commonly used ethical terms such as 'empathy' and 'humanitarian.' The term 'empathy' may be defined as "actively imagining oneself in the mind of another person in order to fully understand that other person; evenhandedness: impartial, fair, just."²⁰ To empathize with another, one must be able to represent *accurately*, in one's mind, the thinking and/or feelings of that person. One must also be able to think *fairly* or *impartially* about the person's views. Thus, at minimum, the intellectual standards of *accuracy*, *fairness* and *impartiality* are presupposed in the proper use of the term 'empathy.'

Or take the term 'humanitarian' which "implies direct concern with promoting the welfare of humanity, especially through reducing pain and suffering." The proper use of the term 'humanitarian' requires one to consider the viewpoints of those who suffer (thus to consider the *relevant* viewpoints in context). It requires *accurate* understanding of the problems and issues that give rise to the need for intervention. And it requires one to reason from a *fair* and *unbiased* perspective.

Consider the following additional examples of terms in the English language that presuppose the appropriate use of one or more intellectual standards. The examples we

²⁰ The definitions in this and the next section were adapted primarily from entries in *Webster's New World Dictionary*, or from the glossary of critical thinking terms which can be found at the following link: <http://www.criticalthinking.org/articles/glossary.cfm>

have chosen all happen to be ethical terms. A thorough analysis of the language would disclose many more examples in other domains of human thought.

Each of the following examples presupposes, at minimum, the intellectual standards of *relevance* and *fairness* (requiring one to consider *fairly* the viewpoints *relevant* in context). Additional intellectual standards may be presupposed in the proper use of any one of the following terms:

Altruistic: implies a putting of the welfare of others before one's own interests and therefore stresses freedom from selfishness.

Attentive: showing constant thoughtfulness through repeated acts of consideration.

Benevolent: implies a charitable or altruistic inclination to do good.

Benign: suggests a mild or kindly nature and is especially applied to a gracious superior.

Charitable: implies the giving of money or other help to those in need.

Civil: polite or courteous, especially in merely a formal way; to refrain from rudeness.

Commiseration: implies deeply felt and openly expressed feelings of pity.

Compassion: to show deep sympathy for another, accompanied by the urge to help alleviate suffering.

Compunction: implies a twinge of consciousness for a wrong doing.

Condolence: implies a formal expression of sympathy with another in sorrow.

Considerateness: being concerned with someone's feelings and circumstances, particularly in helping them avoid stress, pain and suffering.

Courteous: goes beyond civility and politeness to a sincere consideration of others that springs from an inherent thoughtfulness.

Dispassionate: implies the absence of passion or strong emotion, hence connotes disinterested judgment.

Exonerate: to free from the imputation of guilt; declare or prove blameless; to relieve of the blame for a wrongdoing.

Fair-mindedness: a cultivated disposition of mind that enables the thinker to treat all perspectives relevant to an issue in an objective manner. It implies having a consciousness of the need to treat all viewpoints alike, without reference to one's own feelings or selfish interests, or the feelings or selfish interests of one's friend's, community or nation. It implies adherence to intellectual standards without reference to one's own advantage or the advantage of one's group.

Forgiveness: inclination to give up resentment against or the desire to punish; to stop being angry with.

Generous: willing to give or share; usually implies a willingness to give liberally or in abundance.

Gentle: kindly, serene, patient; not violent, harsh or rough.

Gracious: having or showing kindness, courtesy; being merciful or compassionate.

Honesty: implies complete fairness and openness in one's dealings with others and stresses freedom from deceit or fraud.

Honorable: implies a keen sense of, and strict adherence to, what is considered ethically right.

Impartial: implies freedom from prejudice for or against any side.

Integrity: implies an incorruptible soundness of moral character, especially as displaying in fulfilling trusts.

Justice: implies adherence to a standard of rightness without reference to one's own inclinations.

Kind: behaving in a sympathetic, friendly, gentle, tenderhearted, or generous way.

Kindly: in a kind manner; characteristically kind.

Mercy: a refraining from harming or punishing offenders, enemies, persons in one's power; kindness in excess of what may be demanded by fairness; forbearance and compassion; implies a kindness or forbearance, as in punishing offenders, in excess of what may be demanded by fairness; connoting kindness and sympathy to those in distress.

Misgiving: implies a disturbed state of mind resulting from a loss of confidence as to whether one is doing what is right.

Moral: relating to, dealing with, or capable of making the distinction between right and wrong in conduct.

Noble: having or showing high moral qualities or ideals.

Objective: implies a viewing of persons or situations without reference to one's own interests.

Obliging: implies a ready, often cheerful, desire to be helpful.

Open-minded: free from prejudice or bias, having a mind open to new ideas.

Pardon: to excuse a person for some minor fault; to release from further punishment for a crime.

Philanthropic: implies interest in general human welfare, especially as shown in large-scale gifts to charities, etc.

Polite: suggests a positive observance of etiquette in social behavior.

Probity: suggests honesty or rectitude that is tried and proved.

Qualm: implies a painful feeling of uneasiness arising from a consciousness that one is or may be acting wrongly.

Reciprocity: the act of entering empathically into the point of view or line of reasoning of others; learning to think as others do and by that means sympathetically assessing that thinking. (Reciprocity requires creative imagination as well as intellectual skill and a commitment to fairmindedness.)

Remorse: a deep, tortured sense of guilt felt over a wrong that one has done.

Respect: to show consideration for; to avoid intruding upon or interfering with.

Scruple: a feeling of hesitancy, doubt, or uneasiness arising from difficulty deciding what is ethically right.

Scrupulous: implies meticulous conscientiousness with regard to the morality of one's actions, aims, etc.

Self-reproach: blaming oneself for a perceived wrong-doing. Like guilt, self-reproach, may or may not result from an ethical wrong-doing.

Selfless: devoted to others' welfare or interests and not one's own; unselfish; altruistic.

Self-sacrificing: sacrificing oneself or one's interests for the benefit of others.

Sympathy: implies such kinship of feeling as enables one to really understand or even share the sorrow of another; entering into another's mental state or feelings.

Tactful: dealing with persons or difficult situations with a delicate sense of what is fitting and thus avoiding giving offense.

Tender: implies a softness or gentleness in one's relations with others that is expressive of warm affection, concern, etc.

Thoughtful: inclined to anticipate the needs and desires of others in order to make them comfortable.

Tolerance: implies the propensity to recognize and respect others' beliefs, practices, etc., without sharing them; freedom from bigotry or prejudice.

Trustworthy: implies that one can depend on another to be honest, reliable, just, and living a life of integrity.

Unbiased: implies freedom from prejudice for or against any side.

Unselfish: putting the good of others above one's own interests, altruistic, generous.

Understanding: sympathetic awareness of or rapport with.

Upright: implies an unbending moral straightness and integrity.

Veracity: specifically characterized by honesty as displayed in habitual truthfulness.

Virtuous: implies a morally excellent character connoting justice and integrity.

Vindicate: to clear a person through evidence of the unfairness of the charge.

Warm-hearted: suggests a sympathetic interest or affection characterized by cordiality, generosity, etc.

Again, these are just a few of the many words in the English language that imply or presuppose the use of intellectual standards. A thorough search would reveal perhaps hundreds of such terms, if not more.

Many Words Imply a Failure to Use Appropriate Intellectual Standards

Similarly, many terms in the English language illuminate the *lack* of appropriate intellectual standards. Consider the following terms, all of which presuppose a failure to consider *relevant* viewpoints, a failure to think *fairly, reasonably, rationally*.²¹

Avaricious: greed for money or riches, miserly. Implies a lack of concern for how one's monetary greed impacts the rights or needs of others.

Base: implies a putting of one's own interests ahead of one's obligations, especially due to greed or cowardice.

Beguile: implies the use of wiles to entice people into accepting what they should question; cheating or tricking someone for self-serving ends.

Belligerent: implies a warlike or hostile nature, suggesting a readiness to fight for any reason, however unjustified.

Belligerent: implies a readiness to fight or quarrel; to behave in an aggressively hostile way.

Bias: a form of prejudice usually implying an unjustifiable mental leaning in favor of or against someone or something.

Bigot: a person who holds blindly and intolerantly to a particular creed, opinion, or belief system.

Bully: a person who hurts, frightens, or tyrannizes over those smaller or weaker; to browbeat, hurt, or frighten one weaker than oneself.

Chauvinistic: showing militant, unreasoning, and boastful devotion to one's country, race, gender, etc., with contempt for other country's races, genders, etc., fanatic patriotism, or jingoism.

Chicanery: the use of clever but tricky or cunning talk in order to deceive, especially in legal actions.

Deceive: implies deliberate misrepresentation of facts by words or actions, generally to further one's ends.

Disingenuous: not straightforward, not candid or frank, insincere. People are usually disingenuous when they have a vested or personal interest in withholding the truth.

Deceitful: implies an intent to make someone believe what isn't true, as by giving a false appearance, deluding, misleading, using fraud, etc. Deceit is a subtle and underhanded way of manipulating others to serve one's selfish interest.

Domineering: to rule over others in a harsh or arrogant way.

²¹ For a more extensive list of ethical terms that presuppose the proper use of one or more intellectual standards, or which imply a violation of one or more intellectual standards, see Richard Paul and Linda Elder, *The Thinker's Guide to Ethical Reasoning*, (Foundation for Critical Thinking Press, 2006), www.criticalthinking.org, glossary.

Duplicitous: characterized by hypocritical cunning or deception; double-dealing.

Egocentricity: a tendency to view everything in relationship to oneself; to confuse immediate perception (how things seem) with reality; the tendency to be self-centered, or to consider only oneself and one's own interests; selfishness. One's desires, values, and beliefs (seeming to be self-evidently correct or superior to those of others) are often uncritically used as the norm of all judgment and experience. Egocentricity is one of the fundamental impediments to critical thinking and to sound ethical thinking. As one learns to think critically in a fair-minded way, one learns to become less egocentric and more just.

Ethnocentrism: a tendency to view one's own race or culture as privileged, based on the belief that one's own group is superior to all others. Ethnocentrism is a form of egocentrism extended from the self to the group. Much uncritical or selfish critical thinking is either egocentric or ethnocentric in nature. ('Ethnocentrism' and 'sociocentrism' are used synonymously, for the most part, though 'sociocentrism' is broader, relating to any social group, including, for example, sociocentrism regarding one's profession.) Most humans privilege the beliefs, norms, and practices of their own culture.

Fanatic: suggests the unreasonable over-zealousness of one who goes to absurd lengths to maintain or carry out unreasonable beliefs.

Fraud: suggests deliberate deception in dishonestly depriving a person of rights, property, etc.

Hateful: feeling or showing hate; malicious; malevolent. A related word, *hatemonger*, refers to a propagandist who seeks to provoke hatred and prejudice, especially against minority groups.

Hypocritical: pretending to be better than one is; assuming a false appearance of piety and virtue; insincere. Hypocrisy occurs whenever people expect others to meet a standard higher than what they require of themselves.

Inhuman: stresses complete absence of the qualities expected of an ethically-sensitive person, qualities such as compassion, mercy, and benevolence.

Intimidate: to force or deter by use of threats or violence.

Murder: the malicious or premeditated killing of one human being by another; to kill inhumanely or barbarously, as in warfare.

Narrow-minded: looking at situations, people, groups in a provincial, biased, or limited way, causing one to distort reality; to fail to fully and completely see things as they are due to limitations in one's perspective.

Prejudice: a judgment, belief, opinion, point of view—favorable or unfavorable—formed before the relevant facts are known; resistant to evidence and reason, or in disregard of facts which contradict it. Self-announced prejudice is rare. Prejudice almost always exists in obscured, rationalized, socially validated, functional forms. It enables people

to sleep peacefully at night even while flagrantly abusing the rights of others. It enables people to get more of what they want, or to get it more easily. It is often sanctioned with a superabundance of pomp and self-righteousness.

Rationalize: to devise socially plausible explanations or excuses for one's actions, desires, and beliefs, when these are not one's actual motives. To rationalize is to give reasons that seem sound but are not honest and accurate. Rationalization is often used in situations in which one is pursuing one's vested interests while trying to maintain the appearance of high moral purpose. Politicians, for instance, are continually rationalizing their actions, implying that they are acting from high motives when they usually are acting as they are because they have received large donations from vested interest groups that profit from the action taken. Those who held slaves often rationalized that slavery was justified because the slaves were like children and had to be taken care of. Rationalization is a defense mechanism egocentric persons use to get what they want without having to face the true nature of their motivation. Rationalizations enable us to keep our actual motives beneath the level of consciousness.

Self-deception: deceiving one's self about one's true motivations, character, identity, etc. One possible definition of the human species is "The Self-Deceiving Animal." Self-deception is a fundamental problem in human life and the cause of much human suffering. Overcoming self-deception through self-critical thinking is a fundamental goal of fair-minded critical thinking.

Sociocentrism: the assumption that one's own social group is inherently and self-evidently superior to all others. When a group or society sees itself as superior, and so considers its views as correct or as the only reasonable or justifiable views, and all its actions as justified, there is a tendency to presuppose this superiority in all of its thinking and thus, to think closed-mindedly. Dissent and doubt are viewed in a negative light and are usually considered disloyal and rejected. Few people recognize the sociocentric nature of much of their thought.

Torture: inflicting severe pain upon someone to force a confession, get information, or to get revenge.

Vested interest: 1) involvement in promoting personal advantage, usually at the expense of others. 2) People functioning as a group to pursue collective selfish goals and exerting influences that enable them to profit at the expense of others. Many groups that lobby politicians do so to gain money, power, and advantage by the enactment of laws that specially favor them. The term 'vested interest' classically contrasts with the term 'public interest.' A group that lobbies Congress in the public interest is not seeking to gain special advantage for a comparative few, but protection for virtually all or the large majority. Preserving the quality of the air is a public interest. Building cheaper cars by including fewer safety features is a vested interest (it makes more money for car manufacturers).

Vengeful/revengeful: Similar to vindictive, but more directly stresses the strong impulse to action and the actual seeking of vengeance.

Words Are Sometimes Used to Imply the Fulfillment of Intellectual Standards Not Justified in Context

The proper use of every term in natural languages presupposes clear and accurate use of the term in context. Thus the appropriate use of every term presupposes at least the two intellectual standards of *clarity* [of meaning] and *accuracy* [of usage].

However, sometimes words are used to imply adherence to intellectual standards which the terms themselves, in educated use, do not necessarily imply. For example, the term ‘illegal,’ according to *Webster’s New World Dictionary*, is generally defined as “that which is prohibited by law; not authorized or sanctioned.” ‘Laws’ refer to “all the rules of conduct established and enforced by the authority, legislation, or custom of a given community, state, or other group.” And yet the term ‘illegal’ is sometimes used to imply that, because it is illegal, an action or practice is therefore *unreasonable* or *unfair*. But the term in and of itself carries no such connotation. Take for example, the many laws that denied basic rights to people of color in the U.S before the civil rights movement (in the 1950’s). It was illegal, for instance, for African Americans to frequent the same restaurants, bars, hotels, etc., as Whites. Because these practices were illegal, many people inferred that it was also (by implication) *unreasonable* for African Americans to engage in them, that there was something *inherently wrong* in doing them. And yet the term ‘illegal,’ according to educated usage, is ethically neutral. To say of an action that it is illegal is to say nothing, necessarily, of its being right or wrong, reasonable or unreasonable. We would hope that any ‘illegal’ behavior *would* also be unreasonable, to justify its being illegal, and yet we cannot assume this to be the case. Otherwise unjust laws would never be overturned, being assumed just and reasonable. Any illegal behavior or practice would be automatically considered wrong, therefore requiring no necessity for debate.

Or consider the term ‘normal.’ According to *Webster’s New World Dictionary*, this word generally is used to mean “conforming with or constituting an accepted standard, model, or pattern; esp., corresponding to the median or average of a large group in type, appearance, achievement, function, development, etc.; natural; usual; standard; regular.” Thus the term ‘normal’ “implies conformity with the established norm or standard for its kind [*normal* intelligence].” Thus to say of a person that her behavior is not “normal” means, according to educated use, that it differs from what is usual or generally acceptable in a particular culture. Sometimes, when referring to people as “not normal,” one might imply that *because* their behavior is not normal it is reprehensible. The word itself carries no such necessary connotation, unless one assumes that there is a direct connection between what the majority believes and what is ethically “correct.” Consider the practice of nudity. It is considered unacceptable (or “not normal”) in some societies. Consequently, in these

cultures it is also sometimes seen as unethical or irrational. And yet the practice, although “not normal” is not irrational in-and-of itself.

We suggest that a thorough analysis of the language would uncover many additional terms sometimes misused by people in everyday discourse when users of the language assimilate social conventions with ethical truths. For example, terms such as ‘official,’ ‘holy,’ ‘sacred,’ ‘socially acceptable’ are sometimes used to imply “correctness” or “soundness” when the words themselves do not necessarily carry these implications. Or again, just because there is an “official” position on an issue, does not mean this position is *sound* or *reasonable*. Just because some set of beliefs is said to be “sacred” or “holy” doesn’t mean those beliefs are based in *sound* reasoning. Just because some set of behaviors is considered “socially acceptable” doesn’t mean they are *rational* or *reasonable*.

The material point is that words are sometimes used to denote or imply adherence to intellectual standards, when, in fact, the terms themselves, as defined through educated usage, carry no such necessary connotation.²²

Intellectual Standards are One Important Dimension of Critical Thinking

Throughout this guide we have focused on the role of intellectual standards in reasoning, exemplifying this role in multiple directions. But it is important to understand intellectual standards as part of a network of ideas which, taken together, form a substantive conception of critical thinking. The following definition of critical thinking is useful in achieving this understanding.²³

Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness.

It entails the examination of those structures or elements of thought implicit in all reasoning: purpose, problem, or question-at-issue; assumptions; concepts; empirical grounding; reasoning leading to conclusions; implications and consequences; objections from alternative viewpoints; and frame of reference. Critical thinking — in being responsive to variable subject matter, issues, and purposes — is incorporated in a family of interwoven modes of thinking, among them: scientific thinking, mathematical

²² For example, there are many ways in which intellectual standards are violated in the ordinary phenomenon known as fallacious speech. For examples, see Richard Paul and Linda Elder, *The Thinker's Guide to Fallacies: The Art of Trickery and Manipulation*, (Foundation for Critical Thinking Press, 2006), www.criticalthinking.org

²³ Definition written by Michael Scriven & Richard Paul for the National Council for Excellence in Critical Thinking, 1987.

thinking, historical thinking, anthropological thinking, economic thinking, moral thinking, and philosophical thinking.

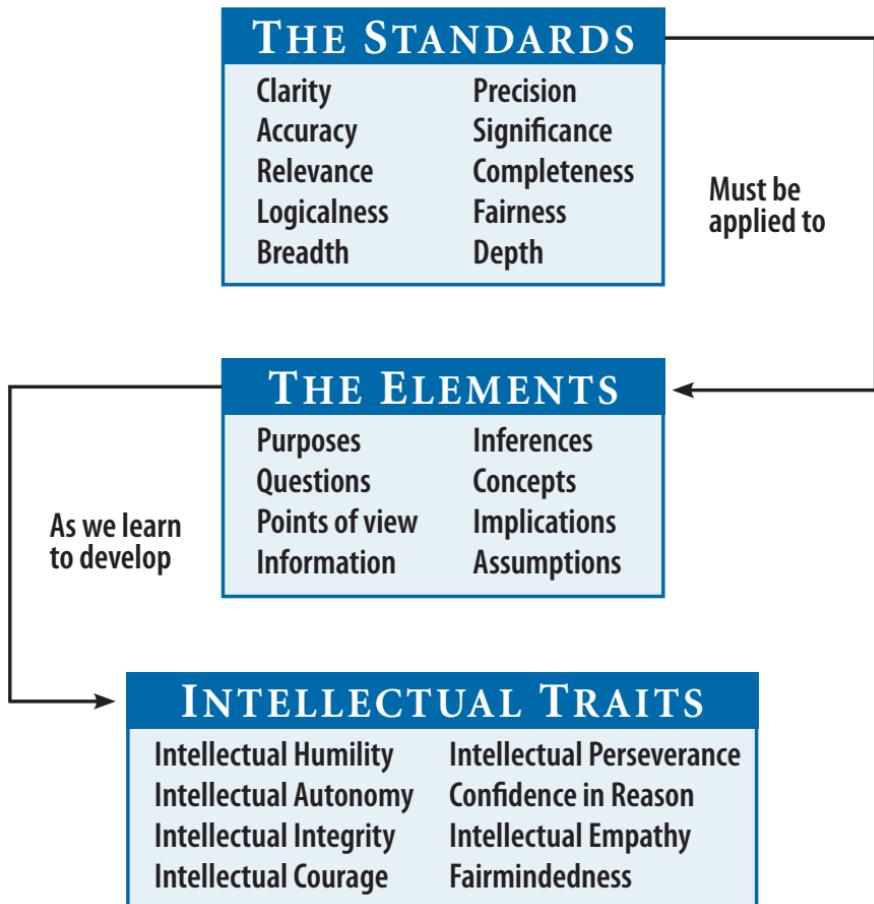
Critical thinking can be seen as having two components: 1) a set of information and belief generating and processing skills, and 2) the habit, based on intellectual commitment, of using those skills to guide behavior. It is thus to be contrasted with: 1) the mere acquisition and retention of information alone, because it involves a particular way in which information is sought and treated; 2) the mere possession of a set of skills, because it involves the continual use of them; and 3) the mere use of those skills ("as an exercise") without acceptance of their results.

Critical thinking varies according to the motivation underlying it. When grounded in selfish motives, it is often manifested in the skillful manipulation of ideas in service of one's own, or one's groups' vested interest. As such it is typically intellectually flawed, however pragmatically successful it might be. When grounded in fairmindedness and intellectual integrity, it is typically of a higher order intellectually, though subject to the charge of "idealism" by those habituated to its selfish use.

Critical thinking of any kind is never universal in any individual; everyone is subject to episodes of undisciplined or irrational thought. Its quality is therefore typically a matter of degree and dependent on, among other things, the quality and depth of experience in a given domain of thinking or with respect to a particular class of questions. No one is a critical thinker through-and-through, but only to such-and-such a degree, with such-and-such insights and blind spots, subject to such-and-such tendencies towards self-delusion. For this reason, the development of critical thinking skills and dispositions is a life-long endeavor.

To understand the concept of intellectual standards in its richest form, it is essential to understand it in connection with the elements of thought as well as intellectual traits or dispositions. Consider the following overview of this relationship:

Critical thinkers routinely apply intellectual standards to the elements of reasoning in order to develop intellectual traits.



The elements of thought are briefly explicated in the section on analysis (see pp. 27-30), and are presupposed in the section on contextualizing intellectual standards in subjects and disciplines (see pp. 37-42). Moreover, some of the important interrelationships between the elements of thought, intellectual standards, and intellectual traits can be found in the following list of critical thinking skills, abilities and dimensions.

35 Dimensions of Critical Thought

A. Affective Dimensions

- thinking independently
- developing insight into egocentricity or sociocentricity
- exercising fairmindedness
- exploring thoughts underlying feelings and feelings underlying thought
- developing intellectual humility and suspending judgment
- developing intellectual courage
- developing intellectual good faith or integrity
- developing intellectual perseverance
- developing confidence in reason

B. Cognitive Dimensions—Macro-Abilities

- refining generalizations and avoiding oversimplifications
- comparing analogous situations: transferring insights to new contexts
- developing one's perspective: creating or exploring beliefs, arguments, or theories
- clarifying issues, conclusions, or beliefs
- clarifying and analyzing the meanings of words or phrases
- developing criteria for evaluation: clarifying values and standards
- evaluating the credibility of sources of information
- questioning deeply: raising and pursuing root or significant questions
- analyzing or evaluating arguments, interpretations, beliefs, or theories
- generating or assessing solutions
- analyzing or evaluating actions or policies
- reading critically: clarifying or critiquing texts
- listening critically: the art of silent dialogue
- making interdisciplinary connections
- practicing Socratic discussion: clarifying and questioning beliefs, theories, or perspectives
- reasoning dialogically: comparing perspectives, interpretations, or theories
- reasoning dialectically: evaluating perspectives, interpretations, or theories

C. Cognitive Dimensions—Micro-Skills

- comparing and contrasting ideals with actual practice
- thinking precisely about thinking: using critical vocabulary
- noting significant similarities and differences
- examining or evaluating assumptions
- distinguishing relevant from irrelevant facts
- making plausible inferences, predictions, or interpretations
- giving reasons and evaluating evidence and alleged facts
- recognizing contradictions
- exploring implications and consequences

Though many of the connections between the elements or structures of thought, intellectual standards, and intellectual virtues have been explicated,²⁴ more work needs to be done to work out these interrelationships, and to contextualize them within the various domains and systems of human thought.

Consider, for example, the relationship between intellectual traits and intellectual standards. To live in accord with any intellectual disposition, it may be necessary to exercise intellectual judgment using any one or more intellectual standards in a given context. What is more, intellectual virtues or traits always presuppose use of some particular intellectual standards. Consider the following brief explanations of three intellectual traits. Each explication is followed by questions that foster the intellectual trait as well as some of the important intellectual standards relevant to its cultivation:

Intellectual Humility

Vs. Intellectual Arrogance

Having a consciousness of the limits of one's knowledge, including a sensitivity to circumstances in which one's native egocentrism is likely to function self-deceptively; sensitivity to bias, prejudice and limitations of one's viewpoint. Intellectual humility depends on recognizing that one should not claim more than one actually knows. It does not imply spinelessness or submissiveness. It implies the lack of intellectual pretentiousness, boastfulness, or conceit, combined with insight into the logical foundations, or lack of such foundations, of one's beliefs.

Questions that foster intellectual humility, (each of which is followed by some intellectual standards important to its cultivation):

- What do I really know - about myself, about the situation, about another person, about my nation, about what is going on in the world? [requires clarifying one's own beliefs, and accurately distinguishing between what one knows and does not know]
- To what extent do my prejudices or biases influence my thinking? [requires examining one's beliefs in a disinterested, unbiased, impartial manner]
- To what extent have I been indoctrinated into beliefs that may be false? [requires examining one's deeply held beliefs with the purpose of clarifying them, thinking them through fairly, checking them for accuracy]
- How do the beliefs I have uncritically accepted keep me from seeing things as they are? [requires seeing things truly and correctly, without distortions]

²⁴ See Linda Elder and Richard Paul, *The Thinker's Guide to Analytic Thinking*, (Foundation for Critical Thinking Press, 2007). www.criticalthinking.org. See also Richard Paul and Linda Elder, *Critical Thinking: Tools for Taking Charge of Your Learning and Your Life*, (Upper Saddle River, NJ: Prentice Hall, 2006).

Intellectual Empathy**Vs. Intellectual Narrow-Mindedness**

Having a consciousness of the need to imaginatively put oneself in the place of others in order to genuinely understand them, which requires the consciousness of our egocentric tendency to identify truth with our immediate perceptions of long-standing thought or belief. This trait correlates with the ability to reconstruct accurately the viewpoints and reasoning of others and to reason from premises, assumptions, and ideas other than our own. This trait also correlates with the willingness to remember occasions when we were wrong in the past despite an intense conviction that we were right, and with the ability to imagine our being similarly deceived in a case-at-hand.

Questions that foster intellectual humility, (followed by some intellectual standards important to its cultivation):

- To what extent do I accurately represent viewpoints with which I disagree? [requires accuracy in explicating the relevant viewpoints]
- Can I summarize the views of my opponents to their satisfaction? Can I see insights in the views of others and prejudices in my own? [requires clarity and accuracy in summarizing viewpoints; requires entering viewpoints to which one is opposed in a fair and unbiased manner]
- Do I sympathize with the feelings of others in light of their thinking differently than me? [requires treating another's views with compassion and respect, requires a rational and reasonable orientation toward those to which one holds opposing views]

Confidence In Reason**Vs. Distrust Of Reason And Evidence**

Confidence that, in the long run, one's own higher interests and those of humankind at large will be best served by giving the freest play to reason, by encouraging people to come to their own conclusions, by developing their own rational faculties; faith that, with proper encouragement and cultivation, people can learn to think for themselves, to form rational viewpoints, draw reasonable conclusions, think coherently and logically, persuade each other by reason and become reasonable persons, despite the deep-seated obstacles in the native character of the human mind and in society as we know it.

Questions that foster intellectual humility, (followed by some intellectual standards important to its cultivation):

- Am I willing to change my position when the evidence leads to a more reasonable position? [requires accurate representation of information; requires reasonability and soundness in thinking through issues and problems]

- Do I adhere to principles of sound reasoning when persuading others of my position or do I distort matters to support my position? [requires soundness and rationality in communicating one's views; requires a disinterested and equitable orientation; requires accurate representation of relevant information]
- Do I deem it more important to "win" an argument, or see the issue from the most reasonable perspective? [requires consideration of important relevant viewpoints, and representing those perspectives in a fair and reasonable manner]
- Do I encourage others to come to their own conclusions or do I try to force my views on them? [requires fairness and consideration in one's treatment of others]

As you can see, the cultivation of intellectual traits or dispositions presupposes meeting specific intellectual standards relevant to that cultivation. When we understand the relationship between the intellectual traits and intellectual standards, fully and truly, interconnected as well with the elements of thought, we have a rich conception of critical thinking.

Conclusion

Command of intellectual standards is essential to the cultivated mind. To gain this command requires internalization of essential intellectual standard words available in natural languages. It also requires the achievement of these standards in reasoning through problems and issues in everyday life.

We have attempted, in this guide, to provide underpinnings for the development of a rich conception of intellectual standards, a conception which can be adapted to the logic of our thinking in every domain of human thought, in every subject and discipline.

When humans, as a species, begin to take seriously the important role of intellectual standards in the development of rational human cultures, when people understand the idea of intellectual standards in connection with a rich conception of critical thinking, when we commit ourselves to using intellectual standard words, explicitly and routinely in everyday life, we will begin to create critical societies. We will begin to bring into being ways of living in a world which further the values and skills of fairminded critical thinking.

References

- Adler, M.J. (1960). *How to Read a Book: The Art of Getting a Liberal Education*. New York: Simon and Schuster.
- Fromm, E. (1976). *To Have or To Be*. NY: Harper and Row Publishers, Inc.
- Groopman, Jerome, M.D (2007). *How Doctors Think*. New York: Houghton Mifflin Company.
- Paul, R., Elder, & L. Bartell. (1997). California Teacher Preparation for Instruction in Critical Thinking: Research Findings and Policy Recommendations. California Commission on Teacher Credentialing.
- Westfall, R. (1993). *The Life of Isaac Newton*. NY: Cambridge University Press.
- Newman, J. Originally published in 1852, this reference is taken from *The Idea of a University* (1996), London: Yale University Press.
- Press Democrat, November 23, 2007. *Dosage Mistakes Plaguing Medicine*.
- Sumner, William Graham. (1940). *Folkways: A Study of the Sociological Importance of Usages, Manners, Customs, Mores, and Morals*, New York: Ginn and Co. William pp. 633. (originally published in 1906).

The following references were used in formulating the definitions of intellectual standards as indicated by footnotes in the text.

The American Heritage® Dictionary of the English Language, Fourth Edition. Retrieved January 19, 2008, from Dictionary.com website: <http://dictionary.reference.com/browse/truth>

The American Heritage® Dictionary of the English Language, Fourth Edition. Houghton Mifflin Company, 2004. <http://dictionary.reference.com/browse/truth> (accessed: January 19, 2008).

The American Heritage® Dictionary of the English Language, Fourth Edition. Houghton Mifflin Company, 2004. 19 Jan. 2008. [>](http://dictionary.reference.com/browse/truth).

The New York Times, *Researchers Fail to Reveal Full Drug Pay: Possible Conflicts Seen in Child Psychiatry*, June 8, 2008.

Appendix

The following examples expand the list which begins on p. 43, and illuminates the types of vague or incorrect answers given to the question: **What is your personal conception of intellectual criteria or standards?** (as found in a large study on college instruction. See Paul et.al.). Our commentary is found in the parenthesis).

“...concrete and appropriate and shows work on their part.... It’s definitely subjective....” (*Does this mean that whenever students engage in “work” in the classroom, that it is acceptable, whatever the quality of that work?*)

“I look at their writing....I have an internal set of criteria but they are intuitive...I know it when I see it.” (*If faculty are not explicit with their criteria, how can students learn those criteria?*)

“Sensitive to broader cultural contexts—blanket generalizations not valuable.”

“It gets real squishy....How do you grade if someone’s critically thought about something?” (*This seems to imply that critical thinking cannot be assessed, that there is no way to determine the quality of one’s reasoning.*)

“It’s pretty esoteric. The moral value and truth that reflects the person’s level of thinking is a major consideration. They each identify it for themselves. The idea is for each student to determine his/her own criteria.” (*Students already have criteria they use in their thinking. The problem is that these criteria are usually not intellectual. They often determine whether an idea is sound, for example, if their peer group believes it. If students are allowed to determine their own criteria, we cannot expect them to engage in high quality reasoning.*)

“Any position you take is a biased one....Look for students to bring criteria to it....” (*The first part of this statement seems to imply that it is impossible to be objective about any issue, that it is not possible to be fair-minded in considering alternative relevant points of view.*)

“I look for multi-dimensional thinking, higher order, holistic, not the traditional either/or stuff...they look at all perspectives...the ability to express themselves.”

“If they reason it out and that’s their opinion, then they are entitled to that.” (*What if they “reason it out” poorly? Are they entitled to thinking which is not well-grounded, logically speaking?*)

“Accuracy is not one...remaining open, not too opinionated, poor thinking - not considering other options.” (*Does this mean that it is not important for students to engage in thinking which is accurate, that when they are figuring out the solution to a*

problem, they should gather information which is inaccurate to address that problem, for example?)

“Does it ring true to you? Based on your life experiences, do the arguments ring true?”

“Bloom’s taxonomy—levels can be ways of looking at standards.”

“...very complex—multifaceted view of intelligences...Gardner...Thurstone. We have been too myopic in looking at intelligences. You have to break it down in the independent domains.” (*How do multiple intelligences relate to intellectual standards?*)

“Writing standards—such as correct grammar and punctuation. The diagram has to be neat and labeled. Well-organized portfolio.”

“there’s all kinds of logical fallacies I use intuitively. I can’t think of anything. Are the students contradicting themselves? Does their prose flow? Use other opinions to compare.”

“This is an ongoing debate. Is diversity a necessary requirement for intellectual ability? How do you define intellectual dialogue? There are narrow and broad perspectives. Original thinking.” (*If the faculty member is unclear about how to define intellectual dialogue, how can that faculty member teach students how to engage intellectually in discussions?*)

“Academic competence and the application of that competence to practice. The gut instinct and background knowledge as used to judge an editorial or someone’s thinking.” (*What is meant by “academic competence?” How are students taught to have reasonable “gut instincts”?*)

“We probably always set our own.”

“...contrasting their knowledge to my knowledge....not if they are thinking accurately or not—that would be up to me to teach them....I trust them to come up with their own opinions—using their knowledge/background, respecting other opinions—that they may not be correct.” (*How are student to learn how to assess others opinions, to determine whether they are faulty or not justifiable?*)

“Take information (data) and apply it to another system.”

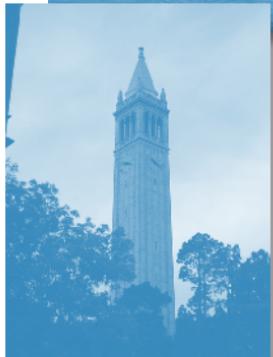
“...an open mind....Different people have different values.”

“want them to be normative, objective first, to have values at the end. Some things you like better than others. Am I happy with this—if so, I’m home free.” (*How are students to learn whether they should be “happy” with something?*)

Join us for the
ANNUAL INTERNATIONAL
Conference on
Critical Thinking

to be held near
UC BERKELEY

Every Summer



Visit www.criticalthinking.org or call 800.833.3645



Visit the Foundation for Critical Thinking online

New Resources Available to
Online Community Members:

- Critical Thinking Bookstore and Event Registration Desk
- Critical Thinking Forum
- Streaming Video
- Online Critical Thinking Tests
- Online Critical Thinking Learning Tools
- Online Courses for Educators
- Critical Thinking Library
- Critical Thinking New Blogger
- Critical Thinking Resources in Multiple Languages



The
Foundation
for
Critical Thinking
www.criticalthinking.org

The Thinker's Guide Library

The Thinker's Guide series provides convenient, inexpensive, portable references that students and faculty can use to improve the quality of studying, learning, and teaching. Their modest cost enables instructors to require them of all students (in addition to a textbook). Their compactness enables students to keep them at hand whenever they are working in or out of class. Their succinctness serves as a continual reminder of the most basic principles of critical thinking.

For Students & Faculty



Critical Thinking—The essence of critical thinking concepts and tools distilled into a 22-page pocket-size guide. #520m



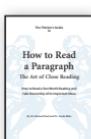
Analytic Thinking—This guide focuses on the intellectual skills that enable one to analyze anything one might think about — questions, problems, disciplines, subjects, etc. It provides the common denominator between all forms of analysis. #595m



Asking Essential Questions—Introduces the art of asking essential questions. It is best used in conjunction with the Miniature Guide to Critical Thinking and the Thinker's Guide on How to Study and Learn. #580m



How to Study & Learn—A variety of strategies—both simple and complex—for becoming not just a better student, but also a master student. #530m



How to Read a Paragraph—This guide provides theory and activities necessary for deep comprehension. Imminently practical for students. #525m



How to Write a Paragraph—Focuses on the art of substantive writing. How to say something worth saying about something worth saying something about. #535m



The Human Mind—Designed to give the reader insight into the basic functions of the human mind and to how knowledge of these functions (and their interrelations) can enable one to use one's intellect and emotions more effectively. #570m



Foundations of Ethical Reasoning—Provides insights into the nature of ethical reasoning, why it is so often flawed, and how to avoid those flaws. It lays out the function of ethics, its main impediments, and its social counterfeits. #585m



How to Detect Media Bias and Propaganda—Designed to help readers come to recognize bias in their nation's news and to recognize propaganda so that they can reasonably determine what media messages need to be supplemented, counterbalanced or thrown out entirely. It focuses on the internal logic of the news as well as societal influences on the media. #575m



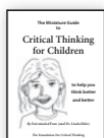
Scientific Thinking—The essence of scientific thinking concepts and tools. It focuses on the intellectual skills inherent in the well-cultivated scientific thinker. #590m



Fallacies: The Art of Mental Trickery and Manipulation—Introduces the concept of fallacies and details 44 foul ways to win an argument. #533m



Engineering Reasoning—Contains the essence of engineering reasoning concepts and tools. For faculty it provides a shared concept and vocabulary. For students it is a thinking supplement to any textbook for any engineering course. #573m

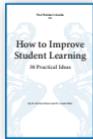


Critical Thinking for Children—Designed for K–6 classroom use. Focuses on explaining basic critical thinking principles to young children using cartoon characters. #540m

For Faculty



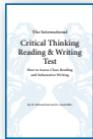
Active and Cooperative Learning—Provides 27 simple ideas for the improvement of instruction. It lays the foundation for the ideas found in the mini-guide How to Improve Student Learning. #550m



How to Improve Student Learning—Provides 30 practical ideas for the improvement of instruction based on critical thinking concepts and tools. It cultivates student learning encouraged in the How to Study and Learn mini-guide. #560m



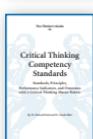
Critical and Creative Thinking—Focuses on the interrelationship between critical and creative thinking through the essential role of both in learning. #565m



Critical Thinking Reading and Writing Test—Assesses the ability of students to use reading and writing as tools for acquiring knowledge. Provides grading rubrics and outlines five levels of close reading and substantive writing. #563m



Socratic Questioning—Focuses on the mechanics of Socratic dialogue, on the conceptual tools that critical thinking brings to Socratic dialogue, and on the importance of questioning in cultivating the disciplined mind. #553m



Critical Thinking Competency Standards—Provides a framework for assessing students' critical thinking abilities. #555m



Educational Fads—Analyzes and critiques educational trends and fads from a critical thinking perspective, providing the essential idea of each one, its proper educational use, and its likely misuse. #583m



The Foundation for Critical Thinking

The Foundation for Critical Thinking seeks to promote essential change in education and society through the cultivation of fair-minded critical thinking, thinking predisposed toward intellectual empathy, humility, perseverance, integrity, and responsibility. A rich intellectual environment is possible only with critical thinking at the foundation of education. Why? Because only when students learn to think through the content they are learning in a deep and substantive way can they apply what they are learning in their lives. Moreover, in a world of accelerating change, intensifying complexity, and increasing interdependence, critical thinking is now a requirement for economic and social survival.

Contact us online at www.criticalthinking.org
to learn about our publications, videos,
workshops, conferences, and professional
development programs.

"Intellectual Standards" Mini-Guide Price List:

(+ shipping and handling)

Item #593m

1–24 copies \$6.00 each
25–199 copies \$4.00 each
200–499 copies \$3.00 each
500+ copies \$2.50 each
Prices subject to change.

For pricing for other guides in the
Thinker's Guide Library, contact us.

For More Information

(To order guides or to
inquire about other resources)

Phone: 707-878-9100

Fax: 707-878-9111

E-mail: cct@criticalthinking.org

Web site: www.criticalthinking.org

Mail: Foundation for Critical Thinking

P.O. Box 220
Dillon Beach, CA 94929



The Foundation for Critical Thinking
PO Box 220
Dillon Beach, CA 95929

About the Authors

Dr. Linda Elder is an educational psychologist who has taught both psychology and critical thinking at the college level. She is the President of the Foundation for Critical Thinking and the Executive Director of the Center for Critical Thinking. Dr. Elder has a special interest in the relation of thought and emotion, the cognitive and the affective, and has developed an original theory of the stages of critical thinking development. She has coauthored four books on critical thinking, as well as twenty thinkers' guides. She is a dynamic presenter with extensive experience in leading seminars on critical thinking.

Dr. Richard Paul is a major leader in the international critical thinking movement. He is Director of Research at the Center for Critical Thinking, and the Chair of the National Council for Excellence in Critical Thinking, author of over 200 articles and seven books on critical thinking. Dr. Paul has given hundreds of workshops on critical thinking and made a series of eight critical thinking video programs for PBS. His views on critical thinking have been canvassed in *New York Times*, *Education Week*, *The Chronicle of Higher Education*, *American Teacher*, *Educational Leadership*, *Newsweek*, *U.S. News and World Report*, and *Reader's Digest*.

