Critical Thinking Skills for Auditors

Instructor

Mary Beth Saenz

EGAPP, Inc.

Course Objectives

- **Understand and apply the basic steps in analyzing information**
- **Identify common fallacies in reasoning—yours and others'**
- **Define the primary criteria for clear thinking**
- **Ask appropriate/essential questions when assessing problems, information, assumptions, inferences, concepts, points of view, and consequences**
- **Define your priorities in advance**

EGAPP, Inc.

Today's Plan

- **Introductions**
- **Overview of Competence, Thinking, and Judgment**
- **Formal Logic**
- **Graphic Tools for Critical Thinking**
- **Criteria for Critical Thinking**
- **Common Fallacies in Reasoning**
- **Class Exercises – Applying Techniques**
- **Conclusion**

EGAPP, Inc.

Basic Thinking Skills

- **How far can a man walk into the woods?**

EGAPP, Inc

Why this class?

- **To audit more effectively**
- **To enhance reliability of auditor conclusions**
- **To define a structured approach to assessing information**
- **Survey results included:**
  - Improved decision making
  - "How to cut through the bull and get to the facts"
  - Distinguish between relevant and irrelevant facts

EGAPP, Inc

Core Concept

Judgment in professional practice, correctly exercised, is a reflective, *self-corrective*, purposeful thinking process which requires the professional to take into account content knowledge, context, evidence, *methods*, conceptualizations, and a variety of criteria and standards of adequacy.

The exercise of sound judgment requires both a willingness and the ability to think critically.

EGAPP, Inc

Prior Training

College and various specialized training seminars offer courses in both auditing and formal logic.

Auditing courses teach audit methodology and technique. Use and application of logic is assumed or implied.

Formal logic courses provide a strong foundation in thinking processes—a structured approach to thinking and communicating.

Auditing is taught in black and white, but the real world is in living color.

7 EGAPP, Inc

What does it take?

- Be curious - about how things work, what comes next, what specific words mean
- Be alert – to problem situations and potential obstacles
- Be *appropriately* trustful – of your own ability to reason and make sound decisions
- Be willing – to commit to and stand behind the decision that you make

8 EGAPP, Inc

What does it take?

- Systematically persist – even when the task at hand is difficult
- Understand timing – when decisions need to be made, revised, or deferred
- Be open-minded about other approaches or new ideas
- Ask questions – especially the tough but important questions necessary to follow evidence wherever it may lead

9 EGAPP, Inc

Basic Thinking Skills

- We have 200 pens

- Some of the pens are Red

- Some of the pens are in the drawer

- Are some of the pens in the drawer Red?

EGAPP, Inc.

Competence

- **Unconscious Competence**
  – Common Sense

- **Conscious Competence**
  – Critical Thinking
  – Being conscious of each step in a process as you are performing that process so that you do not inadvertently omit key steps
  – Thinking about thinking while you are thinking

EGAPP, Inc.

The Flow of Reasoning

Critical thinking

leads to

Reasoned judgment

which leads to

Auditor judgment

EGAPP, Inc.

Critical Thinking...

- **is the art of analyzing and evaluating thinking with a view to improving it.**
- **is using our command of the elements of thinking to dynamically adjust our thinking to the demands of each unique situation.**
- **requires rigorous standards of excellence and mindful command of their use.**
- **entails effective communication and problem solving abilities.**

13   EGAPP, Inc.

Reasoned Judgment

- **Judgment based on relevant, sound reasoning that goes beyond, and is never to be equated with, fact alone or mere opinion alone.**

- **Reasoned judgment follows the standards of formal logic and critical thinking.**

14   EGAPP, Inc.

Reasoned Judgment

- **Three Types of Questions**
  - Fact
    - **One correct answer**

  - Opinion
    - **Any answer fits**

  - Reasoned Judgment
    - **Better and worse answers**

15   EGAPP, Inc.

Reasoned Judgment

- **Three Types of Answers**
  - Fact
    - **9 out of 10 expenditures not reimbursed by the awarding agency were rejected due to inadequate supporting documentation.**
  - Opinion
    - **The program manager doesn't care about keeping receipts.**
  - Reasoned Judgment
    - **Requests for reimbursement are not reviewed for adequacy of supporting documentation prior to submission.**

Auditor Judgment

- **Drawing audit conclusions and making audit decisions based on a combination of sound logic and firm knowledge of auditing standards and business practices.**

Basic Audit Thinking Skills

- **Policies and Procedures are clearly documented**

- **Policies and Procedures are up-to-date**

- **Every agency employee has a copy of the Policies and Procedures manual at their desk and can accurately describe relevant policies and procedures for their areas**

- **Any/all transactions tested will be in compliance with agency policies and procedures**

Formal Logic

**The Foundation of Critical Thinking
and Judgment**

Logic - History

• **Socrates / Plato / Aristotle**

• **Education Courses**
  – Logic was once the basis of a classical education
  – Logic "inherent" in many courses today
  – Logic taught as a specific discipline in Philosophy, Logic, and Debate classes

• **Formal Logic = the Foundation of Critical Thinking in today's world**

Logical Ability in Auditing

• **Problem Solving**

• **Weighing evidence**

• **Collecting evidence**

• **Drawing conclusions**

• **Determining sound criteria**

• **Defining possible effects of conditions**

Logic Terminology

INFERENCE (the process)

ARGUMENT (the group of propositions)

If   PROPOSITION (the <u>premise</u>)
Then   PROPOSITION (the <u>conclusion</u>)

22   EGAPP, Inc.

Logic Terminology

- <u>**Inference**</u> **– process in which one proposition is arrived at and affirmed on the basis of one or more propositions accepted as the starting point of the process**
- <u>**Proposition**</u> **– statements that are either true or false; they can be asserted or denied**
- <u>**Argument**</u> **– a group of propositions of which one is claimed to follow from the others**

23   EGAPP, Inc.

Logic Terminology

- <u>**Premise**</u> **– propositions that provide support or reason for accepting the conclusion**
- <u>**Conclusion**</u> **– the proposition affirmed on the basis of the other propositions of the argument.**
- <u>**Deduction**</u> **– conclusive support for the validity of the conclusion**
- <u>**Induction**</u> **– some varying level of support for the validity of the conclusion**

24   EGAPP, Inc.

Audit Deduction and Induction

- **Common definitions**
  - Deduction – general to specific
  - Induction – specific to general

- **Critical Thinking definitions**
  - Deduction – If not fallacious, conclusion is always valid
  - Induction – If not fallacious, conclusion has varying probability of validity, based on the soundness of evidence and reasoning.

25

Formal Logic Example

- **If A then B**
  - A, therefore B
  - B, therefore A???

- **If the power goes out, the projector will stop working.**
  - The power went out, therefore the projector stopped working.
  - The projector stopped working, therefore the power is out?

26

Logic – Deduction Example

- **Everyone dies.**

- **I am someone.**

? **So, I will die.**

27

Logic – Induction Example # 1

- Everyone dies.
- I am someone.
- Drinking from the fountain of youth makes some people immortal.
- I drank from the fountain of youth.
- ? I may or may not die.

EGAPP, Inc.

Logic – Induction Example # 2

- Everyone dies.
- I am someone.
- Drinking from the fountain of youth makes most people immortal.
- I drank from the fountain of youth.
- ? It is very likely that I won't die.

EGAPP, Inc.

Deduction Audit Example

- Grant expenditures that are allowable and appropriate will be reimbursed by the awarding agency.
- All program expenditures are specifically listed as allowable in the applicable OMB cost circular and are appropriate in quantity and nature.
- ? All program expenditures will be reimbursed by the awarding agency.

EGAPP, Inc.

Induction Audit Example # 1

Some probability of valid conclusion

- Grant expenditures that are allowable and appropriate will be reimbursed by the awarding agency.
- Few of the program expenditures are specifically listed as allowable in the applicable OMB cost circular.
- Most expenditures were not specifically listed in the original approved grant budget. Prior written approval was neither requested nor granted by the awarding agency for any expenditure.
- ? Most program expenditures *probably* will not be reimbursed by the awarding agency.

31 EGAPP, Inc

Induction Audit Example # 2

Higher probability of valid conclusion:

- Grant expenditures that are allowable and appropriate will be reimbursed by the awarding agency. The grantee gets prior approval from the awarding agency for all expenditures greater than $100.

- Most program expenditures for the $10M grant are specifically listed as allowable in the applicable OMB cost circular.

32 EGAPP, Inc

Induction Audit Example # 2 Continued

Higher probability of valid conclusion:

- In a statistical sample (95% confidence level), of the 5 expenditures not specifically listed as allowable, 2 are for items specified in the original approved grant budget, and 1 was granted prior written approval by the awarding agency. The remaining 2 were for $10 each.

- ? Controls to ensure that material expenditures are reimbursed are adequate.

33 EGAPP, Inc

Advanced Thinking Skills

- **See Math Problem**

EGAPP, Inc.

Process Flowcharts

Graphic Tools for Critical Thinking

Mind Mapping   **Logic Diagrams**

EGAPP, Inc.

Mind Mapping

- **Using Your Right Brain – non-linear, big picture**
- **Lateral Thinking technique**
- **Non-linear note taking**
- **Useful for brainstorming, organizing thoughts, thinking outside of the box**

EGAPP, Inc.

Logic Diagrams

- **Using Your Right Brain – Images**
- **A picture is worth a thousand words**
- **Similar to a flowchart**
- **Illustrates relationships between premises**
- **Useful for planning types of evidence needed, testing findings for sound reasoning**

EGAPP, Inc

Logic Diagrams

- **Steps in diagramming logic**
  - Identify the separate premises
  - Determine if/then, independent/dependent relationships between each unique pairing of premises
  - Chart the premises and relationships
  - Test the logic with critical thinking criteria (to be discussed) to ensure sound reasoning

EGAPP, Inc

Logic Diagrams
Vegetable Garden Example

- **My backyard is a good place to grow vegetables. (A)**
- **Having rich soil, it enables vegetables to obtain valuable nutrients from the earth. (B)**
- **Gardens need at least 6 hours of direct sunlight to grow most vegetables. (C)**
- **The lack of trees in my backyard provides full sun for 8 hours a day. (D)**

EGAPP, Inc

Logic Diagrams
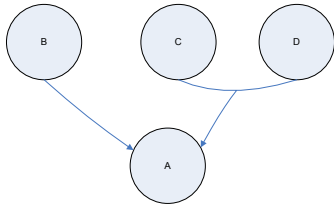### Vegetable Garden Example

```
   (B)      (C)      (D)
      \       |      /
       \      |     /
        \     |    /
         \    |   /
          (A)
```

EGAPP, Inc.

Logic Diagrams
Vegetable Garden Example

My garden has rich soil, enabling vegetables to obtain valuable nutrients from the earth.

Gardens need at least 6 hours of direct sunlight to grow most vegetables.C

The lack of trees in my backyard provides full sun for 8 hours a day.

My backyard is a good place to grow vegetables.

EGAPP, Inc.
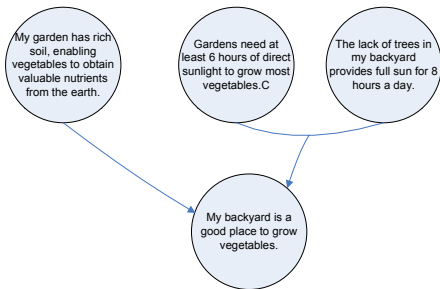
Critical Thinking

Clarity

Accuracy

Precision

Relevance

Depth/Breadth

Logic

Significance

Criteria for Critical Thinking

EGAPP, Inc.

Clarity

- Free from confusion or ambiguity
- You cannot determine the accuracy or relevance of an unclear statement.
- May need additional elaboration, illustration, or example
- Can you communicate the information to someone with little to no background in the area?
- Can you re-state or re-phrase?

EGAPP, Inc

Accuracy

- Verifiable; free from errors, mistakes, or distortions; conforms with fact or truth
- You must have a rational basis for determining accuracy.
- Can you fully identify the source(s) of the data and the adequacy of relevant controls?
- Are you aware of other reports/references that will allow comparison and verification?

EGAPP, Inc

Precision

- Pinpointing the extent, frequency, or amount
- Reasoned judgment often relies on the degree of an occurrence.
- Could you give me more details?
- Is the sample size adequate to draw conclusion?
- How likely is it that the identified risk will occur (if quantifiable)?

EGAPP, Inc

Relevance

- Closely related to the issue at hand and the conclusion drawn
- How is this connected to the objective of the audit?
- Why does that matter?
- Is the sample selected truly representative of the population?

EGAPP, Inc.

Depth and Breadth

- Considering the complexity of an issue
- Considering other points of view or other elements of information (quantitative and qualitative)
- Have we identified the real cause of the problem?
- Do we need to validate the evidence at a more detailed level?
- Have we identified and evaluated any possible compensating controls?

EGAPP, Inc.

Logic

- Correct reasoning
- Premise and conclusion are mutually supporting and make sense together.
- Does this really make sense?
- Does the audit evidence soundly support my conclusion? Could someone reach a different conclusion from the audit evidence?
- Does any piece of evidence contradict another?

EGAPP, Inc.

Significance

- Impact/importance/effect
- So what?
- Why does this matter?
- What is the worst/best that can happen and how will that impact the program or agency?
- Does this weakness put the agency at significant risk in relation to the other findings of this audit?
- Be careful with this one!!

Common Fallacies in Reasoning

Common Fallacies

- **Fallacy**
  - An error in reasoning
  - An argument which doesn't conform to rules of good reasoning (especially one that appears to be sound)
- **Why learn about fallacies?**

- **Client Fallacies**
- **Auditor Fallacies**

Informal Fallacies

- **Fallacious Appeals**
  - Misdirected appeals
  - Emotional appeals
- **Generalizations**
- **Other Common Fallacies**
  - Linguistic
  - False Cause
  - Begging the Question
  - Relevance

EGAPP, Inc

Fallacious Appeals

- **Misdirected appeal - otherwise legitimate appeal misapplied – used to support an unrelated claim**

  - Appeal to Authority

  - Appeal to Common Belief

  - Appeal to Common Practice

  - Appeal to Indirect Consequences

EGAPP, Inc

Fallacious Appeals

- **Emotional appeal – NEVER a legitimate strategy by itself – not based on verifiable or evaluative support**

  - Appeal to fear

  - Appeal to loyalty

  - Appeal to Pity

  - Appeal to prejudice

  - Appeal to Spite

  - Appeal to Vanity

EGAPP, Inc

Generalizations

- **Generalizations can be valid – Inductive reasoning is based on the available evidence and the supportable ability to generalize**

- **Generalizations can be invalid**
  - Hasty generalization
  - Sweeping generalization
  - Fallacies of Composition and division

EGAPP, Inc

False Cause

- **To mistake what is not the cause of a given effect for its real cause**

- **Common problem with inductive logic**

- **Often happens when you stop auditing too soon**

- **Good reason to develop and test your findings on an ongoing basis for sound reasoning**

EGAPP, Inc

Begging the Question

- **Also known as Circular Reasoning**

- **Premise and conclusion mean the same thing**

- **Often occurs when you have decided on the conclusion intuitively and are trying to explain how you inferred it**

EGAPP, Inc

Relevance Fallacies

- **Also know are Irrelevant Conclusion**
- **Premise and conclusion do not address the same issue**
- **Occurs when a particular action (e.g., a recommendation) is not an instance of the general principle of the premise.**

EGAPP, Inc

Class Exercises
Applying Techniques

EGAPP, Inc

Conclusion

EGAPP, Inc

Math Problem

Note: You must come up with a conclusion, and you must be ready to support that conclusion.

Katie went to the toy store to buy some cool super-bouncey balls so she and her friends could play dodge ball. There were so many beautiful balls to choose from! All different colors and sizes! Unfortunately, there were also all different prices…

Large red or purple balls - $8

Large blue or yellow balls – $7.50

Medium orange or green balls - $6

Medium striped or spotted balls $7.25

Small red, yellow, blue, or purple balls - $3.50

Small rainbow balls - $5

Susan had 10 dollars that she earned by helping her mom's friend's aunt pick weeds out of the flowerbed. Janet had only 6 dollars that she earned by washing her dad's Chevy truck. Katie had 28 dollars that her brother gave her so that she wouldn't tell their parents she caught him sneaking back into the house 4 hours after curfew.

What is the best way for the four girls to spend their money?

FALLACIES

Fallacies are arguments that do not conform to the rules of solid reasoning. Fallacious arguments look as if they are logical when in fact they do not provide adequate support for their conclusions.

Formal logic does not classify arguments that contain a false premise as fallacies. This is because formal logic does not examine propositions for actual truth or falsehood, since normally there is no way that logic **by itself** can reveal whether something is true. Formal logic and audit work, when performed properly together, results in quality audit results. In other words, formal logic helps ensure that sound reasoning is applied to the collection and analysis of audit evidence to meet the audit evidence standards of sufficiency, competency, and relevance.

Why learn about fallacies?

People can (inadvertently or intentionally) misuse information to allow themselves or to convince others to come to improper or unsupportable conclusions. Understanding how this happens can help us not only to avoid those pitfalls in our own reasoning but also to more quickly and accurately interpret the messages being received from others.

To detect misleading information provided by the client—
Be aware that clients can inadvertently or intentionally use fallacious arguments to defend or protect themselves or sometimes even to confuse or distract the auditor.

To detect your own or other auditors' reasoning errors –
Making decisions too quickly, "going with your gut", or sometimes just not being able to clearly and concisely express the process by which you came to a conclusion can all be warning signs of fallacious arguments. This doesn't always mean the conclusion is wrong, simply that the information gathered or the way it is presented may be insufficient to support the conclusion you are trying to persuade others to believe.

What's the bottom line?

Question thoroughly the logic or reasoning involved in the approach you take to address the audit objectives, what the client says, what the documentation says, what you observe, and the conclusions you or others draw from evidence collected.

Types of Fallacies

There are two very broad categories of fallacies—**formal** and **informal**.

Formal fallacies are fallacies based on the form or structure of an argument. There are 2 main types of formal fallacies:

- **Affirming the Consequent**

- **Denying the Antecedent**

Informal fallacies are detected by examining the argument's substance or content. There is no standard way to categorize informal fallacies. The informal fallacy categories in this document are by no means an exhaustive list. You may also notice that some fallacies seem to

fit in multiple categories. Rather than struggling to classify each type of fallacy, focus on recognizing an argument as invalid and taking corrective action.

Some commonly used categories to describe informal fallacies include:

- Misdirected Appeals
- Emotional Appeals
- Ad Hominem Fallacies
- Generalizations
- Linguistic Fallacies
- False Cause Fallacies
- Begging the Question
- Relevance Fallacies

==

FORMAL FALLACIES

AFFIRMING THE CONSEQUENT

Always valid -- If A then B
                        A, therefore B

Not always valid -- If A then B
                           B, therefore A

Affirming the Consequent – Example

Always valid
If money was stolen from petty cash, the receipts won't match the amount disbursed.
        Money was stolen from petty cash; therefore the receipts don't match the
        amount disbursed.

Not always valid
If money was stolen from petty cash, the receipts won't match the amount disbursed.
        The receipts don't match the amount disbursed; therefore money was stolen
        from petty cash.

Sanity check: Can you think of another reason the receipts might not add up? For example, someone hasn't turned in their receipts yet.

DENYING THE ANTECEDENT

Always valid -- If A then B.
                        It is not the case that B,
                           Therefore it is not the case that A.
Not always valid --If A then B.
                        It is not the case that A.
                           Therefore it is not the case that B.

Denying the Antecedent - Example

Always valid
If money is stolen from petty cash, there will be discrepancies in the petty cash receipts.
  There were no discrepancies in the petty cash receipts;
      therefore no money was stolen from petty cash.

Not always valid
If money is stolen from petty cash, there will be discrepancies in the petty cash receipts.
  There was no money stolen from petty cash;
      therefore there are no discrepancies in petty cash receipts.

Sanity Check: Are there other reasons BESIDES theft that would account for discrepancies in petty cash receipts?

==================================

INFORMAL FALLACIES

MISDIRECTED APPEALS
Misdirected appeal are otherwise legitimate appeals that are misapplied, i.e., used to support an unrelated claim. Misdirected appeals include:

Appeal to Authority
A misdirected Appeal to Authority usually cites some person or thing (a book, for example) as a source to be trusted on a subject, when in fact that person or thing is not authoritative on that specific subject.

  Audit example –   Auditee Sue says, "Joe over at Office Depot really knows everything about computers, software, and accessories. He told us that all the agencies are buying this brand of laptop at this price and no one else has had any trouble with getting approval for the purchase." The implication is that because Joe says it's ok, it MUST be an allowable purchase.

  Sanity check: Joe may know a lot about computers, software, and accessories, but he is NOT a government employee, nor familiar with the auditee's grant provisions. He is not in a position to answer whether or not a particular purchase is (or should be) acceptable/allowable for our auditee.

Appeal to Common Belief
Using popular opinions to support a claim that must be verified in another manner is a fallacious Appeal to Common Belief.

  Audit Example: Auditee Sue said "Federal money (grant funds) is "free" money."

  Sanity Check: The opinion might be that it's "free money", but in fact those of us in government know that it is far from free. Grants have to carefully monitored to ensure that the results achieved justify the funds spent.

Appeal to Common Practice
A fallacious Appeal to Common Practice involves justifying an action because "everyone is doing it." In a sound argument, the action must be justified on its own merits, and what others do or think is of little or no consequence. Just because "everyone is doing it" (a claim that is often unsupported, exaggerated, or vague in the first place), doesn't make it right to do.

Audit Example: Everybody rushes to spend any "leftover" money at the end of the grant period. After all, if you don't spend it you probably won't get as much money next year. Besides, the grantors expect you to do it since everybody else does.

Sanity check: While it's true that not using the funds can have a bearing on the amount of award the agency/program might receive next year, spending it all at the end of the period on things that may or may not directly benefit the ultimate program service recipients during the current grant period can backfire. It's a very common belief, but more and more grant agreements are building in special punitive clauses for exactly this behavior.

Appeal to Tradition
This is similar to the fallacious Appeal to Common Practice. Instead of using the justification, "Everyone is doing it," in Appeal to Tradition, the rationalization is, "We've always done it that way."

Audit Example: We've always purchased all of our office supplies with grant funds (and used those supplies for the grant program and other programs) and no grantor has ever complained.

Sanity check: If no one complained it's probably because no one knew. Grant agreements clearly indicate that all purchases are for items to be used exclusively for the grant-funded program.

Appeal to Indirect Consequences
In the fallacy of an Appeal to Indirect Consequences, also known as a slippery slope, remotely possible (usually very negative) effects are presented as the automatic consequences of a course of action or belief. The idea is that the overwhelming negativity of those possible effects will persuade the reader to reject that course of action or belief.

Audit Example: Because controls are weak over expenditures, the program could spend money on things that aren't allowable under the grant. If the program spends money on things that aren't allowable under the grant, they won't be reimbursed or maybe will have to pay back funds. If they have to pay back funds, that money will deplete other budget line items. If they deplete the budget, the program will not have adequate funding and will fail. If the program fails, the people who should have been served will suffer, and the agency's reputation will be destroyed. The legislature will shut down the agency and we will all be out of a job.

Sanity Check: If the control errors were only detected in a strata (say expenditures < $100) for which the total dollars are immaterial to the total grant funds, the above example would be a slippery slope fallacy. A better conclusion may be:
Because controls are weak over expenditures, the program could spend money on things that aren't allowable under the grant. If the program spends money on things that aren't allowable under the grant, they won't be reimbursed or maybe will have to pay back funds. End of statement.

However, if the control errors were detected in a strata for which the total dollars are material to the total grant funds and to the total agency funds, portions of the above paragraph may be warranted. The key is to use reasoned auditor judgment, which varies depending on your specific evidence and environment!

Appeal to Wishful Thinking

Wishful Thinking is, in some ways, the opposite of an Appeal to Indirect Consequences. In Wishful Thinking, an extremely positive, but improbable and remote outcome is suggested in the hopes that it will distract from the merits of the issue at hand.

> Audit Example: Program Manager said: "We realize that we had a few minor unallowable expenditures in March. But we discovered it and remedied the situation, which you would see if you looked at April transactions. So there is no reason to report those errors to the grantor and risk losing our grant renewal. Now that it is fixed, we are in compliance and can use the grant money to help the children. This in turn will help ensure they go on to higher education and get out of the rut of depending on the 2 main employers in town. And that is well worth overlooking a few minor errors."

> Sanity Check: Obviously, the client wants to hope that you will not report the errors, but they are going overboard. If the errors are minor there is very little risk that their grant will not be renewed. They may just want to save face internally or externally by saying they got a clean audit.

======================================

EMOTIONAL APPEALS

By itself, an Emotional Appeal is never a legitimate strategy in an argument, because it is based on emotions rather than verifiable or evaluative support. Examples of Emotional Appeals include:

Appeal to Fear

> Audit Example: If the agency does not properly control access to the database, someone could get copies of YOUR personal e-mails and share them with the newspapers.

Appeal to Loyalty/Peer Pressure

> Audit Example: If you don't tell the auditors what they want to hear, we'll all look bad and management won't approve any raises this year.

Appeal to Pity or Sob Story

> Audit Example: If you tell them we didn't follow controls, I'll get in trouble and lose my job.

Appeal to Prejudice/Stereotypes

> Audit Example: Please, boss - you know how those auditors are – they won't quit until they find something bad. If they can't find anything real they'll make a mountain out of a molehill.

======================================

AD HOMINEM FALLACIES

Ad Hominem fallacies occur when the person to whom an argument is directed concludes that the argument is defective by finding fault with the arguer. In other words, this is attacking the person, not the argument. It can be viewed as a way of misusing misdirected appeals as a defensive maneuver. Argumentative or hostile clients have

been known to use this approach to undermine an auditor's confidence in his or her work and conclusions.

> **Audit example: Auditee Sue says "Your findings are ridiculous; it's obvious you've never administered grants before."**

> **Sanity Check: You don't have to have administered grants to know how to audit them.**

> **Audit example: Auditee Sue says "Your findings are ridiculous; it's obvious this is your first grant audit."**

> **Sanity Check: Even if it is your first grant audit, your work would have been reviewed by more senior people.**

> **Audit example: Auditee Sue says "Your findings are petty and insignificant, but we know you have to stretch to have findings so you can justify your jobs."**

> **Sanity Check; All auditors hear this at least once in their career.**

GENERALIZATIONS

Generalization fallacies usually involve inductive reasoning based on insufficient evidence or unrepresentative samples. The most common fallacies of this type are Hasty Generalizations (known also as Jumping to a Conclusion), Sweeping Generalizations, and Fallacies of Composition and Division. It is important to remember that inductive reasoning is based on the ability to generalize, so well supported generalizations are valid.

Hasty Generalizations

A Hasty Generalization occurs when there is an insufficient number of instances on which to base the generalization.

> Audit Example: Because there were errors detected in the judgmental sample of 3 items out of a population of 10,000, controls over disbursements are considered weak; no further testing is needed.

> Sanity Check: Okay, so this is a ridiculous example, but the point is that you need to be sure that your have a representative and sufficient (statistical!) sample to draw conclusions.

Sweeping Generalizations

Sweeping Generalizations occur when there appears to be sufficient evidence to draw a conclusion, but the conclusion drawn overstates what the evidence can support. Sweeping Generalizations tend to overlap with the Appeal to Indirect Consequences (Slippery Slope) fallacy.

> Audit Example: Because there were 10 errors detected in the statistical sample of 77 items, controls over disbursements are considered weak. The controls are poorly designed and implemented. Furthermore, management oversight and employee training is inadequate, and it is possible that the grant program may be in imminent danger of failure.

> Sanity Check: While the cause of the errors certainly needs to be addressed, and the auditor wants the client to take action, it is an overstatement to say that the grant program is in imminent danger because of this one problem. Remember that in "real life" these fallacies will rarely be this blatant; they will require thoughtful consideration to identify.

<u>Fallacies of Composition and Division</u>
Fallacies of Composition and Division involve confusing attributes of the parts with attributes of the whole.

> Audit Example: All employees are CPAs with proven track records on keeping good financial records, so the agency's financial books must be in good shape.

> Sanity Check: While each employee may know how to keep good financial records, as a team they may have not assigned roles, responsibilities, and accountability to ensure that outcome.

LINGUISTIC FALLACIES
Linguistic fallacies involve ambiguous words or phrases used in more than one sense within an argument. It also occurs when the premise and/or conclusion can be interpreted multiple ways. This fallacy can cause problems with evidence collection in interviews and documentation review, as well as in documenting audit evidence and conclusions.

> Audit Example: Although the client said they reviewed reimbursement requests we found multiple errors.

> Sanity Check: The client definition of review differed from the auditor's definition.

> Example: The foundation awarded $1,000,000 to the Rehabilitation Commission and the Education Department.

> Sanity Check: Does each agency get $1,000,000 or $500,000?

=====================================
FALSE CAUSE
The False Cause fallacy involves mistaking what is not the cause of a given effect for its real cause. This is a common problem with inductive logic. It often happens when you stop auditing too soon, or when you assume the cause is the same as you've seen before.

> Audit Example: 9 of the 10 disbursements sampled were not allowable expenses. Disbursements were not reviewed; there was no written indication of review by a supervisor.

> Sanity Check: The real causes included: no procedures for preparing disbursements; no training on allowable expenses; supervisor has no grants background or training and does not mark disbursement requests as reviewed.
> Attribute sampling looked for: evidence that disbursements were reviewed and were the disbursements on the list of allowable expenses. The auditor didn't bother to look at the procedures, etc.; thought it was quicker to do the sampling; after all we are just trying to identify the questionable expenditures.

===
BEGGING THE QUESTION
Begging the Question fallacy occurs when the premise and the conclusion mean the same thing. It is also know as circular reasoning. Begging the Question often occurs when you have decided on the conclusion intuitively and are trying to explain how you inferred it.

Audit Example: Auditee Sue said: "The supervisor who is also the grant administrator prepared the procedures we follow for ensuring disbursements are allowable for the grant.   He is very strict about ensuring that all disbursement requests are reviewed for compliance with our procedures.   The supervisor has us correct any expenditure requests that don't comply with the procedures."

Sanity Check: There is an implied conclusion in the above example—that the steps outlined ensure disbursements are allowable. However, have the procedures been compared with the grant provisions to ensure that the procedures are correct?

RELEVANCE FALLACIES

Relevance fallacies, where the conclusion fails to follow logically from its premises, are the "catch all" fallacy category. Any fallacy that does not fit into another category is classified as a relevance or non-sequitur fallacy. Non-sequitur translates into "It does not follow." This type of fallacy is also known as irrelevant conclusion.   In some relevance fallacies the premise and conclusion do not address the same issue. In others, a particular action (e.g., a recommendation) is not an instance of the general principle of the premise.

Audit Example: The grant administrator who prepared the original grant request reviews all disbursement requests, so controls are strong; no further testing is needed in this area.

Sanity Check: Just because the grant administrator prepared the proposal doesn't mean he is up to speed on the grant agreement itself.

Critical Thinking Glossary

This glossary contains the meanings of words as they pertain to the discipline of critical thinking.

Accuracy – Verifiable; free from errors, mistakes, or distortions; conforms to fact or truth. You must have a rational basis for determining accuracy. Accuracy is one criterion for critical thinking.

Ambiguous - Having two or more possible meanings. Ambiguity is usually involved in linguistic fallacies.

Analyze - To break up a whole into its parts, to examine in detail so as to determine the nature of, to look more deeply into an issue or situation.

Argument - A group of propositions of which one is claimed to follow from the others.

Assumption - A statement accepted or supposed as true without proof or demonstration; an unstated premise or belief. All human thought and experience is based on assumptions. Our thought must begin with something we take to be true in a particular context. We are typically unaware of what we assume and therefore rarely question our assumptions. Much of what is wrong with human thought can be found in the uncritical or unexamined assumptions that underlie it.

Auditor judgment - Drawing audit conclusions and making audit decisions based on a combination of sound logic and firm knowledge of auditing standards and business practices

Bias - A mental leaning or inclination. Because of a person's background or point of view, he/she notices some things rather than others, emphasizes some points rather than others, and thinks in one direction rather than others. Thinking within a point of view is unavoidable, but critical thinkers take steps to compensate for this trait.

Breadth - Considering other points of view, perspectives, or elements of information (quantitative and qualitative). Breadth is a criterion for critical thinking.

Clarity - Free from confusion or ambiguity; may need additional elaboration, illustration, or example. You cannot determine the accuracy or relevance of an unclear statement. Clarity is a criterion for critical thinking.

Clear/Critical thinking criteria – Universal intellectual standards for assessing quality of reasoning. The criteria include clarity, accuracy, precision, relevance, depth, breadth, logic, and significance.

Concept - An idea or thought, especially a generalized idea of a thing or of a class of things.

Conclusion - The proposition affirmed on the basis of the other propositions of the argument; the last step in a reasoning process; a judgment, decision, or belief formed after investigation or reasoning

Conscious competence - Being conscious of each step in a process as you are performing that process so that you do not inadvertently omit key steps; thinking about and explicitly proceeding step by step to perform a process.

Criterion / Criteria - A standard, rule, or test by which something can be judged or measured.

Critical thinking - The art of analyzing and evaluating thinking with a view to improving it; using your command of the elements of thinking to dynamically adjust your thinking to the demands of each unique situation; the art of thinking about your thinking while you are thinking in order to make your thinking better: more clear, more accurate, or more defensible.

Data - Facts, figures, or information from which conclusions can be inferred. It is important to distinguish hard data from conclusions when induction is involved.

Deduction – Drawing specific conclusions from general premises; conclusive support for the validity of the conclusion. If the premises are true the conclusion is true.

Depth - Considering the complexity of an issue or the context in which it occurs. Depth is a criterion for critical thinking.

Evidence - The data on which a judgment or conclusion might be based or by which proof or probability might be established.

Explicit - Clearly stated and leaving nothing implied.

Fact - What actually happened, what is true; verifiable by empirical means; distinguished from interpretation, inference, judgment, or conclusion; the raw data.

Fallacy - A condition in which the premises of an argument do not imply its conclusion; an argument which doesn't conform to rules of good reasoning (especially one that appears to be sound).

Formal fallacy – a fallacy based on the form or structure of the argument.

Formal logic - Correct reasoning or the study of correct reasoning and its foundations.

Induction – Drawing general conclusions from specific premises. If the premises are true, the conclusion has some probability, but not absolute certainty, of validity.

Inference - Process in which one proposition is arrived at and affirmed on the basis of one or more propositions accepted as the starting point of the process; a step of the mind, an intellectual act by which one concludes that something is so in light of something else's being so, or seeming to be so. Inferences can be strong or weak, justified or unjustified. Inferences are based upon assumptions.

Informal fallacy – A fallacy that can be detected by examining the argument's substance or content, as opposed to the form of the argument.

Intuition - The direct knowing or learning of something without the conscious use of reasoning. We sometimes seem to know or learn things without recognizing how we came to that knowledge. Critical thinkers use thoughts of intuition as a question to be answered with evidence and reasoning.

Judgment - Understanding and good sense. In professional practice, correctly exercised, judgment is a reflective, self-corrective, purposeful thinking process which requires the professional to take into account content knowledge, context, evidence, methods, conceptualizations, and a variety of criteria and standards of adequacy.

Logic - Correct reasoning; premise and conclusion are mutually supporting and make sense together. Logic is a criterion for critical thinking.

Logic diagram – A visual representation of one or more formal logic arguments, illustrating relationships between propositions and conclusions. Logic diagrams are used to analyze arguments and as a communication tool.

Mind mapping – A lateral thinking, visual image oriented technique that uses key words, symbols, and colors to organize thoughts, to help identify and understand the relationships between information, and to enhance group communication in brainstorming or problem solving.

Opinion - A belief; typically one open to dispute. Sheer unreasoned opinion should be distinguished from reasoned judgment — beliefs formed on the basis of careful reasoning.

Precision: Pinpointing the extent, frequency, or amount; "beyond" clear and accurate; the quality of being accurate, definite, and exact. Reasoned judgment as well as auditor judgment often relies on the degree of an occurrence. Precision is one criterion for critical thinking.

Premise: Propositions that provide support or reason for accepting the conclusion; a proposition upon which an argument is based or from which a conclusion is drawn

Proof - Evidence or reasoning so strong or certain as to demonstrate the truth or acceptability of a conclusion beyond a reasonable doubt.

Proposition - Statements that are either true or false

Reasoned judgment - Judgment based on relevant, sound reasoning that goes beyond, and is never to be equated with, fact alone or mere opinion alone; reasoned judgment follows the standards of formal logic and critical thinking. Few people have a clear sense of which of their beliefs are based on reasoned judgment and which on mere opinion.

Relevance - Close relation to the issue at hand and the conclusion drawn. Relevance implies close logical relationship with, and importance to, the matter under consideration. Relevance is a criterion for critical thinking.

Significance - Impact, importance, or effect relative to all possible issues at hand. Significance is a criterion for critical thinking.

Unconscious competence - common sense; performing processes on "auto-pilot".