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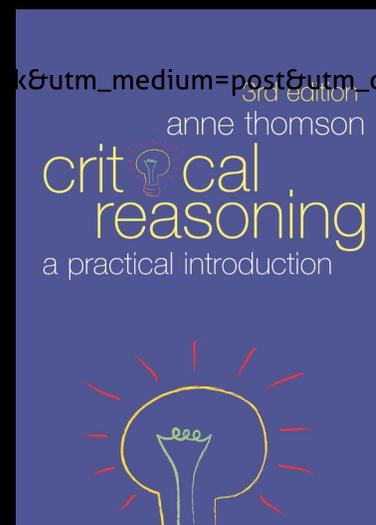
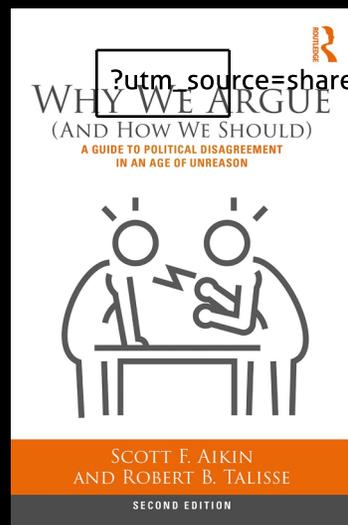
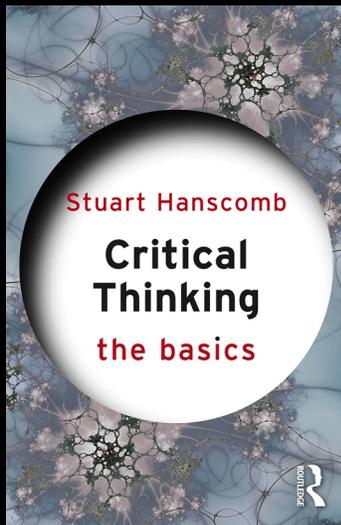
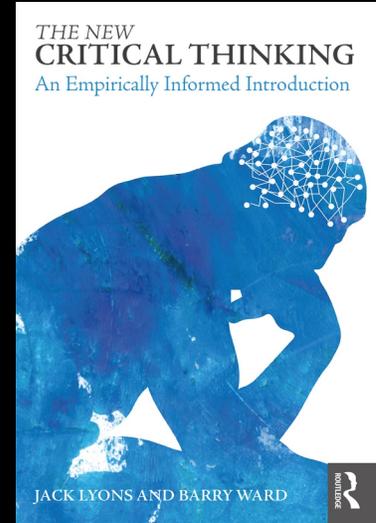
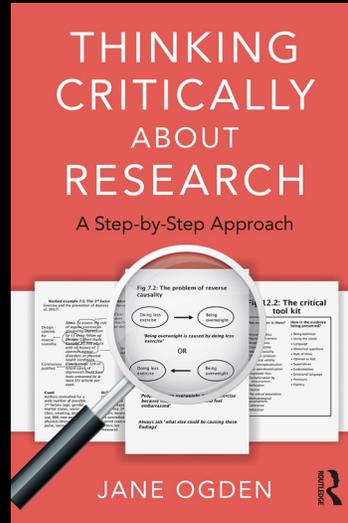
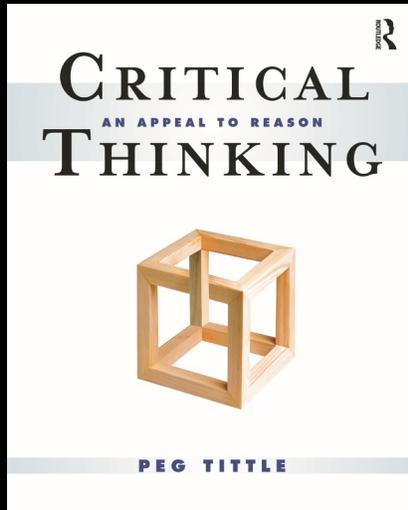
Critical Thinking for Humanities Students



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Introduction

Thank you for downloading our selection of chapters focusing on critical thinking for humanities students.

The first chapter, taken from *Critical Thinking: An Appeal to Reason* asks what is critical thinking and why is it important? Next, you will be introduced to the key skills, or 'toolkit' of critical thinking and shown how to apply critical thinking skills in everyday life.

Chapter three, *Validity: Why it Matters*, taken from *The New Critical Thinking*, looks at how to properly evaluate the evidence for and against an argument. It is followed by *Critical Thinking and Dispositions* which discusses the importance of becoming a skilled critical thinker.

Next, *The Surprising Truth About Hypocrisy*, taken from *Why We Argue (And How We Should)*, looks at questions and arguments around the tricky subject of hypocrisy. Finally, chapter six, *Exercising the Skills of Reasoning*, teaches the reader how to apply critical thinking skills to written texts through analysis and evaluation.

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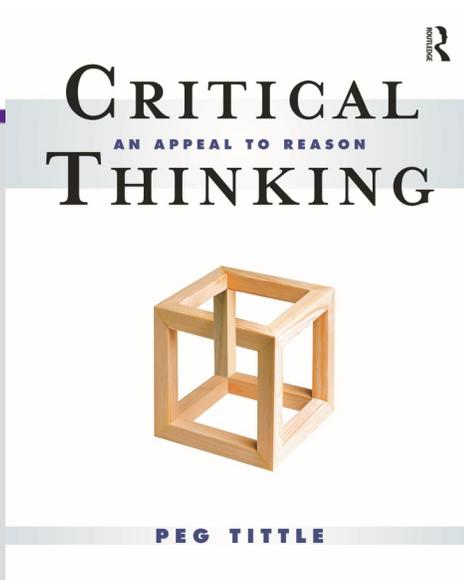
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CHAPTER

1

CRITICAL THINKING



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Critical Thinking: An Appeal to Reason
by Peg Tittle

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CRITICAL THINKING

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Okay, the *point* is clear: buy Zoné jeans. But no *reason* is given. So as it stands, it's just a command. It's not an *argument*—a claim about something, supported by reasons (see Chapter 2). So, unless you tend to obey commands for no good reason, you won't buy Zoné jeans.

But let's "read" the visuals. There are some very cool people in the ad. So perhaps the ad is implying, "You should buy Zoné jeans *because* they'll make you look cool." Okay, so now we have an argument. It's a very simple argument, but it's an argument nonetheless: it's a claim ("You should buy Zoné jeans") with supporting reasoning ("because they'll make you look cool").

Let's take a closer look. Is the premise (the supporting reason) *true*? Will Zoné jeans make you look cool? Well, that depends on what, exactly, is meant by "cool." Let's accept the contemporary definition—whatever it may be. And let's assume that the ad portrays the contemporary definition, which means that we're assuming that Zoné jeans will indeed make you look cool. So the premise is indeed true.

Next, is the premise *relevant* to the conclusion? Yes: looking cool is by definition a matter of appearance, and jeans, as clothing, contribute to one's appearance. As such, buying—and wearing—the jeans is relevant to looking cool.

Suppose, however, there had been a photograph of the sun instead of a



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photograph of a bunch of cool people. Then the implied premise—whatever it might be—would be irrelevant. In that case, you wouldn't have a very good argument. No wait a minute. A picture of the sun *could* be relevant: what if Zoné jeans were stonewashed, but, unlike their competitors, Zoné used a process that did *not* damage the environment? And the sun was intended to suggest Zoné's environmental friendliness? Admittedly, it's a bit of a stretch—which only goes to show the problems with arguments that aren't made clear.

Let's go on. Is the premise *sufficient*? That is, does it provide enough support for the conclusion? Well, is looking cool enough reason for buying Zoné jeans? Perhaps. If all you care about is looking cool, then yes, the reason is sufficient. So accept the argument and go buy yourself some Zoné jeans. However, if you also care about price, comfort, durability, and so on, then the reason given is insufficient for you to accept the conclusion.

Let's say that Zoné jeans are the right price. In that case, you have additional support for the conclusion—you've strengthened the argument. But let's say they're incredibly uncomfortable. In that case, you have something that weakens the argument.

Now let's consider counterarguments. Are there good reasons in support of the contradictory claim, "Do *not* buy Zoné jeans"? Perhaps the jeans are made by people who are paid less than a living wage. So if you buy them, your money is supporting, perhaps even encouraging, exploitation. Such an argument would consist of a premise that's true and relevant. Let's also assume that you care about economic justice. You may now have an argument that provides sufficient reason for not buying Zoné jeans. Especially if there are other jeans that make you look cool and that are not made with exploited labor.

Which argument is stronger, the one claiming you *should* buy Zoné jeans or the one claiming you should not buy Zoné jeans? That would depend on what's more important—looking cool or not contributing to economic injustice.

Welcome to Critical Thinking 101.

1.1 What is critical thinking?

Briefly put, **critical thinking** is *judicious reasoning about what to believe and, therefore, what to do*. (Note my assumption that what you do depends on what you believe—that is, that you act according to your beliefs.)

Judicious reasoning is *deliberate* and *thorough*. Being deliberate implies an



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intentional consideration of, a responsible attitude toward, ideas, values, and so forth. Being thorough requires, among other things, an appreciation of the breadth and depth of the issue in question, of the complexities of the issue.

As such, critical thinking is a *skill*. It's not something you can just memorize or look up. And it's a multi-dimensional skill—take a look at the list of skills involved, according to critical thinking guru Richard Paul. And, as a skill, it's something you get better at, gradually, with practice.

The elements of critical thought

Cognitive strategies—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.

Cognitive strategies—macro-skills:

- 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
- 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



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- reasoning dialogically: comparing perspectives, interpretations, or theories
- reasoning dialectically: evaluating perspectives, interpretations, or theories.

(Richard W. Paul, *Developing Minds*, revised edition, vol. 1, 1991, p. 78. © Richard W. Paul)

'Critical thinking is the reasoned evaluation of opinions - our own and others.' - Jerome E.

Bickenbach and
Jacqueline M. Davies,
*Good Reasons for Better
Arguments*, 1996

While it is possible to think critically about something just for the fun of it (and I mean that quite sincerely), critical thinking is *judgmental*. It's thinking carefully about something in order to evaluate it and ultimately decide whether or not it's something you should accept. So critical thinking is a how-not-to-be gullible kind of thing.

Now of course before you judge what someone has said, you have to understand what they've said. And that's a lot harder than you might think. Often, people aren't very clear or complete about the point they're making. They use words imprecisely or even incorrectly (see Chapter 5), and they leave out important stuff, most particularly how they got from here to there, or even where here is (see Chapters 2 and 3).

And of course often people aren't really making a point, they're just talking. And that's okay. As long as they don't think they're making a point, as opposed to expressing themselves or describing something. Consider, for example, a student who declares, "I need an extension on this assignment!" Until the student explains why an extension is needed, the statement is just an expression of need, or, more likely, of desire.

So how does one judge or evaluate an argument? Well, that depends on what kind of argument it is. We'll get into that. For now, let's just say there are deductive arguments and inductive arguments. For deductive arguments, if the supporting statements or premises are true, and if the structure is valid, following the rules of reasoning, then you've got a good argument. In fact, you've got a sound argument: the conclusion necessarily follows from true premises. For inductive arguments, if the supporting statements are true or at least acceptable, if they're relevant, and if they're sufficient or adequate, you've got a good argument. The conclusion probably follows from the premises; the higher the probability, the stronger the argument. So you'll accept or reject inductive arguments with more or less certainty. Keep in mind, however, that in many cases, certainty is a sign of shallow thinking! So sometimes you won't accept *or* reject the argument—you'll suspend judgment until you've got more evidence.



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Critical thinking is “playing devil’s advocate” as a matter of routine. The phrase “playing devil’s advocate” is a very unfortunate one: it suggests that presenting or considering arguments for a claim you don’t at the moment accept is somehow mischievous, even evil. On the contrary, presenting or considering arguments for a claim you don’t currently accept is a good thing. It’s something to be done quite seriously, not as a mere game. After all, how will you know what to accept if you don’t consider all the possibilities?

And if you’re presenting your views to others, articulating the counterarguments is only fair. Also, if you’re really after the best belief or explanation, and not just a debating victory, you’ll present the counterarguments in case someone else sees something you don’t that makes a counterargument stronger than you thought.

Warning: It is possible to become frustrated with this kind of thinking because very little is black-and-white. Many arguments are not simply either right or wrong, but nor are they all one shade of grey. And it is definitely possible to distinguish between the many shades of grey. It is possible to determine which argument is stronger. You might also find that there are far more questions than answers. Try not to be overwhelmed by the questions: you don’t have to answer them all; merely asking them is something to be proud of.

'The free man is he who does not fear to go to the end of his thought.'

Leon Blum, *Thoughts: Webster's Quotations, Facts and Phrases*, 2008

1.2 What is critical thinking not?

First, critical thinking is not necessarily negative. As Peter H. Hennessy says, “A tendency to knock down new ideas reflexively is merely reactionary thinking, usually superficial and usually proof of a lazy or immature mind” (in “Critical Thinking in Schools,” *Humanist in Canada*, Autumn 2004). Evaluation can be positive as well as negative. When you think “critical,” don’t think “criticize”; instead, think “criteria”—as in standards of reasoning. All three words, by the way, come from “criticus” and “kritikos,” the Latin and Greek words for “able to make judgments.”

Critical thinking is also not passive, not a matter of simply sitting and passing judgment (a process that’s far from passive, by the way, since your neurons are a-buzzing). Why identify errors if not to correct them? Why identify weaknesses if not to strengthen them? Certainly, there may be fatal flaws, in which case you’re best to reject the argument. But more often, there will be areas that “simply need a little work” before you can decide whether or not to accept the argument and its conclusion. Furthermore, you will not always be the passive recipient of an



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argument, defending yourself from others, defending yourself against manipulation by shoddy argument. You will also be active agents of argument, defending yourself to others, defending your own claims and arguments.

Thus, critical thinking is not solely destructive. Perhaps it often becomes destructive, and only destructive, because that's the easy part—it's easy to tear something down, to break it, to destroy it (be it something physical like a chair or something abstract like an argument). It's far more difficult to build something, to create it (be it a chair or an argument). And if you're truly after the best claim, you won't want to limit yourself to what simply happens to cross your path— you may often need to *construct* the argument you haven't yet come across, and it may well turn out to be the *best* one.

Nor is critical thinking necessarily adversarial. An antagonistic approach is for those who just want to win. For those who want more than that, for those who truly want to know what to believe and what to do, it's far more productive to take a co-operative approach: listen to every claim, every argument, and explore every claim and every argument, drawing on as many resources as you can—in order to arrive at the best claim, the best argument. Critical discussion seldom involves solely contradictory arguments, so “I'm right and you're wrong” will seldom apply. More often, “What I've said strengthens or weakens what you've said” describes the discussion.

Critical thinking is not necessarily cold, calculating, and unfeeling. Being rational does not preclude being passionate. On the contrary, I hope you get excited, I hope you care very deeply about your beliefs, your opinions, your ideas—especially when you have good grounds for them. And I hope you are, and remain, concerned, sympathetic, delighted, angry, and so on. But I hope your passion will be supported by, not a replacement for, reason.

In fact, good critical thinking takes emotion into account. But it does so as part of the reasoning toward, not as a direct motive for, a particular belief or action. Consider the following two arguments:

1. This child is afraid of the dark.
Children who are afraid should be comforted.
Therefore, this child should be comforted.
2. I'm afraid they'll hurt me if I don't co-operate.
I should trust my fears; I believe they're well-founded.
Therefore I should believe they'll hurt me if I don't co-operate.

'Men are apt to mistake to strength of their feeling for the strength of their argument. The heated mind resents the chill touch and relentless scrutiny of logic.'

William Gladstone, *The Writings of William Ewart Gladstone*, 1880



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I don't want to be hurt by them.
Therefore I should co-operate with them.

In both cases, you decide to do something *because* of fear, but—and this is the important bit—the fear is *thought about* and made part of a clear line of reasoning; it's not simply the unexamined, subconscious instigator of your belief or action. When you carefully consider emotion this way, you can then evaluate it, along with every other premise in your argument. And that leaves yourself open to more options than you'd have if you were just a slave to your emotions.

For example, considering the first argument, you could reject the second premise: maybe children who are afraid should *not* be comforted (or at least not always, or at least not in this case).

Or, considering the second argument, you could also reject the second premise: maybe you should *not* trust your fears—maybe you have good reason (note that—"good *reason*") to think they're not well-founded (maybe you know that these particular people have made similar threats before and have never done what they have threatened to do—so your fear in this case is mistaken, based on an improbability).

Critical thinking is not intuitive. After all, what is intuition but a feeling, a hunch, some barely conscious disposition, quite likely the result of some early childhood conditioning (which, when moral issues are involved, we call "conscience")? We're hard-pressed to articulate why we feel the way we do when we attribute a feeling to "intuition"—and if we can't articulate the why, the reason, we certainly can't evaluate it. As Julian Baggini points out, intuition may be good for "sensing what other people are thinking, feeling, or about to do" (*Making Sense*, 2004), probably because we're unconsciously picking up on their body language, but it's not very good for deciding what to believe about the world at large. After all, intuition tells us that a heavy object always falls faster than a light one, but that's not, in fact, the case. (Try it. With inanimate objects.)

Lastly, critical thinking is not just using our "common sense." After all, "common sense" tells us the earth is flat. But even when "common sense" is correct—it may tell us, for example, that a thing can't be green and not-green at the same time—critical thinking goes well beyond just using such basic principles.

1.3 Why is critical thinking important?

Chances are, you think the earth is round. And chances are, you hold that opinion



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simply because other people hold that opinion; perhaps your parents told you the earth is round; perhaps your teachers told you the same thing; certainly, you're aware that the general consensus in our society is that the earth is round. Now answer these questions:

- Are there gods?
- Is abortion wrong?
- Does capitalism meet our needs and wants?
- Are men stronger than women?

Chances are, your answers to at least some of these questions are similarly based on “inherited” opinions. Chances are, if you're like most people, you can't provide any evidence or line of reasoning to support your answers. But shouldn't you be able to?

So for starters, critical thinking is important because people who engage in critical thinking tend to be able to provide evidence and reasoning for the opinions they hold. This may be particularly important for our judgmental opinions, our praise and condemnation. As Browne and Keeley put it, “Critical thinkers find it satisfying to know when to say ‘no’ to an idea or opinion and to know why that response is appropriate” (M. Neil Browne and Stuart M. Keeley, *Asking the Right Questions: A Guide to Critical Thinking*, 1997). Furthermore, critical thinking also enables people to provide reasons for their actions: most people would rather do things, especially important things, for a reason—and even better, for a good reason.

But not only reasons, and not only good reasons, but also your own reasons—that's what critical thinking leads to. So critical thinkers have more autonomy, independence, or freedom than people who just sort of go with the flow and accept whatever's given to them. As Richard Paul notes, “[M]ost people are not in charge of their ideas and thinking. Most of their ideas have come in to their minds without their having thought about it. They unconsciously pick up what the people around them think. They unconsciously pick up what is on television or in the movies. They unconsciously absorb ideas from the family they were raised in” (<http://www.criticalthinking.org/resources/class-syllabus-fall-93.cfm>). So *take charge of your own mind!* You'll be a better person for it. And you'll lead a better life: if you're in control—of your ideas and your actions—you'll be more apt to do what you want to do, live the life you want to live. If you think about stuff, if you take responsibility for what's in your own head, you'll live a conscious life, an examined life, a chosen life. Many a mid-life crisis is triggered by the realization



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that one has lived twenty years of unexamined life, of just doing what was expected by parents, partners, supervisors, and kids. Don't wait until you're forty. Be precocious. Have your crisis now.

People who believe whatever they're told without examining the evidence and the reasons linking the evidence to the claims-in-question—that is, without examining the reasoning—are vulnerable to charlatans, crackpots, and bosses. They're especially vulnerable to calculating corporations who believe their mandate, their only mandate, is to maximize their income. Critical thinking is thus especially important as media conglomerates monopolize what we read, hear, and see. According to Free Press's website, updated in 2008, Disney owns ABC, Touchstone, and Miramax; Viacom owns MTV, CMT, and Paramount Pictures; CBS owns Simon & Schuster; Time-Warner owns AOL, HBO, Warner Bros., and Little, Brown and Company; GE owns NBC and Universal Pictures; and so on. Now since, for example, GE makes a lot of money selling weapons (at least back in 1986, when 11 percent of their revenues came from nuclear weapons; see <http://multinationalmonitor.org/mm2001/01july-august/julyaug01interviewmulvey.html>), war is good for their business, so it's quite possible that NBC (remember they're owned by GE) intentionally shows movies that glorify war, portraying soldiers as heroes. And if you're not a critical thinker, you probably won't even notice that, let alone challenge it.

Not only do media conglomerates control what is said, they control what is not said: "the few men at the top of the giant media corporations control what the people are invited to think about—and more important, what they are not invited to think about" (Ronnie Dugger, *Free Inquiry*, 22.1, 2001). Roy Thomson, king of a newspaper empire, once quipped, "I buy newspapers to make money to buy newspapers to make more money. As far as editorial content, that's the stuff you separate the ads with" (quoted in Wallace Clement, *The Canadian Corporate Elite*, 1975). And those paying for the ads won't want anything negative about their products to be in that "stuff." In fact, their contracts with newspapers and magazines often stipulate that, which means you won't even know what you don't know. They thus control what you think, if only because they control what you think about. And since it's often in their interests that you don't think, they're probably also trying to control *whether* you think. (Read Neil Postman's work.)

And not only do they control what is said and what is not said, they control *how* it's said—call it spin, distortion, misinformation, or lies, but call it another reason to become a critical thinker! Critical thinking enables you to see the spin,



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'Where all think alike, no one thinks very much.'

Walter Lippmann, *The Stakes of Diplomacy*, 1915

'Two cheers for democracy; one because it admits variety and two because it permits criticism.'

E.M.Forster, *Two Cheers for Democracy*, 1951

recognize the distortion, and so on. Consider it self-defense against manipulation.

Critical thinking is also defense against one of the worst consequences of conglomerates: the loss of diversity. As corporations increase in size, merging and establishing interlocking directorates, diversity declines: diversity of product, diversity of service, and especially when corporations influence the media, diversity of opinion. And loss of diversity is the kiss of death not only for ecosystems, but also for cultures. It results in stagnation, the loss of the capacity to adapt, perhaps improve; without that capacity, organisms, systems, die.

A side-effect of all of this is that you will become a better citizen: not only will you see the problems in your society, but you will also, hopefully, see the solutions. Indeed, in this respect, one might consider it one's *duty* to be a critical thinker.

You'll also become a more interesting person to talk to. Of course, some people may also find you a more frustrating person to talk to, but hey, that's their problem. What's the point of discussing something if no one changes their mind? Just to hear each other talk? Hopefully, the purpose of at least *some* discussion, whether it happens conversationally or in print, is to come to some sort of agreement on, broadly speaking, how to make life better. Unfortunately, most discussion resembles ships passing in the night or moose butting their antlered heads. Surely we're better than inanimate objects and instinct-driven animals; surely we should be able to say "Here's where I stand, here's where you stand, here we disagree, because of this, and here we agree, because of this, and here we can move forward, separately our own ways, and here we can move forward together, and we have these possibilities about how to do that."

Being able to discuss in that way indicates that critical thinking is simply superior to other forms of behavior/response. It enables us to handle conflict—to decide between opinions and options—without evasion (the ships) or aggression (the moose). Just as someone skilled in forestry can distinguish between a spruce and a fir, between a sick tree and a healthy tree, someone skilled in critical thinking can distinguish between justified discrimination and unjustified discrimination, between credible evidence and incredible evidence. So we don't need to walk away from the problem. We can resolve the indecision or disagreement—and justify our resolution to anyone who asks.

Critical thinking is based on rational thought, and rational thought is superior to emotion, intuition, or faith as a basis for belief and action. Emotion can't always be trusted: I may really hate to do something, but I know, rationally,



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'When there is evidence, no one speaks of faith. We do not speak of faith that two and two are four or that the earth is round. We only speak of faith when we wish to substitute emotion for evidence.'

Bertrand Russell, *Human Society in Ethics and Politics*, 1954

that it's the right thing to do; thus, the emotion, the hate, is an unreliable guide to, at least, morally right behavior. Intuition, as pointed out in the previous section, is likewise unreliable. And it is especially unconvincing to those without the same intuition—why should your hunch be more worthy than anyone else's hunch? As for faith, it stands, by definition, *without* rational justification, without evidence or proof. As such, faith is very limited in its appeal: *you* might accept something on faith “just because,” but you'd be hard-pressed to convince someone else. Think about it: what could you possibly say but “Trust me, I'm right”?

Lastly, critical thinking skills can be applied not only to the “big issues” like social, political, and environmental issues, but also to your day-to-day decisions, especially the ones that have long-term consequences. Should you transfer to another college? Should you reconsider your career goal? Do you really want a career or will a job make you happy? Do you really want to be married? Do you really want to be a parent and look after one or more children? *What do you really want to do?* Identifying the problem, understanding what information is relevant (and what's not), figuring out what all the options are, assessing each one, and then choosing the best one—a course in critical thinking can help you do all that.

In particular, being able to think critically will be valuable when you have to think about new or unfamiliar questions, ideas, and situations. Critical thinkers have the tools for handling the unfamiliarity. As Mark Twain said, if all you have is a hammer, an awful lot of things are going to look like nails. But they're not all nails. And being a critical thinker means you have a full set of tools, instruments, techniques, capacities, for dealing with stuff (including the capacity to identify when, and what, other tools are required!). What answer you get depends a lot on what questions you ask (or don't ask), and the critical thinker has *lots* of questions.

1.4 Why do we typically *not* think critically? (why do we need a *course* in critical thinking?)

For many reasons, thinking critically isn't something we generally do. Partly we can't—many critical thinking skills need to be learned. And partly we just don't—it's hard, it's not particularly encouraged, and it can be disturbing.

It's certainly harder than, say, watching television or reading a newspaper. And it's harder than other kinds of thinking, such as thinking about what you're going to do today. So we may simply be *unable* to do it. It's not something we can just do; it's certainly not something we were born able to do. We have to learn how



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'[M]ost people would die sooner than think - in fact, they do so.'

Bertrand Russell, *The ABC of Relativity*, 1925

to think critically, and then we have to practice in order to get good at it—like any skill. Like walking and talking. And while critical thinking is a *skill*, it's a skill that is dependent on *knowledge*—and often we just don't know enough to challenge the truth of what we hear or read.

It's hard enough to think through our own opinions. Yet when we engage in critical thinking, we often have to do other people's thinking too: we have to fill in the blanks, the gaps, in what they've said or written. As we noted in the first section of this chapter, this is because very few people articulate their thoughts clearly and completely—probably because very few people know their thoughts that well. Remember, if you can't say, "This is my opinion and these are my reasons . . .," you probably don't really know what you think.

Not only is it hard to *understand* the argument someone is making (or *whether* they're even making an argument), once we do understand the argument, it's hard to then *evaluate* it: it takes a lot of mental energy to weigh every premise, to check every connection, to make sure no errors of reasoning have occurred— in essence, to engage in critical thinking.

Evaluation is made even harder by the loss of diversity mentioned in the previous section. It's easier to evaluate an argument when you're already aware of a counterargument. For example, suppose you're aware of the argument that global warming is caused by the greenhouse gases produced by burning fossil fuels, and so on. Suppose you're also aware of the argument that global warming is part of a natural cycle. Knowledge of the second argument makes it easier to be critical of—to evaluate—the first argument. If you hadn't been aware of the natural cycle argument, you would have been more likely to have just accepted the greenhouse gases argument—you wouldn't have been aware of any challenges to it. Of course, you could come up with challenging counterarguments on your own. But that's hard too. It's hard to put all the pieces together. It's even harder when you don't have all the pieces and you have to imagine what evidence would support a certain claim. And keep in mind that you may have to imagine that evidence if it's not published in any of the mainstream media, or even in the alternative media. Which might be the case if no one's even researching the issue in question, either because no one else has thought of it or because no one has funded it.

So, suppose you're exposed only to arguments that lead to A. You'll develop an understandable predisposition to think that all arguments lead to A; you'll develop a predisposition to *accept* A. Only A. After all, you're not aware of any arguments that lead to B and C. And suppose you're unable to come up with them



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

'Freedom of the mind requires not only, or even specially, the absence of legal constraints but the presence of alternative thoughts. The most successful tyranny is not the one that uses force to assure uniformity but the one that removes the awareness of other possibilities.'

Alan Bloom, *The Closing of the American Mind*, 1987

on your own. What then? To some extent, people do make choices about what they're exposed to, and that's good; it's exerting a certain amount of control over who you are, what you become, what you believe, what you do because of those beliefs. But usually that choice is a choice from among the readily available options. It's like choosing which juice to buy from the four kinds of orange juice at your local grocery store. What happens when you move to a bigger city and the grocery store there has not only orange juice but also orange-cranberry juice? Wow. Great! But what if it turns out you want cranberry-coconut juice? You won't even know this until it occurs to you—until you imagine that there could be such a thing as cranberry-coconut juice. So freedom of choice, whether regarding juice or opinions, depends to some extent on the limits of your own imagination—on whether you can imagine whatever it is you will choose to believe. So in addition to lack of skill and lack of knowledge, lack of imagination accounts for our inability to think critically.

If you *can* imagine whatever it is you will choose to believe, great. If not, then why not expand the range of options you're exposed to? Many books, newspapers, magazines, websites, television, radio, and so on often just increase the kinds of orange juice available to you because they're owned by the same conglomerate: they show the same ideas, or the same menu of ideas. But, as suggested above, what if what you really want isn't on that menu? How will you even know that's what you want? Read alternative-to-mainstream sources—expose yourself to a multitude of differing opinions, arguments, positions. For example, take a look at *Adbusters*, *Free Inquiry*, *The Skeptical Inquirer*, *This Magazine*, *Project Censored*, and so on. They'll show you the orange-cranberry juice and maybe even the cranberry-coconut juice. (You may still have to come up with cinnamon-walnut juice on your own.) Remember that the narrower the mainstream gets, and the stronger it gets, the harder it is to go against the current. The mainstream may be going where you want to go, but if you don't know where else you could go, how will you know for sure?

But realize what you're up against: for better or worse, we seem to take the path of least resistance. Perhaps we're hard-wired for laziness, or we're just too tired, or we're in a rush and don't take the time. The bottom line is that it's easier to think (to believe and to do) as others think than it is to think for ourselves. It always takes more energy to initiate than to follow. Most of us simply absorb the ideas we're exposed to—by parents, friends, society-in-general—and that's the end of it. And mixed in with that tendency to go with the flow, to conform (often a good



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

thing, by the way, especially when you're choosing which side of the road to drive on), is the matter of loyalty: people often feel like they're betraying their parents or friends if they don't agree with them.

Thinking critically is harder still because we are often intentionally misguided: people use language to obscure their arguments, discourage examination, and otherwise manipulate us into agreement (or at least silence). Consider the difference between "I need" and "I want": you're far less likely to challenge a need than a want, aren't you? So if someone says "I need to do this," you're more likely to comply than if they had said "I want to do this." If that had been the case, you may well have asked "Why?"

Outright lies, incomplete truths, and exaggerations similarly prevent or distract us from thinking critically about what we encounter. Unfortunately, such deception is becoming increasingly acceptable: "disinformation," "spin doctors," "PR," "advertising"—all are presented as perfectly legitimate.

Another explanation for our tendency not to think critically is the many ways in which critical thinking is discouraged. There was a time in the 1960s, when dissent was perfectly acceptable; it was even popular. Now dissenters are frequently dismissed as quarrelsome, even unpatriotic. And that's really too bad. Someone *did* speak up about the faulty O-rings before the space shuttle *Challenger* exploded in 1986, killing the entire crew. But that person's critical comment was ignored. Scratch the surface of any such disaster and you'll often find at least one person who said something critical but was ignored—perhaps even reprimanded.

Our culture seems to endorse the belief that we shouldn't be judgmental. Why? To some extent, it seems to be a manners thing: "If you can't say anything nice, don't say anything at all." But if it's rude to be critical, does that mean it's polite to be gullible?

And to some extent, a non-judgmental attitude stems from a post-modern belief that there is no such thing as absolute truth and, hence, that opinions can't be right or wrong. But surely *some* opinions *can* be right or wrong because *some* matters *are* subject to absolute truth. For example, water freezes when its temperature is at or below 32 degrees Fahrenheit. And if it's your opinion that it does not, well, you're simply wrong.

Lastly, a non-judgmental attitude stems from a kind of relativism that is often associated with tolerance: our opinions depend on how we were raised and what culture we live in—and who are we to say someone else is wrong? The first part is generally (but unfortunately) correct: most people do hold the opinions that

'There are two threats to reason: the opinion that one knows the truth about the most important things, and the opinion that there is no truth about them.'

Alan Bloom, *The Closing of the American Mind*, 1987



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

'The right to be heard does not automatically include the right to be taken seriously.'

Hubert Humphrey, U.S. Vice President, in a speech made in 1965

'Persecution is the first law of society because it is always easier to suppress criticism than to meet it.'

Howard Mumford Jones, *Primer of Intellectual Freedom*, 1949

are held by their community—be that family or culture. However, except for certain kinds of opinions, such as moral or aesthetic opinions, the *truth* of our opinions is *independent* of time and place. For example, whether or not the earth is flat doesn't depend on whether you live in North America or in Europe. The earth is more or less round all over the place. True, if you lived in the Middle Ages, you probably believed the earth was flat, but that doesn't make your belief *true*. Consequently, as to the second part of tolerance-via-relativism—the question of who are we to say someone else is wrong—well, we are those who critically examine the support given or assumed by that someone else for the opinion in question. And if we find the support weak or downright mistaken, then why shouldn't we say so—especially if there are harmful consequences to holding the opinion in question?

And that brings us to the next point: a more direct expression of tolerance is the view that everyone's entitled to their own opinion. Of course, it's true that everyone is entitled to their opinion. But some opinions are better than others. You can express your opinion that Santa Claus exists until you're blue in the face, but until you present some *reasons* for your opinion, others are justified in ignoring you. And until you present good reasons, they're justified in not changing their mind (assuming they disagreed with you in the first place). Good opinions are like the tip of an iceberg—the weight of evidence and logic supports them. So know at the outset that opinions are not exempt from examination and evaluation—from judgment.

The view expressed by the phrase “everyone's entitled to their own opinion” is often understood not only as tolerant, but also as open-minded. It is good to be open-minded, to consider everything, including everyone's opinions. However, while you should consider everything, you can't accept everything—at least, not without being inconsistent. So you're going to have to be judgmental. And hopefully, your judgment will be based on critical examination. Being judgmental in this way is not a bad thing. After all, if you're not judgmental, you're gullible. Do you want to be someone who believes, who uncritically accepts, everything and anything that everyone and anyone says?

Another reason for our tendency *not* to engage in critical thinking is that we live in a decidedly anti-intellectual era. It's almost cool to be stupid. It's certainly not cool to be smart. (You might want to think critically about that: what, exactly, is cool about being stupid?) Much to our detriment, critical thinking is simply not encouraged in our society. You'd think, given its importance and its difficulty, that critical thinking would be taught at elementary and secondary



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

'A man should never be ashamed to own he has been in the wrong, which is but saying that he is wiser today than he was yesterday.'

Alexander Pope, *Thoughts on Various Subjects*, 1706

schools. But, generally, it's not. Perhaps teachers and principals think it would make students more difficult to manage. They're right. Perhaps that's why critical thinking is not only not encouraged, it's *discouraged*. It's interesting to note that cults discourage critical thinking. So do large corporations who want loyal employees who don't question the company's goals.

So critical thinking is hard. And it's not particularly encouraged. In what way is it disturbing? Well, it involves the possibility of changing your mind, which unfortunately is often seen as a weakness. Changing your mind also implies you were wrong, and some people can't admit they've been wrong. What's the big deal about saying "I was wrong until I found out about x, y, and z"? Do you really expect yourself to know all of the relevant evidence on every single issue? Perhaps you could have suspended judgment until you had all the relevant evidence, but sometimes it's years before things come to light, either publicly or just in your own life. So again, it should be no big deal to say, "Based on what I knew then, the opinion I formed was justified, but now that I know this, I'm going to change my mind, change my opinion . . ." Of course, perhaps it's not new evidence that makes you change your mind, but awareness that you didn't think carefully or thoroughly before. Maybe you *had* all the relevant evidence, but your reasoning process was faulty. Still, why *not* just say, "I was careless about that back then— now I'm being careful and I've come to a different conclusion . . ."? Would you really rather stand by your past carelessness? Changing your mind is simply a matter of recognizing that one position is better than another. Remember: recognizing that your own position is *not* the better one does not mean you've lost some competition. Thinking is not a competition! Life is not a competition!

Admittedly, sometimes the new, clearly better, argument calls into question a whole set of opinions, our entire worldview. And it can certainly be hard to accept that we are wrong about so much! But hey, it happens.

Too, it's hard to change one's mind, because one's mind—what's in it as well as how it works—is very much a matter of habit and habits are hard to break.

And any kind of change involves newness, which is uncomfortable to some people. We like the familiar; we find the unfamiliar threatening instead of interesting or potentially better.

And, often, we simply believe what we want to believe. We believe whatever is in our best interests to believe. Perhaps it's something connected to some specific personal gain. Perhaps it's the majority view, which, for some reason, gives us a sense of security and/or a sense of belonging. In any case, our capacity



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

to delude ourselves should not be underestimated.

On some issues, our emotions get in our way and prevent us from thinking rationally about the matter. Zachary Seech calls these “points of logical vulnerability” (*Open Minds and Everyday Reasoning*, 1993). We may find it difficult to weigh all the evidence fairly or to accept that a certain conclusion necessarily follows from the evidence. But as mentioned previously, you don’t have to give up your emotional involvement; you just have to recognize that emotions are better considered as spotlights illuminating matters of importance than as tools for working through those matters.

And of course, there is one final problem with thinking critically that might account for why we tend not to do it: we then have to take responsibility for what we think. If we haven’t thought about what we think and do, we can always plead ignorance, and tell ourselves that ignorance absolves us of any responsibility for what we think and do.

1.5 Template for critical analysis of arguments

The purpose of this text is to help you develop the skills that will enable you to critically analyze arguments. As with any complex set of skills, the learning process is usually improved if you consciously follow a series of steps. Once you’ve mastered the skills, the steps become unconscious. The following template articulates the basic steps you should take in order to critically analyze an argument.

You or your professor may want to modify the template as you work your way through the course—feel free to do so!

Template for critical analysis of arguments

1. What’s the point (claim/opinion/conclusion)?
 - Look for subconclusions as well.
2. What are the reasons/what is the evidence?
 - Articulate all unstated premises.
 - Articulate connections.
3. What exactly is meant by ...?



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Excerpted from *Critical Thinking: An Appeal to Reason*

- Define terms.
 - Clarify all imprecise language.
 - Eliminate or replace “loaded” language and other manipulations.
4. Assess the reasoning/evidence:
 - If deductive, check for truth/acceptability and validity.
 - If inductive, check for truth/acceptability, relevance, and sufficiency.
 5. How could the argument be strengthened?
 - Provide additional reasons/evidence.
 - Anticipate objections—are there adequate responses?
 6. How could the argument be weakened?
 - Consider and assess counterexamples, counterevidence, and counterarguments.
 - Should the argument be modified or rejected because of the counterarguments?
 7. If you suspend judgment (rather than accepting or rejecting the argument), identify further information required.

This template will be presented at the beginning of each chapter to show you where you are in the process; the step that will be covered by that particular chapter will be emphasized in bold.

Review of terms

Define the following terms:

- critical thinking

The following end-of-chapter exercises are intended to establish your starting point. You’ll note that the instructions are intentionally vague—to see how you do without any leading questions. You will be asked to do the same five kinds of exercise at the end of each subsequent chapter in order to practice and strengthen your accumulating skills. Hopefully you will notice improvement in your critical abilities—whether in considering what you see, read, write, hear, or say—as you cover the material in the subsequent chapters!



CRITICAL THINKING

Excerpted from *Critical Thinking: An Appeal to Reason*

Thinking critically about what you see

What is your considered reaction to this?

© Corbis



Thinking critically about what you hear

Listen to the audio clip under the Student Resources tab on the companion website at www.routledge.com/textbooks/tittle. Any response?

Thinking critically about what you read

Read and evaluate the following.

There's nothing wrong with downloading music from the internet. First, everyone does it, and second, it's not like you're taking something—after you download, the song's still there, it's not like taking someone's car. Some people say downloading music from the internet isn't fair because the musicians don't get paid when you download, but you're paying for the internet connection—why should you have to pay twice? *That's* not fair! And people say that if everyone does it, sales of CDs will decrease, and then since there'll be no money in making CDs, the record companies will stop making them. But everyone's not doing it, so CD sales won't decrease. And actually, a friend of mine told me that after their band put one of their songs on their website, sales of their CD increased! Lastly, downloading is legal; anything



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Excerpted from *Critical Thinking: An Appeal to Reason*

that's morally acceptable is legal; so downloading must be morally acceptable. People should stop worrying about this stuff and go after the *real* criminals!

Thinking critically about what you write

Write a few paragraphs arguing that this course will or will not be of benefit to you.

Thinking critically when you discuss

In a group of three or four, discuss something.

Reasoning test questions

Graduate school entrance tests (the LSAT for law school applicants, the MCAT for medical school applicants, the GMAT for graduate business programs, and the GRE for other graduate programs) usually have whole sections testing reasoning ability. Since these are typically multiple-choice questions (the reasoning section of the GRE is now an analytic writing test rather than a multiple-choice question test), students often assume they are easy questions. They are not. Especially since you've got only two or three minutes for each one. You'll get a chance at the end of each chapter to work through such reasoning test questions. Since we haven't yet begun to cover the skills required to successfully answer such questions, consider this, as per the previous end-of-chapter bits, a sort of pre-test, to establish your starting point.

1. Computers perform actions that are closer to thinking than anything nonhuman animals do. But computers do not have volitional powers, although some nonhuman animals do.

Which one of the following is most strongly supported by the information above?

1. Having volitional powers need not involve thinking.
2. Things that are not animals do not have volitional powers.
3. Computers possess none of the attributes of living things.
4. It is necessary to have volitional powers in order to think.
5. Computers will never be able to think as human beings do.

(The Official LSAT Prep Test XXIII, Section 2, #7)



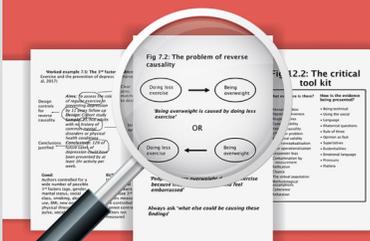
CHAPTER

2

THE CRITICAL TOOL KIT AND THINKING CRITICALLY IN EVERYDAY LIFE

THINKING CRITICALLY ABOUT RESEARCH

A Step-by-Step Approach



JANE OGDEN



This chapter is excerpted from
Thinking Critically About Research
by Jane Ogden.

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THE CRITICAL TOOL KIT AND THINKING CRITICALLY IN EVERYDAY LIFE

Excerpted from *Thinking Critically About Research*

Overview

Thinking critically about research involves the following steps: Step 1: Knowing methods; Step 2: Thinking critically about methods; Step 3: Thinking critically about how the evidence is presented. These steps have now been covered in detail to highlight a wide range of problems with research. These steps have also introduced the key terms that can be used to think critically about research and answer the questions: 'What evidence is there?' and 'How is the evidence presented?' This chapter will explore the final two components of thinking critically about research. The first is coherence and whether the conclusions are justified which can be assessed by using all the factors covered in this book so far. The second is the process of research synthesis and what happens when we combine different research studies. This chapter will then introduce the Critical Tool Kit in which I have pulled together the key terms used in this book. Finally, this chapter will look the role of critical thinking in everyday life in terms of dealing with facts, making logical decisions, and the role of uncertainty.

Coherence

Coherence refers to whether a research study has internal validity, which in essence reflects whether the conclusions are justified given the theory, aims, methods, and analysis used. The extent to which any research study is coherent can be assessed in terms of the following:

(i) **Is the research question matched to the literature:** As part of the incremental nature of research, the research question should emerge from the existing literature and fill a gap; (ii) **Is the research question matched to the methods?** Research questions can only be answered with the correct research methodology. Therefore, the question should be matched to the sample and the design of the study; exploratory questions can be answered with a smaller sample and qualitative designs; causal questions need representative samples and an experimental design; process questions can be answered with cross-sectional designs. (iii) **Is the research question matched to the data analysis?** Questions not only need to be matched to the design but also to the data analysis. Therefore exploratory questions are usually answered with qualitative analysis, causal questions are usually answered with differences analysis, and process questions are usually answered with associations analysis (although in reality many different types of analyses can be used in most situations); (iv) **Are the conclusions justified?**



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Below are a list of research questions, methods and conclusions. Read each one and decide whether if this question was answered with this method and the authors made this conclusion would this be coherent?

| Research question | Research design | Conclusion | Is this coherent? |
|---|-----------------------|---|-------------------|
| How do people feel about exercise? | Experimental study | Exercise makes people feel good | NO/YES |
| Does exercise improve people's mood? | Qualitative study | Exercise makes people feel good | NO/YES |
| Do people who do more exercise feel happier | Cross sectional study | People who do more exercise are happier | NO/YES |
| Does doing more exercise make people's mood get better? | Longitudinal study | Doing more exercise improves mood | NO/YES |
| How does exercise make people feel? | Qualitative study | People say that exercise makes them feel better and gives them energy | NO/YES |
| Do people who are depressed do less exercise? | Cross sectional study | Depressed people exercise less than those who are not depressed | NO/YES |
| Does exercise make people less depressed? | Experimental study | Exercise reduces depression | NO/YES |
| How do depressed people feel about doing exercise? | Qualitative study | Depressed people don't feel that exercise will help them | NO/YES |
| Does depression change over time when you do exercise? | Longitudinal study | People's mood lifts as they do exercise | NO/YES |
| Is mood stable or variable? | Longitudinal study | Mood fluctuates hugely over time | NO/YES |
| Do men and women differ in their levels of depression and exercise? | Cross sectional study | Men do more exercise and get more depressed than women | NO/YES |
| Why don't women who are depressed want to do exercise? | Qualitative study | Depressed women don't feel that exercise is good for them | NO/YES |
| Does exercise reduce depression more in men than women? | Experimental study | Men's mood shows a greater improvement after exercise than women's | NO/YES |



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Excerpted from *Thinking Critically About Research*

If a paper is coherent in terms of matching as described earlier then the final question is whether the conclusions are justified and they should be justified if the paper is coherent. However, if the research question has been asked using the wrong design or the results analysed using the wrong approach to data analysis then the paper will not be coherent and the conclusions will not be justified. For example, if the research question is 'does exercise help with depression?' yet it has been answered with a qualitative study, then the conclusion 'exercise helps depression' is not justified as the wrong design and data analysis have been used. Likewise, if the question 'does overeating cause obesity' has been answered with a cross-sectional design then the conclusion 'overeating causes obesity' is not justified.

The notion of coherence is core to thinking critically about any research study and reflects whether the study has been carried out in line with its research question and aims using the appropriate design and correct process of data analysis. Now try Task 12 and test your understanding of coherence.

Research synthesis: Putting research together

This book has mostly focused on thinking critically about an individual research study. Research, however, never happens in isolation and is always part of the wider literature. Each study therefore makes an incremental contribution to this literature and either supports or conflicts with research that has gone before or comes afterwards. Thinking critically about research involves an understanding of how new research is integrated into the existing research and deciding whether any single study makes a useful contribution to the broader literature. This involves the processes of rejection and support and ultimately research synthesis as follows:

Rejection

At times a new finding contrasts with what has gone before. This can result in the rejection of the previous research and can take a number of different forms.

Refutation: If one research study produces results opposed to the existing data this can refute the previous data indicating that it was flawed in some way and that the findings have been disproved. For example, the earlier findings may have been a product of chance due to the study being underpowered or overpowered. The



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Excerpted from *Thinking Critically About Research*

previous studies may have had weaker designs, have used the wrong design or have measured the key variables in an inappropriate way. Furthermore, the earlier work may have contained many of the problems with research identified throughout this book (bias, reverse causality, third factor problem, poor operationalisation, etc.). If the new study has a stronger design and fewer flaws than the earlier study, it can be said to refute the previous work.

Falsification: The traditional definition of a theory is that it can be tested and then accepted or falsified. Therefore, theory is said to have been falsified if new evidence emerges indicating that the theory does not predict what it is supposed to predict. For example, a theory may state that intentions to smoke predict actual smoking behaviour, but if research shows that intentions do not predict behaviour then this theory can be falsified. Likewise, if a theory predicts that objects fall when they are dropped due to gravity, yet an object is seen to rise, the theory of gravity has been falsified.

In reality: In reality, one study very rarely refutes all previous research as research is always incremental and all research has some level of flaw. Likewise, no theory is ever simply falsified by one study and theories persist even though research testing these theories indicates that they do not predict what they are supposed to predict. What tends to happen is that slowly, over time, the emerging body of work indicates that the earlier research findings cannot be upheld or that the theory cannot be supported. Then, after even more time, our beliefs about what we think is right change and research studies and theories are ultimately rejected.

Support

In contrast to the rejection of previous findings or theories, new research may reflect and support previous work. This then slowly, and over time, adds to a body of literature indicating that the findings are correct and that the theories can be accepted. This process can happen in a number of ways.

Replication: Occasionally researchers replicate previous work in an identical way using the same sample, methods, and measures. If a study's findings are replicated then this provides evidence that they were a strong illustration of whatever was being studied. The more they are replicated the stronger this evidence becomes. In psychology, there used to be a tradition of replicating findings and journals would



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publish the same study done several times in one journal paper. Due to the limitations of time and cost and the drive for new and different research papers, this tradition has pretty much disappeared. Nowadays, many disciplines are struggling with the replication crisis whereby it seems that many of our published findings are indeed a product of chance (or sometimes fraud!) and cannot be replicated.

Additive: In the main, researchers do not replicate previous findings but repeat them whilst changing the target sample or some of the variables. Therefore, what may have involved men in the past is now repeated on women, what may have used complex measures of quality of life involves a more simple measure, or what was used with patients with cancer now involves patients with heart disease. From this perspective, previous findings are supported and added to by extending their reach and showing that they also hold for different populations, in different situations, or using different measures.

Triangulation: An alternative approach to supporting previous research involves triangulation. This has been common in health services research for several years and often involves a mixed method or multi method approach to ask the same (ish) question but from different angles using different methods. For example, if a researcher wants to know the impact of surgery they could carry out a qualitative study with a small group of patients, a cross-sectional survey with a larger group, and a randomised control trial. This would answer a similar question but in different ways and would enable the findings from these different studies to be triangulated. This approach enables complex questions to be answered in different ways and recognises that there are different perspectives that need to be considered.

In reality: Although accumulative evidence that supports previous evidence helps to show that findings are correct, it is rare that any research finding or even any theory is accepted as 'truth'. In reality, most research findings come with caveats and most studies are flawed which means that research is always ongoing and very rarely is a research question completely finished and answered.



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Excerpted from *Thinking Critically About Research*

Research synthesis

Given the incremental nature of research there are now a number of formal approaches to synthesising research and exploring how each study fits together. These involve systematic reviews in which different research studies addressing a similar research question are evaluated and a conclusion drawn and meta-analyses in which the data from different studies are combined to create an overall effect size. Both these approaches involve a quality assessment of the different papers and sometimes follow the guidelines prepared by the Cochrane Collaboration or NICE which emphasise the problem of bias. These organisations argue that a quality assessment of research papers involves an evaluation of the internal validity and external validity of any study. Using their terms, internal validity reflects the extent to which the study's design, conduct, analysis, and presentation have minimised or avoided bias and external validity is the extent to which the results can be generalised to other settings. It is suggested that all research studies in any systematic review or meta-analysis are rated for quality and that an overall quality score is created. There are different quality assessment tools for different research designs (qualitative, cross-sectional, cohort, experimental/trial). There are also more general tools that can be used across a number of designs. These can all be found on the Cochrane website (www.cochrane.org) or through NICE (www.nice.org.uk). Different research studies can also be evaluated and synthesised using very simple approaches such as a rating scale ranging from strong evidence, moderate evidence, and weak evidence, which enable synthesis across different methods and a simple take home message about the quality of research evidence. There is no perfect solution as complex approaches to synthesis lead to complex answers, which are difficult to implement and put into practice. In contrast, simple approaches miss the complexity of research but are more pragmatic. In the end, it comes down to a judgement concerning the quality of research (which is what this book is all about).

The critical tool kit

This book has highlighted three steps to thinking critically about research and has outlined key problems and terms. I have pulled these together in the critical tool kit to facilitate thinking critically about research in terms of 'what evidence is there?' and 'how is the evidence presented?' The fourth step involves using this tool kit whenever you are reading a research study or the report of a research



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Excerpted from *Thinking Critically About Research*

study in the media. The Critical Tool Kit is shown in Figure 15 . Try using this tool kit against any research paper you have read or any media article describing research to test your understanding of the terms.

| What evidence is there? | How is the evidence being presented? |
|--|--|
| <ul style="list-style-type: none"> • Researcher bias • Representativeness • Response bias • Generalisability • Reverse causality • 3rd factor problem • Ecological validity • Poor conceptualisation • Poor operationalisation • Responder bias • Contamination by measurement • Reification • Chance • The virtual population • Methodological assumptions • Coherence • Refutation | <ul style="list-style-type: none"> • Being technical • Using the social • Language • Rhetorical questions • Rule of three • Opinion as fact • Superlatives • Evidentialities • Emotional language • Pronouns • Flattery |

Figure 15 The critical toolkit

Using the critical tool kit in everyday life

The Critical Tool Kit is useful for assessing research papers and how they are reported in the media. But thinking critically is also a central part of daily life. We are constantly bombarded by information often presented as 'facts' that needs to be critically analysed. We also need to be able to think logically about contemporary problems and to weigh up the available evidence in order to come to a logical conclusion. These two components of our daily life will now be considered. This



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Excerpted from *Thinking Critically About Research*

chapter will then highlight the problem of uncertainty and how this forms a core part of any research, any attempt at finding facts, and any attempt to think logically.

Dealing with Facts

As part of being persuasive our friends and family, the media, as well as scientists present us with 'facts' as if they are beyond discussion and simply 'true'. Thinking critically about research can help with deciding whether these 'facts' should be accepted or whether we should be more skeptical of what we are being told. So far, this book has worked its way through research from the initial research question, to the chosen sample, design, measurement tools, and data analysis and then explored whether the conclusions drawn are justified. This is the order in which research is usually done, and if not, it is the order in which it is presented. When presented with 'facts' in our daily life, a useful critical approach is to do this process in reverse and ask 'If this fact were the conclusion from a research study what would need to be done in order to make this fact a justified conclusion'? In other words we need to ask 'how could we ever know this'? For example, if we read that 'drinking tea prevents cancer' then we need to think what sample, research design, measurement tools, and data analysis would enable this conclusion to be made. Then we would need to think if this is feasible and has it been done? Similarly, if we are told that 'Coffee gives you a heart attack'? then we can think through what kind of study would be necessary to make this a justified conclusion. When the question 'how could we ever know this?' is applied to any black and white statement of fact it quickly becomes apparent that most 'facts' are not facts at all: Either the necessary research hasn't been done to collect the evidence behind the fact or the necessary research is not feasible and never would be done. Have a look at the 'facts' presented in Task 13 and think 'how could we ever know that?' in terms of what research would need to be done and if this is feasible. I have chosen this wide array of 'facts' as things we have once believed to be facts in the past, things that we didn't believe to be facts in the past, or things that we tend to believe are facts now.

Thinking Logically About Life Problems

Every day we make decisions about what to do, what to think, and what is right. This also involves a process of assessing the available evidence and coming to a



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Task 13 Are these facts?

'How could we ever know this?'

Below are some 'facts'. Have a look through them and decide if you think they are facts or not and what would we have to do to know this?

- Broccoli protects you from cancer
- Statins prevent stroke
- Men are more aggressive than women
- HIV is caused by recreational drugs such as poppers
- Autism is on the increase
- ECT treats depression
- Women are more body conscious than men
- Social media is bad for you
- Good weather makes you happier
- Masturbation damages your eyesight
- Lectures are a good way to teach
- HIV is transmitted by sex
- Mad people are more creative
- Obesity is genetic
- Wearing glasses makes your eyes worse
- Exercise makes you live longer
- Laughing is good for your health
- Drinking tea prevents heart attacks

logical conclusion. For example, if we are deciding what to wear we have to weigh up what the weather is likely to be like by considering the weather yesterday, the month we are in, by checking the weather app on our phone, and remembering what we last wore on a similar day that made us too hot, too cold, or just right. Then we get dressed. This all involves an assessment of evidence and drawing a logical conclusion. Likewise, if we are deciding what to vote in the next election we might read the manifestos (mostly not), reflect upon the past achievements or failures of the different parties, consider the recent public appearances of the party leaders, watch a debate or two then talk to our friends about what they are going to vote. Then we weigh up the evidence and vote. Similarly, when deciding whether to stay in a relationship we weigh up the pros and cons of the person themselves,



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our life with them or without them, and the ways in which our decision will impact on those we care about. Then we make a decision. In reality, many of our decisions are not based upon logic at all but on our habits, emotions, or values. So, we wear the clothes we always wear, vote for the party we feel most attached to, and stay or leave a partner depending upon our 'gut instinct'. But if we can learn to think critically about research, then we can also think critically about evidence in general and perhaps come to more logical conclusions about some of the more important decisions in our lives. Two of the biggest issues facing our world as I write this are the problem of mass shootings in the US and climate change. I have provided an analysis of each of these problems involving an assessment of the evidence in Worked Examples 20 and 21. If only the leaders of our world could be this logical.

Dealing with Uncertainty

Thinking critically about research involves knowing methods and then evaluating what evidence there is and how it is being presented. This book has illustrated how this approach can be used to evaluate research papers and how they are presented. It can also be used to understand facts and thinking logically about life problems. Evidence, however, is hardly ever clear-cut. Studies Some contemporary problems: mass shootings in the US. are mostly flawed (given all the problems outlined in the tool kit), the ideal study is often not feasible and cannot be done (for either financial, pragmatic or ethical reasons), and in our daily lives we are drawing upon all sorts of evidence beyond that which comes from formal research (we are scientists in our daily lives but our evidence is hardly ever actually 'scientific'). Furthermore, all findings, however good the study, only ever apply to some of the people for some of the time (due to sampling methods and the effects sizes found which are rarely absolute). We hardly ever find out anything that is true for all of the people all of the time. Thinking critically is therefore also about dealing with uncertainty and drawing the best conclusions given the available evidence. This still involves thinking critically but focusing on best-case evidence given the available evidence rather than rejecting evidence as either right or wrong.

It also involves recognising that there is rarely a simple answer to any question and that no one factor is responsible for another. It is most likely that many factors have a role to play, but our job is to work out which factors are more important than others. One way to deal with uncertainty is to think about variance.

In research, we talk about variance in data and trying to predict this



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Worked Example 20 Using the critical tool kit in real life.

Some contemporary problems: mass shootings in the US.

Thinking critically is also essential to every day life and making sense of every day problems. Here is one example drawn from some core problems in the modern world which involve weighing up the evidence and drawing an evidenced based conclusion: the problem of mass shootings in the US, possible causes and evidence for these causes

| Possible causes | What evidence is there? |
|------------------|--|
| Mental health | High mental health in Japan, Australia, UK. No mass shootings. <input checked="" type="checkbox"/> |
| Men | Men in all other countries; lower levels of shootings <input checked="" type="checkbox"/> |
| Not enough guns | As gun ownership goes up, shootings go up <input checked="" type="checkbox"/> |
| Poor gun control | Mass shootings in UK and Australia. Increased gun control – no more mass shootings |

The problem
Mass shooting in the US



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Excerpted from *Thinking Critically About Research*

Worked Example 21 Using the critical tool kit in real life.

Some contemporary problems: climate change.

Thinking critically is also essential to every day life and making sense of every day problems. Here is one example drawn from some core problems in the modern world which involve weighing up the evidence and drawing an evidenced based conclusion: the problem of climate change, possible causes and evidence for these causes.

Possible causes

Time: its part of the natural undulations in weather

Vested interests by scientists: they want to build careers and gain financial reward

Burning fossil fuels which gives off CO₂ which traps in heat

Deforestation which reduces number of trees to absorb CO₂

What evidence is there?

Recent changes are more than this



Scientists don't get personal money for research – more to be gained by supporting fuel industry



Increased climate change relates to increased CO₂ AND increased fossil fuel use

Increased climate change relates to increased CO₂ AND increased deforestation

The problem
Climate change





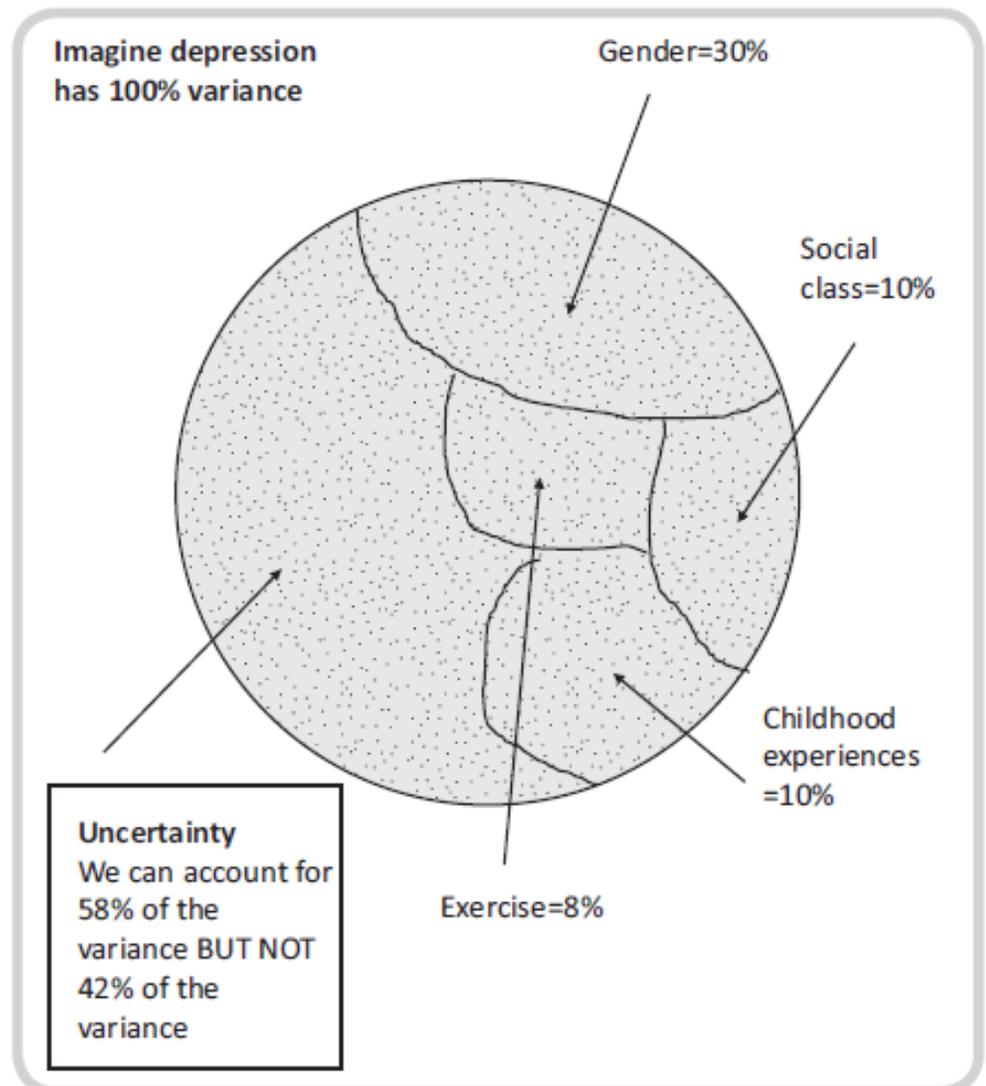
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variance. For example, if we imagine that depression varies by 100%, research tries to explain as much of this variance as possible. Findings might show that of this 100%, 30% is predicted by gender (women get more depressed than men), 10% is predicted by social class, 10% is predicted by childhood experiences, and 8% is predicted by exercise. Our study may not be able to explain the remaining 42%. From this analysis we cannot be certain what causes depression, but we can see

Worked Example 22 Dealing with uncertainty.

The role of variance and the example of depression.





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the relative impact of a number of variables. In addition, given that there is very little we can do about gender, social class, or childhood experiences, we may choose to focus on exercise even though it predicts the smallest amount of variance. We therefore accept the uncertainty in our model, but make an informed judgement as to the way forward. This is illustrated in Worked Example 22.

Now go back to Worked Examples 20 and 21 and consider where the degrees of certainty and uncertainty are and how to weigh up any available evidence to draw the best case conclusion.

In Summary

Thinking critically about research involves knowing methods and thinking critically about what evidence there is and how it is presented. The fourth step in this process is using the Critical Tool Kit, which should hopefully be a useful resource for lecturers and students and could be used as part of a module. It could also be used by those who use research in their jobs including doctors, nurses, paramedics, occupational therapists, physiotherapists, counsellors, psychologists, teachers, or anyone who disseminates research to others (journalists, broadcasters, and even bloggers). Thinking critically is also central to everyday life in terms of dealing with facts and making logical decisions. The tool kit could also be helpful for these processes as we are increasingly bombarded by 'factual' information and need to draw conclusions for our daily lives. Finally, it is clear that no evidence is ever perfect and that thinking critically also involves recognising and dealing with uncertainty and making conclusions based upon the best-case evidence at any point in time.

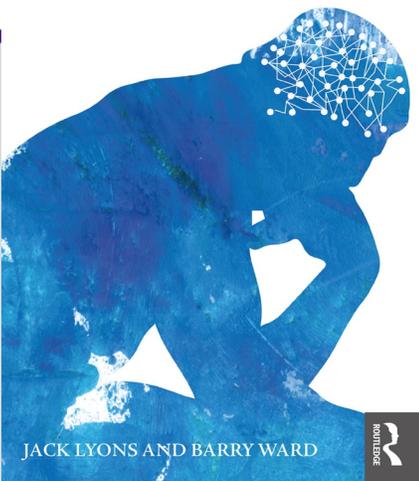


CHAPTER

3

VALIDITY: WHY IT MATTERS

THE NEW
CRITICAL THINKING
An Empirically Informed Introduction



This chapter is excerpted from
The New Critical Thinking
by Jack Lyons and Barry Ward.

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The main topic of this book is the proper evaluation of evidence. This means the proper evaluation of arguments.

An **argument**, again, is a set of sentences (or, as we'll sometimes call them: claims, statements, or propositions) consisting of one or more *premises* and a *conclusion*. The **premises** are statements that are offered as *evidence* for the **conclusion**, and the conclusion is the statement whose truth the argument is intended to establish. Logicians typically distinguish between deductive arguments and inductive arguments. Roughly speaking, an argument is **deductive** if the truth of premises would guarantee the truth of the conclusion; an argument is **inductive** if the truth of premises would render the truth of the conclusion probable, without guaranteeing it. Some inductive arguments are very powerful, and the probability they confer is extremely high. There's nothing *wrong* with an inductive argument just because it doesn't absolutely guarantee its conclusion. Nevertheless, inductive arguments are messier and more complicated than deductive arguments. Thus, in this chapter and Chapters 2 and 3, we will focus on the stronger and simpler kind of argument, the **deductive** argument. Simple doesn't mean easy, and the next two chapters will be a bit abstract, but please bear with us. The skills and concepts mastered here will be important for nearly all other reasoning.

Our provisional understanding of deduction is rough in two ways. First, we'll want to say quite a lot more about what's meant by "guarantee." Second, if we were to define deductive and inductive arguments as those that guarantee or make probable their conclusions, it would follow that there couldn't be *bad* arguments of either type, arguments that abjectly fail to provide the kind of support they're intended to. Consequently, we'll officially define deduction and induction in terms of the *aims* of the argument, that is, in terms of the *intentions* of the person offering the argument. Thus, we will define a **deductive argument** as one that *aims* at *validity*, i.e., one that purports to be valid. "Validity," of course, is a technical term that replaces the more intuitive but less precise "guarantee." Just what it means is the topic of this chapter. (We'll say more about aims and intentions a bit in this chapter, but more so in Chapter 3.)

1. Distinguishing the Good from the Bad

The goal here is to distinguish good arguments, ones whose premises provide a genuine reason to believe the conclusion, from bad ones. The good news: You already know a lot about how to do this. From an early age, we reliably use this ability on a daily basis. So, the task of this book is not to introduce some alien,



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intellectual discipline, but to develop and refine a skill you already possess. To see that we have this skill, take the following pair of examples:

(P1) All members of species X have lungs.
 (P2) y is a member of species X.
 (C) Therefore, y has lungs.

(P1) All members of species X have lungs.
 (P2) y has lungs.
 (C) Therefore, y is a member of species X.

The first is a good argument and the second is a bad one, and we confidently make that judgment. So, in some sense, we already know the difference.

The question now is: can we say what the difference is? What is it about the good argument that makes it good and the bad one that makes it bad? What is the *relevant contrast* between them, the difference that makes a difference?

What counts as a successful answer here? First, we want to know what makes arguments good *in general*, not just the first argument in particular. It is relevant and true to say, “the first argument is good, because “y has lungs” follows from y being a type X and all Xs having lungs,” but that answer is too specific. It does not tell us how to evaluate arguments about economics or physics or the likelihood of rain. There’s another problem with that answer. To say that the conclusion *follows from* the premises is correct, but unhelpful. If we can’t say what that means in simpler terms, saying “it follows” is no more illuminating than saying the argument is good. We haven’t *explained* what it is for the argument to be good. The same goes for saying that the conclusion *is a consequence* of the premises, or that the premises *imply* the conclusion, or, if you’ve already been exposed to some logic, that the argument is *valid*. All true, but they won’t explain the idea to someone who genuinely lacks the ability to discriminate the good from the bad, or help us better understand the nature of good argumentation so we can improve our own ability.

We can sneak up on the problem by focusing on the bad argument. It has a hole in it: it could be that all Xs have lungs, but there are other species that also have lungs, and so, y could be one of those. If Xs are dogs, and cats also have lungs, then maybe y is a cat. So, the conclusion would be false.

As it happens, lots of species have lungs. But even if there weren’t any other species with lungs, the premises leave open the possibility that such species



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exist and that is enough for the argument to have a hole in it. And this hole is what makes it a bad argument. The first argument is good because it has no hole; it's airtight: if all type Xs have lungs, and y is an X, the conclusion that y has lungs is inescapable.

There's something to this, but unfortunately, talk of holes is just a metaphor here, and so, it's too woolly to provide precise guidance. There's not *literally* a hole in the argument, as when we say there's a hole in the wall or in my sweater. For someone who doesn't already have the skill of evaluating arguments, telling them to look for holes is vague, hand-waving advice.

But it does capture something important. So, we need to figure out the precise idea to which the metaphor points. Here's a way of putting it: what is special about the first argument is that the truth of the premises would *absolutely guarantee* the truth of the conclusion; if the premises were true, the conclusion would have to be true. Or, to put it most precisely: it is *impossible* for both the premises to be *true* and the conclusion to be *false* together. This statement is non-metaphorical, and it explains the goodness of the argument in simple terms that do not presuppose specialized logical knowledge: *impossible*, *true*, and *false*. We call arguments like this "valid."

An argument is **valid** if and only if it is impossible for the premises to be true and the conclusion to be false together.

The other ones, the ones that lack this special property, we call "**invalid**."

This definition fits with our two examples. What makes the first argument good is that it is absolutely impossible for it to be false that y has lungs, given that it is true that y is an X and all Xs have lungs. What makes the second example bad is that it clearly is possible for all Xs to have lungs, and for y to have lungs, and yet for y not to be an X (i.e., for it to be false that y is an X). And if we fail to recognize the disconnect between the second argument's premises and its conclusion, we are clearly allowing ourselves to be misled, to be persuaded by premises that just don't provide a good reason to believe the conclusion. On the other hand, if we allow ourselves to believe the conclusion of the first argument, given its premises, we make no such error.

More generally, in life we typically want to believe truths and *only truths*. To have any success at that goal, we need to have some kind of policy for deciding what to believe. Here's one policy: every time you are confronted with a proposition, flip a coin. If the coin comes up heads, undertake to believe the proposition; if it comes up tails, don't. This is an obviously bad policy. If you



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followed it, any truths you came to believe would be a matter of sheer luck, and if you acted on the beliefs you acquired, you probably wouldn't do very well. "Eating the rat poison will be a nutritious and delicious experience": Let's flip a coin.

We need a policy that tracks the truth: picks out truths and avoids falsehoods. Picking out valid arguments and rejecting invalid ones is part of such a policy, a crucial component of it. However, just paying attention to validity is not enough. Validity on its own provides *no reason* to believe the conclusion is true. And this is made explicit in our definition: all it says is that a valid argument can't have *true premises* and a false conclusion. It guarantees *conditional support* between the premises and the conclusion: *If* the premises are true, *then* the conclusion must be too. *If not*, all bets are off. Valid arguments with false conclusions are not hard to find. For instance:

- (P1) All human beings have tentacles.
- (P2) All creatures with tentacles live in the sea.
- (C) So, all human beings live in the sea.

It's valid, but it provides no reason to believe the conclusion. Why? Because one of the premises is obviously false, and valid reasoning from a false premise provides no reason whatsoever to believe that we have a true conclusion.

Another way of putting this is to say that valid arguments are **truth-preserving**: all true premises guarantee a true conclusion: Truth in; truth out. Falsehood in; who knows? (Unless you're lucky, a false conclusion.) Certainly, the argument gives you no reason to believe it true. So, our policy for truth-tracking should be this: believe only the conclusions of arguments that are valid and that have all true premises. These arguments are important enough that we need a name for them. We'll say an argument is sound if and only if it is valid and has all true premises. A sound argument must have a true conclusion: *Truth-preservation + all true premises* guarantees a true conclusion.

A word of caution: these two features of an argument (i) its validity, and (ii) the actual truth values of its premises, *have nothing to do with each other*. It is worth emphasizing this point, as people often mistakenly think that the actual *truth values* of the premises and conclusion—whether the premises and conclusion happen to be true or false—can tell us whether the argument is valid or not. But this is not so. For example:

- (P1) Beethoven's music is excellent.
- (P2) If someone's music is still well-known centuries after their death, their



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music must be excellent.

(C) So, Beethoven's music is still well-known centuries after his death.

It's perfectly possible that someone might have written excellent music and also that music only survives the test to time if it is truly excellent, and yet some great composer could be unlucky enough for their work to be lost or destroyed before achieving any popularity, and so never be well-known. That's not how it was for Beethoven, but it could have happened. So, the argument is invalid, and yet the premises and conclusion are all plausibly true. Validity and true premises guarantee a true conclusion, but it doesn't work the other way around: true premises and a true conclusion guarantee nothing about the quality of reasoning.

Just to hammer home the point, let's return to our first pair of arguments:

(P1) All members of species X have lungs.

(P2) y is a member of species X.

(C) Therefore, y has lungs.

(P1) All members of species X have lungs.

(P2) y has lungs.

(C) Therefore, y is a member of species X.

You confidently judged the first valid and the second invalid. But notice, there's no way for you to even assign truth values to the premises and conclusions, *because we never even said what X and y are*. If X is dogs and y is Lassie then the sentences in both arguments are all true. If X is monarch butterflies and y is Charlie the tuna, then they're all false. None of this changes the fact that both arguments of the first kind are valid and that both arguments of the second kind are invalid. The actual truth values are *irrelevant* to assessing validity.

To summarize: how well we are reasoning from a set of assumptions does not depend on whether or not they happen to be true. When you assess validity, you should *completely ignore* whether the premises and conclusion actually happen to be true or false. Consider only the information specified in the premises and in the conclusion and determine whether there is any way at all that things could be as stated in the premises and not as stated in the conclusion. If so, it's invalid; otherwise, it is not.



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Exercises 1.1

A. Evaluate whether the following are valid or invalid:

1. Americans landed on the moon in 1969. No Russians landed on the moon before 1969. So, Americans were the first to land on the moon.
2. It is always cloudy when it rains. It is cloudy now. So, it is raining now.
3. Americans first landed on the moon in 1972. No one landed on the moon before them. So, Americans were the first to land on the moon.
4. Mary is Pat's sister. So, Pat is Mary's brother.
5. All fish live in the sea. All things that have scales live in the sea. Therefore, all fish have scales.
6. No carnivore is an herbivore. John is a carnivore. Therefore, John is not an herbivore.
7. John is a friend of Brian. Brian is a friend of Jim. So, John is a friend of Jim.
8. Mary is Pat's sister. So, Pat is Mary's sister.
9. Mary is Pat's sister. So, Pat is Mary's sibling.
10. Obama is not the current president. If George W. Bush was the last president then Obama is the current president. So, George W. Bush was not the last president.
11. If Nadal wins in straight sets in the final, he will win the tournament. Nadal will not win in straight sets in the final. So, Nadal will not win the tournament.
12. Dogs are bigger than cats. Therefore, cats are smaller than dogs.

B. Evaluate each of the following arguments for validity and soundness:

1. The Eiffel tower is in Paris. Paris is in France. So, the Eiffel tower is in France.
2. The Eiffel tower is in Berlin. Berlin is in France. So, the Eiffel tower is in France.
3. The Eiffel tower is in France. Paris is in France. So, the Eiffel tower is in Paris.
4. The Eiffel tower is in Berlin. Berlin is in Germany. So, the Eiffel tower is in Germany.
5. All birds have wings. All things that can fly have wings. So, all birds can fly.
6. Some dogs are pets. Some pets have four legs and a tail. So, dogs have four legs and a tail.
7. All snakes are poisonous. Pythons are snakes. So, pythons are poisonous.



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8. Copper is a metal. All electrical conductors are metals. So, copper is an electrical conductor.
9. All metals are electrical conductors. Copper is a metal. So, copper is electrical conductor.
10. India is the most populous country in Asia. China is the most populous country in the world. The world includes Asia. So, China is not in Asia.
11. Either Bernie or Hillary is going to get the nomination. Bernie can't beat Hillary. Therefore, Hillary is going to get the nomination.
12. It costs about \$.50/mile to drive the average car, figuring in gas, maintenance depreciation, and the like. Therefore, if you drive the average car and work 5 days a week, 50 weeks a year, moving 10 miles closer to work will save you about \$2500/year, keeping everything else the same.
13. Obama says he's in favor of gun safety legislation. Anyone who says that means to take our guns away. So, Obama wants to take our guns away.
14. If the mind is entirely physical, it ought to be possible to create artificial minds in computers. It is possible to create artificial minds in computers. Therefore, the mind is entirely physical.

C. More on validity and soundness.

1 Consider the following argument:

If John has pancreatic cancer, then he will be dead within 12 months.
John has pancreatic cancer.

So, John will be dead within 12 months.

- (a) Is it valid or invalid?
- (b) Suppose a new cure has been found for pancreatic cancer that is 100% effective and available to all patients. Given that information, what should we plausibly say about the above argument? Is it valid or invalid? Is it sound or unsound? Explain your answer.
- (c) *Don't* suppose that a cure has been found. Nevertheless, suppose John survives for more than 12 months, i.e., it turns out that the conclusion is false. What should we now say about the argument? Is it valid or invalid? Is it sound or unsound? Explain your answer.

2 Which of the following are possible? If impossible explain why. If a genuine possibility, provide an argument as an illustrative example.

1. An argument that is sound and invalid.



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2. An argument that is valid and has a false conclusion.
3. An invalid argument with a true conclusion.
4. An argument that is unsound and valid.
5. An invalid argument with true premises and a true conclusion
6. An argument that is sound and has a false conclusion.
7. An argument with a true conclusion that is unsound.
8. An argument with true premises and a true conclusion that is unsound.
9. A valid argument with a true conclusion and at least one false premise.
10. An argument that has false premises and a true conclusion that is invalid.

2. Validity and Impossibility

An argument is valid if, and only if, it is *impossible* for its premises to be true and its conclusion to be false. We favored this definition, because it explains a sophisticated idea, validity, in simpler terms: *impossible, true, false*. However, the first of these terms is not so simple, and we need to talk about exactly what it means.

Here's the concern. In assessing the current state of the U.S. military, a general might say, "*It is not possible* for the U.S. to successfully fight two full-scale wars at once." However, if asked whether with additional investment the U.S. could fight two full-scale wars, the very same general might say, "Sure, it's *possible* for the U.S. to successfully fight two full-scale wars at once." Superficially, it might look like she's contradicting herself—she's asserted the very same thing to be both possible and impossible—but there's no contradiction here. In the first case, the general is taking one set of background information—the current resources of the U.S. army—as a given, and that puts certain restrictions on what is possible. In the second case, the general is not taking that as background, but considering what is possible if those resources were expanded through investment, and that gives a different specification of what is possible. If we spell out what is meant by the two sentences, they come out as "*given the U.S.'s current military capability, this is not possible*" and "*given more investment in the military, this is possible*." The italicized bits are not explicitly stated by the general but are intended to be understood by whomever she is talking to, presumably on the basis of whatever has already been said in the conversation. So, when we use the word "possible" we almost invariably mean: possible *given the background information assumed in this context*. Different background assumptions; different meaning. The word "possible" is ambiguous: in different contexts, *it means different things*.



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Some notions of possibility are sufficiently important to have their own names. It is **physically impossible** to travel faster than the speed of light. When we say this we are claiming, rightly or wrongly, that going faster than light is incompatible with the laws of physics. It is **psychologically impossible** for mice to do algebra. When we say this, we are not claiming that mice have merely lacked the incentive or education to solve simultaneous equations: we're saying that such an ability is simply incompatible with the mental equipment possessed by mice. It is physiologically impossible for humans to breathe underwater (without special equipment), meaning that breathing underwater is incompatible with the capabilities of the human body. When we use these names for particular types of possibility, we are signaling which background information should be assumed in understanding our use of "impossible": physically impossible, one should assume the (known) laws of physics; physiologically impossible, assume the capabilities of the human body, and so on. Maybe the most common of these specialized notions of possibility is epistemic possibility (recall that epistemology is the study of knowledge and rational belief). To say that something is **epistemically possible** (for me) is to say that it's compatible with everything I know. Since you and I know different things, what's epistemically possible for me need not be epistemically possible for you, and vice versa.

Which notion of possibility is the right one for the definition of validity? Referring back to the start of the chapter, our first example is a valid argument and the second is invalid, and that's just a fact. We feel no temptation to say that the second is invalid in one context and valid in another. So, it's not going to be some squishy, context-dependent notion of possibility, where whether or not an argument is valid depends upon whatever background information *happens to be* assumed in a given context. Instead, it will be a special notion of possibility, one that assumes *no background information whatsoever*. Let's call it "**logical possibility**."

Validity is the gold standard of reasoning. When we say an argument is valid, we are saying that you can rely upon that line of reasoning *in any context whatsoever*. We are saying that it is impossible for the premises to be true and the conclusion to be false, *without assuming any unstated background information*. So, logical impossibility is not incompatibility with the facts about physics or psychology or any other body of background information. What logical impossibility boils down to is literal inconceivability. It means that we literally *cannot make sense of* such a possibility. It may be physically impossible for things to go faster than the speed of light, but it's not logically impossible; if the laws of



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physics were different, say they were the ones we thought were true before relativity theory, then things could go faster than light. It is indeed physiologically impossible for humans to breathe underwater, but it's entirely conceivable that humans could have gills or some other organs that would allow us to do so. So, it's logically possible. When you want to assess what is logically possible, bracket all your background knowledge about how things actually are and consider whether you can coherently conceive of the possibility in question.

Here's a helpful, intuitive way of thinking about it. To say that something is logically possible is to say that an omnipotent being could make it true. This includes all kinds of absurd situations: it's logically possible for me to walk on water, for my car to sprout wings and fly, for cats to talk, and so on. But it doesn't include *everything* as possible. Even an omnipotent god couldn't make a four-sided triangle, a chair that is partly green but also completely red, a man that is taller than himself, etc. There's no contradiction in the idea of an omnipotent god that can't make me taller than myself. There is just *no sense to be made* of a man who is taller than himself. So, there just is no such possibility that our hypothetically all-powerful being is incapable of making happen. So, there's no conflict with omnipotence.

Returning to our original example,

(P1) All members of species X have lungs.

(P2) y is a member of species X.

(C) Therefore, y has lungs.

What this argument has going for it, which you instinctively realized made it a good argument, is that we can make no sense of the premises both being true and the conclusion being false. *Without assuming any unstated background information whatsoever*, it is impossible for the premises to be true and the conclusion to be false. It's *logically* impossible, and that's what we mean by validity.

By adopting a very inclusive conception of possibility, we end up with a very exclusive conception of impossibility. This ensures that validity (because it's defined in terms of this conception of impossibility) embodies the highest level of praise possible; there simply couldn't be a kind of conditional support better than validity. That is why we say validity is the gold standard of reasoning. Nevertheless, you might think it ridiculous to demand such a high standard, to define validity using a notion of possibility on which we allow that pigs could fly and cats could talk. The following arguments are *invalid* precisely because such phenomena are logically possible:



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(P1) Slypork is a pig.
(C) So, Slypork can't fly.

(P1) Jeffrey is a cat.
(C) So, Jeffrey can't talk.

Yes, both lines of reasoning seem very sensible, *given our common-sense background knowledge about pigs and cats*: if you tell me only that Slypork is a pig, I will readily accept on that basis that he can't fly. But that's beside the point here. We've already explained one reason why: a valid argument is one whose reasoning *can be relied upon in any situation whatsoever*, because it does not depend upon any background assumptions. These arguments simply don't have that general reliability. Why it matters, why we are insisting on validity—at least for now—is something we'll explain further in section 1.5. For the moment, let's just accept the gold standard.

To summarize the last two sections: assessing validity is an exercise in abstraction in two different ways. First, because validity is a matter of *conditional* support, we need to forget about whether the premises or conclusion are actually true. Second, because validity is a matter of logical possibility, we need to forget a host of background information about the world: what the laws of physics and psychology are, whether humans can breathe underwater, etc. We just focus on what the premises and conclusion say, and determine whether it is in any way conceivable for the premises to be true and the conclusion to be false together.

Now that you understand the technical concept of validity, there's just one more small point to understanding our definition of a **deductive** argument as one that aims at validity, i.e., that purports to be valid. Obviously, *arguments* don't have goals or aims, but the people who offer them do. We'll see in more detail in Chapter 3 that understanding arguments requires understanding the intentions of the authors of those arguments. For now, it's enough to note that we'll count an argument as deductive if the author meant for it to be valid. Thus, there will be *failed* deductive arguments: arguments that aimed at validity but aren't valid.

Box 1.1 Possibility and Necessity

Possibility and necessity are interdefined. Something is possible if and only if it's not necessarily false. Something is necessary if and only if it's not possibly false. Something is **contingent** if and only if it's neither necessarily true nor necessarily false.



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Box 1.2 Some Important Notions of Possibility

Logically possible: conceivable without contradiction

Physically possible: compatible with the laws of physics

Epistemically possible (for S): compatible with everything S knows

Exercises 1.2

A. For each of the following, specify whether the kind of possibility/ impossibility at issue is logical or not. If not, say what we might call it, using our examples as guides (so, although we didn't mention "biological possibility," surely there is such a thing as compatibility with the laws of biology, and so on). If it doesn't easily admit of a name, indicate what the relevant background assumptions are.

1. It's impossible for a fire to burn without oxygen.
2. Dogs can't face their "palms" toward each other.
3. A triangle must have three sides.
4. You can't go to jail for cheating on your spouse.
5. Sound must travel slower than light.
6. If Margaret and Joe are both here, then Joe must be here.
7. You can't survive a zombie bite without becoming a zombie yourself.

B. For the following pairs of sentences, determine whether it is logically possible that both be true at the same time. If so, offer a scenario that explains how. Note, this will sometimes require outlandish, though not self-contradictory, suppositions.

1. It's raining. The streets are dry.
2. I dropped this rock. It never hit the ground or any other surface.
3. Jessica died this morning. She was a half-hour late to work this afternoon.
4. Women are smarter than men. Men score higher on IQ tests than women.
5. Everyone loves Taylor Swift and her music. Taylor Swift is terribly unpopular.
6. Sam Shepard is the greatest English-speaking playwright of all time. Shakespeare existed.

C. The following pairs couldn't possibly both be true at the same time. In each case, how would you explain this fact to someone who didn't yet see why?

1. X is a triangle. X has four sides.



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2. Sandy and Jules came to the party. Sandy didn't come to the party.
3. If there's an open flame, there's oxygen. There's an open flame but no oxygen.
4. I am taller than Lewis. I am Lewis.
5. Rene thinks he might be dreaming. Rene doesn't exist.
6. Things are going to get better, or they're going to get worse. Things are going to stay exactly the same.
7. I'm in Paris, and Paris is in France. I'm not in France.
8. Nobody's ever run a four-minute mile. Jolene ran a mile in 3:54.

D. Evaluate the validity of the following arguments:

1. A cat falls from the top of a tall building and strikes the ground at over 100 mph. Therefore, it is seriously injured or killed.
2. The Empire State Building is made entirely of soap bubbles. All soap bubbles disintegrate within 5 minutes. No new soap bubbles are made. So, there will be no Empire State Building in 5 minutes.
3. John, a human being, is entirely submerged in water for 10 hours without any kind of breathing apparatus. So, John dies.
4. All human beings live in pineapples under the sea. Everyone that lives in a pineapple under the sea is a friend of SpongeBob. So, every human being is
5. a friend of SpongeBob.
6. John is unmarried. So, John is a bachelor.

3. More on Logical Impossibility

We have defined a valid argument as one for which it is *logically* impossible for the premises to be true and the conclusion to be false, and that means that the truth of the premises guarantee the truth of the conclusion, *without our assuming any background information whatsoever*. However, there's a way in which this requirement might seem confusing. Take the following argument:

(P1) John is a bachelor.

(C) Therefore, John is unmarried.

If anything is a valid argument, this is. However, someone might be concerned that we used background information in judging it as valid. To make that judgment, we needed to know that a bachelor is someone who is unmarried—we needed to *assume background information* about what “bachelor” means. This is true, but it's



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unavoidable and shouldn't be troubling: if we don't allow background information about what the words in the argument mean, *we can't even understand what the argument is saying*, let alone evaluate it. So, being a little more careful, what we mean is that when you evaluate the possibility of the premises being true and the conclusion being false, the *only* background information allowed is the information required for understanding the sentences that make up the argument. Consider the following four arguments:

(P1) The earth's orbit is a circle.

(C) So, the earth's orbit has no corners.

(P1) My father is 40 years older than I am.

(C) So, I am 40 years younger than my father.

(P1) Ice is just solid water.

(C) So, ice will melt when heated above 32° F.

(P1) The cue-ball struck the 8-ball with great force.

(C) So, the 8-ball moved.

Valid or invalid? The first two are valid because of what the terms in the arguments mean. A circle is a curve on which all points are equidistant from one point, the center, and a curve like that is smooth; it has no corners. And if you don't know that, either you don't understand what "circle" means or you don't understand what "corner" means. Given that you do understand, the conclusion is inescapable. Similarly, if my father is 40 years older than me, that just means that I am 40 years younger than him. Once you understand what is meant by "older than" and "younger than," it's inconceivable that the premise is true and that the conclusion is false.

Let's look at the second pair of arguments. We all know that water is liquid if it is above its freezing point, 32° F, and hence, given that ice is solid water, heating it will yield liquid water, i.e., the ice will melt. That's a piece of knowledge about the world that we have had for so long that we have likely forgotten when first we learned it, but that's not the same thing as being part of the meaning of "water." We can see this pretty easily. Suppose we found that some chemical process resulted in a new kind of ice, a solid form of water with a different crystal structure to regular ice. And suppose that if you heat crystals of that ice, they don't liquefy until you heat them above 110° F. We would not describe that situation by saying that the new ice crystals aren't really water. We would say, "Here's a fascinating surprise about water: you can make water ice that doesn't melt even



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when you push its temperature way above 32° F.” In fact, this is the possibility considered in Kurt Vonnegut’s novel *Cat’s Cradle*. A scientist discovers a novel crystal structure for water, called Ice-9, which is solid at high temperatures. (Spoiler alert: a crystal of Ice-9 is dropped into the oceans, solidifying all of earth’s water, triggering an ecological disaster, and the end of humanity.)

The second invalid argument is very similar. We all know that if one pool ball hits another with great force in normal circumstances, it will cause it to move. But again, the given premise does not render the conclusion’s falsehood impossible in the relevant sense; it’s the given premise, plus that additional background information that guarantees the conclusion’s truth. We can easily form new valid arguments by incorporating these background beliefs as premises, giving:

(P1) Ice is just solid water.

(P2) Solid water will always melt when heated above 32° F.

(C) So, ice will melt when heated above 32° F.

(P1) The cue-ball struck the 8-ball with great force.

(P2) Given the circumstances, if the 8-ball was struck with great force, it moved.

(C) So, the 8-ball moved.

These are now valid, but the originals were not.

Note an important difference between the last two invalid arguments and the two valid ones that preceded them: we *could* give those the same treatment. For example:

(P1) The earth’s orbit is a circle.

(P2) Circles don’t have corners.

(C) So, the earth’s orbit has no corners.

This makes the original reasoning a bit more explicit, but note: it doesn’t improve the conditional support for the conclusion. It *couldn’t*, because the original argument is valid, and validity can’t be improved on. If you don’t know anything about the world, but I tell you that the earth’s orbit is a circle, then I’ve already told you all you need to validly infer that the earth’s orbit has no corners. I don’t need to tell you that circles don’t have corners, because if you didn’t already know that, then *you didn’t understand the rest of the argument*. You can’t understand what a circle is and what a corner is unless you know that circles have no corners. Thus, P2 is dispensable, because it doesn’t—couldn’t!—tell you anything new.



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By contrast, in the ice and 8-ball cases, the (P2)s are not logically necessary truths, and they're not things you must already know in order to understand the (P1)s. If you don't know anything about the world, but I tell you that ice is just solid water, I haven't told you everything you need to know to infer that ice will melt at 32° F. *You'd still need to be told that water melts at 32° F.* You could understand the terms "water," "ice," "melt," and "32" without knowing this.

Sometimes it's hard to know exactly where to draw the line between contingent, factual background knowledge of the sort that we're not allowed to presuppose in assessing validity, and necessary, meaning-related knowledge that just makes explicit what we already had to know in order to have the relevant concepts. For instance, what is the status of the following argument?

(P1) Moby Dick is a whale.

(C) Therefore, Moby Dick is a mammal.

Obviously, it doesn't hurt to explicitly add,

(P2) All whales are mammals.

It's true, and it makes the argument obviously valid. But was the argument valid without it? Is it part of the *meaning* of "whale" that whales are mammals? It is tempting to think so. In some sense you couldn't fully know what whales *really* are without knowing that they're mammals. On the other hand, P2 is a relatively recent discovery, before which, lots of people were capable of forming thoughts about whales. In *Moby Dick*, the narrator, Ishmael, believes that whales are fish. But surely he knows what the word "whale" means, even if he's badly mistaken about their nature. When someone shouts, "Avast! There blows a sperm whale off the starboard bow!" Ishmael understands perfectly well what's being claimed, and he forms the belief that there's a whale off the starboard bow. Someone, like Ishmael, could understand (P1) without knowing (P2). But *that means that (P2) does genuinely add some factual information to (P1)*. Thus, the argument is invalid without (P2) although valid with it. So, when in doubt, you should *always demand that the information be made explicit*. You might accidentally count some valid arguments as invalid, but in the end, no real harm comes from being too careful.

Box 1.3 Concepts and Definitions

To have the concept square or cat, etc. is just to have the ability to think thoughts about squares, cats, etc. Sometimes having a concept does seem to amount to knowing a definition: you have the concept prime number only if you know that it



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is something that is divisible only by itself and one. But having a concept isn't always a matter of knowing a definition: there isn't any particular thing you need to know about cats in order to think thoughts or understand sentences about cats. Knowing what they look like may be sufficient for having the concept; and knowing what they sound like may be sufficient; but neither is necessary.

In assessing arguments for validity, the background knowledge you're allowed to bring in is just the knowledge required for having the concepts involved in the premises and conclusions—that is, the background knowledge required for understanding these statements. Sometimes this may involve definitions, sometimes it won't.

Box 1.4 Definitions and Natural Language

The fact that dictionaries exist suggests that it's not hard to find definitions for all or most terms. But it's more complicated than this. Consider "bachelor." Suppose we define it as an unmarried male. That's not right. A 5-year-old boy doesn't count as a bachelor. Fair enough, how about unmarried male of marriageable age? A man who was married, but has been widowed, satisfies this definition. Is he a bachelor? Some may say "yes"; some may say "no." Most will shrug their shoulders and look puzzled. What about a monk, or the Pope, who have taken vows not to marry? It doesn't seem that there's a clear-cut definition of even a simple concept like bachelor, but we can all think thoughts about bachelors. Surprisingly, it seems that having a concept is not, in general, the same thing as knowing a definition. Notwithstanding potential disagreements over obscure cases, we all know that bachelors are, necessarily, unmarried men. So, even if the concept is not specified by a definition, it remains that the argument from John being a bachelor to John being unmarried is indeed valid. It's worth repeating, however, that when in doubt, it's best to err on the side of caution: if you make explicit the fact that all bachelors are unmarried as an added premise, then the argument will be obviously valid.

Exercises 1.3

A. For each of the following arguments, say what background assumption would have to be added to render it a fully explicit, valid argument. Then say whether the argument was already valid without it.

1. It's a domestic cat. Therefore, it's someone's pet.



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2. It's a cat. Therefore, it's warm-blooded.
3. You're voting for Gil Fulbright. So, you're a Republican.
4. It's January. So, we'll get some snow soon.
5. It's Tuesday. Therefore, the day after yesterday is Tuesday.
6. You have Lyme disease. You must have been bitten by a tick!
7. All electrons are negatively charged. So, all electrons repel each other.
8. She was your date for your senior prom? I guess she really hated her parents!
9. I had an appendectomy six weeks ago. Therefore, I have undergone a surgical procedure in the past year.
10. You're down to a half gallon of gas and you have 140 miles to go.
Therefore, you won't get there without stopping to refuel.

While we're on the subject of meaning and its relation to validity, it's worth making note of a couple of important topics, to which we shall return in more detail later in the book.

Logical Terms

We've been looking at arguments whose validity hinges on the meanings of terms like "bachelor" and "circle," but arguments whose validity depends on the meanings of broadly **logical terms**, like "some," "all," "and," "not," "if...then," are even more important. Consider the following:

- (P1) All cetaceans are heterotrophs.
- (P2) Mauyuk is a cetacean.
- (C) Mauyuk is a heterotroph.

Even if you don't know what "cetacean" and "heterotroph" mean, or who Mauyuk is, you know what "all" means, and that's enough to know that this argument is valid.

We can show this a little more clearly by drawing a diagram. (P1) says that the class of cetaceans is included in the class of heterotrophs, that you can't be a cetacean without being a heterotroph. We can illustrate this by placing a circle that represents cetaceans inside a circle that represents heterotrophs. That way, anything that falls in the C circle is going to fall in the H circle as well:



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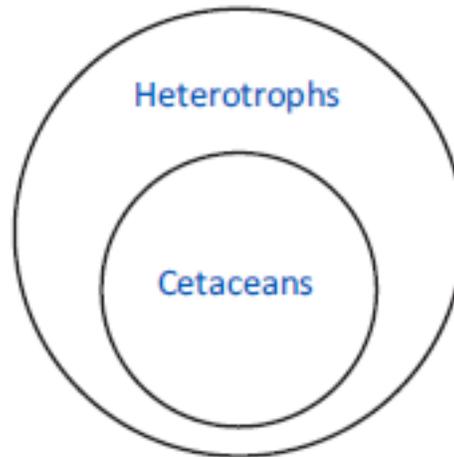


Figure 1.1

To represent the claim that Mauyuk is a cetacean, we use a dot or an x or something that stands for her, and we put it in the Cetaceans circle.

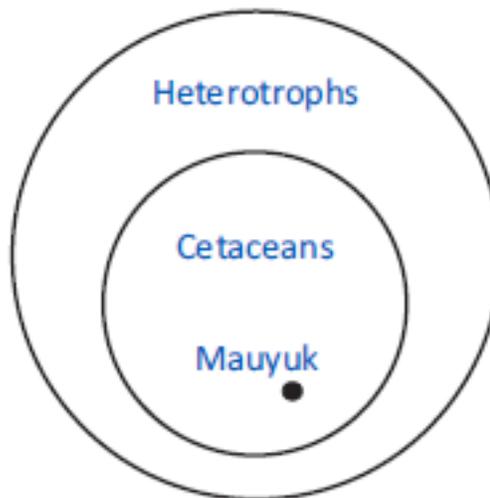


Figure 1.2

But now it is quite obvious that, because Mauyuk is a cetacean—she falls inside the smaller circle—she *must* be a heterotroph too—she must fall inside the larger, more inclusive circle. We can't draw a *Mauyuk* dot inside the *Cetaceans* circle without also putting it inside the *Heterotrophs* circle. This shows that from the fact that Mauyuk is a cetacean (P2) we can deduce with certainty that she is a



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heterotroph (C). On the other hand, if our second premise had instead claimed that Mauyuk was a heterotroph, we couldn't have validly inferred that she's a cetacean. This is because she might have—for all our premises have told us—fallen outside the *Cetaceans* circle but still inside the *Heterotrophs* circle.

As we progress, we'll see that we can learn a lot about validity by focusing on such logical terms: broad classes of arguments turn out to be valid precisely because of the patterns or forms in which such terms are used. The above case illustrates this. It just doesn't matter that the argument is about cetaceans or heterotrophs or about Mauyuk. All instances of the form

- (P1) All Cs are Hs.
- (P2) m is a C.
- (C) m is an H.

will have to be valid. By contrast, arguments whose validity depends on specifics of the meanings of terms like “cetaceans” or “bachelor” are of little *general* interest.

Moreover, the meanings of logical terms are typically clearer and less ambiguous than the meanings associated with non-logical terms. Generally, when people say something of the form “All Xs are Ys” there is just one thing meant by the term “all.” This also renders such terms as suitable targets in our attempt to characterize the properties of broad classes of arguments. By contrast, non-logical vocabulary is not generally so well-behaved. This brings us to the second meaning-related topic we need to briefly discuss: *equivocation*.

Equivocation

In judging the last argument valid, we reasonably assumed that the terms used in multiple locations (“cetacean,” “heterotroph,” “Mauyuk”) meant the same thing each time they occurred. However, if a term is ambiguous, it can lead to the **fallacy of equivocation**, where an argument uses a single word or phrase in two or more different ways, so that the argument has the appearance of being sound, even though it isn't. Here's a toy example to illustrate the concept. Consider the following argument:

- (P1) My nephew is just a kid.
- (P2) Kids are baby goats.
- (C) Therefore, my nephew is a goat.

Obviously, “kid” is being used differently in these two premises. The argument



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looks valid, but it is only valid if “kid” means the same thing in both premises. However, if we use it to mean “child,” then (P1) is true but (P2) is false; if we use it to mean “baby goat,” then (P2) is true but (P1) is false. So, on either reading, if the argument is valid, it’s unsound; at least one of the premises is false. If, on the other hand, we use “kid” one way in (P1) and a different way in (P2), we can get two true premises, but now the argument’s invalid, and again, unsound. We discuss equivocation in more detail in Chapter 10 .

4. Logic and the Belief Bias

We’ve tried to be really careful in laying out what a valid argument is and how to evaluate simple arguments. However, even if you’ve taken everything we’ve said onboard, it is still easy to be misled about an argument’s validity. Consider the following argument:

- (P1) Anything that has a motor needs oil.
- (P2) Cars need oil.
- (C) Therefore, cars have motors.

Valid or invalid? Remember that validity is about conditional support and not about the actual truth values of the premises and conclusions. Many people are inclined to think the argument is valid. Now consider another argument:

- (P1) Anything that has a motor needs oil.
- (P2) Opprobines need oil.
- (C) Therefore, opprobines have motors.

Most people are not inclined to think that this argument is valid. Notice, however, that the two arguments are perfect parallels. We’re inclined to think the first argument is valid because we know that the conclusion is true. The argument, however, is invalid, as we can more easily see in the case of the second argument, where we immediately realize that things that don’t have motors might also need oil for other reasons, and opprobines/cars might be among these things. This is a phenomenon known as the belief bias: people tend to judge invalid arguments to be valid if the conclusion is something they already believe to be true.

Obviously this is a bad kind of mistake to make. Among other things, it will keep us stuck in a cognitive rut. If we once adopt a belief for no good reason at all, the mere fact that we now believe it will make bad reasons for that belief look like good ones. This tendency makes it difficult for us to learn, because it makes it



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difficult for us to be open-minded. And of course, it makes it difficult for us to be objective; we are naturally prone to find (real) flaws in the arguments of those who disagree with us, but to overlook (real) flaws in the arguments of those who agree with us. It's hard to overstate how bad this is from the perspective of believing all and only what's true.

The culprit here, of course, is System 1: we have an automatic, intuitive sense of validity and are prone to judge accordingly. But this sense of validity is highly unreliable, because it's so heavily influenced by our fallible prejudgments about the conclusions. Even if we were perfect, infallible judges about the conclusions, this would still be a bad guide to validity, since it's quite possible for an invalid argument to have true conclusions or a valid argument to have false conclusions.

Our strategy for evaluating arguments is clear: Use System 2, don't let System 1 foist beliefs on you that just seem right. System 2 will be much more reliable, at least once you've learned how to properly distinguish between valid and invalid arguments.

Exercises 1.4

A. Assess the following arguments for validity. Do so as quickly as you can, writing down whatever verdict pops into mind.

1. People who are opposed to freedom support gun control. Liberals support gun control. So, liberals are opposed to freedom.
2. People who don't care about the sick, the disadvantaged, and the elderly support cuts to welfare. Conservatives support cuts to welfare. So, conservatives don't care about the sick, the disadvantaged, and the elderly.
3. People who write graphic novels require the storytelling skills of a writer and the visual imagination of a good film maker. Film directors also need both of those skills. So, film directors write graphic novels.
4. People who totally buy into the scientific worldview are anti-religion. People who totally buy into the scientific worldview also believe in global warming. So, people who believe in global warming are anti-religion.
5. People who accept the results of well-established science accept the reality of global warming. People who accept the reality of global warming must be anti-religious. So, people who accept the results of well-established science must be anti-religious.



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6. People with strong fundamentalist religious beliefs deny global warming. People who, for one reason or another, won't honestly face the evidence deny global warming. So, people with strong fundamentalist religious beliefs won't honestly face the evidence about global warming.
7. Historically, the noble potato has long been a valuable food source in poorer societies across the world. Even today, in several countries it is common for potatoes to be on the dinner table almost every night of the week. As is well-known, this is true in Ireland, but also in Poland, Peru, and several other countries. So, we can conclude that these societies are still quite poor. They can still not be counted among the richer nations of the world.
8. Even people from the poorest of backgrounds have succeeded in life with hard work and dedication. So, anyone, even someone from a very poor background, can be successful.

B. Go back through the arguments of section A just now, and this time, take your time evaluating them, keeping in mind the fact that we're all more likely to find an argument valid if we already believe the conclusion. Was there any difference between your quick assessment and your slower, more careful assessment?

C. Which of the following arguments are valid and which are invalid?

Watch out for belief bias, i.e., uncritically accepting an argument as valid, just because you think the conclusion is true.

1. New York is bigger than Houston. Houston is bigger than San Francisco. So, New York is bigger than San Francisco.
2. Los Angeles is bigger than New York. Los Angeles is bigger than San Francisco. So, New York is bigger than San Francisco.
3. Abraham Lincoln and Bill Clinton were both U.S. presidents. Lincoln is dead, but Clinton is still alive. So, Lincoln was president before Clinton.
4. George H. W. Bush was the 41st president of the U.S. Bill Clinton defeated him in the presidential election in 1992. So, Bill Clinton was the 42nd president of the U.S.
5. The Empire State Building is in New York. You can see Brooklyn from the top of the Empire State Building. So, Brooklyn is in New York.
6. Mount Everest and K2 are both in the Himalayas. Mount Everest is taller than K2. K2 is the second tallest mountain in the Himalayas. So, Mount Everest is the tallest mountain in the Himalayas.



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Excerpted from *The New Critical Thinking*

7. The Himalayas contain more tall mountains than any other mountain range on earth. Mount Everest is taller than any other mountain in the Himalayas. So, Mount Everest is the tallest mountain on earth.
8. Michael Phelps has won more Olympic gold medals than any other swimmer. Successful Olympic swimmers typically win more medals than other athletes. So, Phelps has won more Olympic gold medals than any other athlete.
9. Rio de Janeiro is in Brazil. Brazil is right beside Argentina. Argentina is in South America. So, Rio de Janeiro is in South America.
10. Washington D.C. is the capital of the U.S. The president's office, the Oval Office, is in the White house, which is in Washington D.C. So, the president lives in Washington D.C.

D. Go back through the arguments in 1.1 B and re-assess for validity and soundness. Note any cases where belief bias initially leads you astray in assessing for validity.

5. Why it Matters: Missing Premises and Insisting on Validity

Validity is the highest possible standard, since it demands that it's *logically* impossible that the conclusion is false and all the premises true. You might think that the very notion of logical possibility/impossibility is rather silly and impractical, especially when we remember that absurd situations, like talking typewriters, are logically possible. Do we really need such a high standard?

First of all, not all good arguments are valid, as we'll start to see in detail in Chapter 4. But valid arguments are the cleanest, simplest kind, and it's best to start where everything is pure and simple before moving on to the messy and complicated. Also, some arguments do meet this extremely high standard. If we didn't have the concept of validity, we wouldn't be able to explain how these arguments differed from other arguments, with a weaker degree of conditional support.

Most importantly, when we insist on validity, this forces us to make explicit premises that we had left unstated. This, in turn, forces us to directly confront our unarticulated and maybe unconscious assumptions. This can have an enormous beneficial effect on our thinking.

Suppose we had a less exacting standard, one that accepted the original Ice argument as perfectly adequate. We would have a large blind spot in our



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understanding of the world. Someone who thinks the reasoning of that argument is adequate has just *ruled out*, without giving it a thought, the possibility that there might be different types of water ice with different melting points. If we do not require that it is *logically* impossible for the premises to be true and the conclusion to be false, we will *fail to track the truth* in an important way: we will implicitly assume we know things that we don't—in this case that all solid water melts at 32° F. That is why we hold arguments to the highest possible standard. If we don't, we will have intellectual blind spots.

Insisting on validity, rejecting a line of reasoning until it's clearly valid, compels us to insert the extra premise:

(P2) Solid water will always melt when heated above 32° F.

With this assumption out in the open, we no longer have that intellectual blind spot. We can now assess this premise and recognize that our evidence for it may indeed be surprisingly weak—yes, any water *I have seen* melts when heated above 32° F, but is it *obvious* that even in unusual or exotic circumstances that is *always* the case? Surely not. Answering that question demands scientific research, not just casual observation of the behavior of water under normal circumstances.

An incomplete argument is called an **enthymeme**. Converting enthymemes into fully stated arguments is a way to drag unstated assumptions into the light. Very often, the unstated assumptions, the *missing premises*, are the weakest. In many cases, they turn out to be obviously false, or at best highly controversial and unsupported by the evidence. The belief bias means we often won't notice this unless we actively engage System 2 and self-consciously assess the stated argument's validity. So, insisting on validity, and the associated reconstruction of arguments and interrogation of the premises we uncover is one of the most powerful tools for reasoning and arguing reliably. We'll have more to say about enthymemes and about argument reconstruction in Chapter 3, but for now, we want to note that enthymemes are very common, and that filling in the missing premises to make an argument valid is often extremely illuminating.

Through much of history, it was accepted that the earth sat entirely stationary at the center of the universe, with the sun and other objects orbiting around it. When scientists and philosophers considered the possibility that the earth orbited the sun and that it also rotated on its own axis, they were met with great skepticism. Just the rotation of the earth on its axis seemed to be ruled out by an argument from the most straightforward observational data:



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(P1) If the earth rotates, we are moving at about 1,000 mph.

(P2) We don't *seem* to be moving.

(C) So, the earth isn't rotating.

This seems pretty reasonable, especially if you're living in the 1500s and have the belief bias working in favor of the argument, rather than against it. It was known that the earth's circumference was about 24,000 miles, and so, given that the earth has to rotate once every 24 hours, someone at the Equator would be moving at 1,000 mph. Even far north of that, you could work out that we would be moving at a substantial fraction of that speed. So, (P1) is true. However, the argument is not valid, and we can easily see what's missing. To be valid it needs a further premise:

(P3) If we are moving at about 1,000 miles per hour, it will seem to us that we are moving.

But why should we think *this* is true? Obviously, if I'm moving at about 1,000 miles per hour relative to the ground below me and relative to the air, then I'd feel that. But if we're all moving at the same time, would it still seem that we're moving? We can drink coffee on an airplane without it flying into our faces because, although we're moving at 500 mph, so is the coffee. Once we make (P3) explicit, we're in a position to see that it's not so obvious after all.

Most of the great innovations in science, technology, business, and a wide range of other fields resulted from someone being the first to notice that everyone else had been assuming something without ever making that assumption explicit. This is the nature of assumptions; they're things we unreflectively take for granted. They shape and direct our thinking without our even recognizing their influence. Consider the following, plausible but invalid, argument.

(P1) The fastest jet from Los Angeles to San Francisco takes an hour and 15 minutes.

(C) There's no way to travel from Los Angeles to San Francisco in less than an hour.

This argument presupposes that there is no mode of travel faster than a jet:

(P2) There is no faster way to travel from Los Angeles to San Francisco than by jet.

Although this is currently true, it doesn't have to stay that way. We can imagine train-sized capsules using magnetic levitation, being shot through 100-mile-long low-pressure tubes, with no friction and very little air resistance. This might get you there in half an hour. We can imagine a computerized system that makes an



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extremely detailed scan of your entire body in Los Angeles, that sends that scan at the speed of light to San Francisco, that disintegrates your body in Los Angeles, and that uses that scan to reconstruct you with a sophisticated 3-D printer in San Francisco. This might get you there in seconds.

The point is that we can't question our hidden assumptions until we've made them explicit. This allows us to imagine other possibilities and maybe to make them a reality. Insisting on validity forces us to explicitly articulate assumptions that we hadn't realized we'd been relying on. Sometimes these will be trivial facts, like that all whales are mammals. But sometimes we will discover that the premises we'd been relying on are substantive, questionable, and/or alterable.

All of this requires that we slow down, override our cognitive autopilot, and engage System 2. The belief bias shows us that we are *naturally strongly disposed* to accept poor arguments as decisive, simply because we already happen to believe their conclusions. Given this, if we don't deliberately verify that each argument really is valid or supply the missing premises that will make it so, we're believing what we already believed. If you don't even know what the full argument should look like, and System 1 is mindlessly giving it the thumbs up, you have little hope of spotting cases where you believe things for bad reasons. So, insisting on validity isn't just advice for the classroom or the science lab; it's practical advice for everyday life.

Summary

An **argument** is a piece of reasoning that is intended to establish the truth of a conclusion. An argument consists of one or more premises and a conclusion. The **premises** are statements that are offered as **evidence** for the conclusion. The **conclusion** is the statement whose truth the argument is intended to establish.

Logicians divide arguments into two broad categories: deductive and inductive. An argument is **deductive** if it is intended that the truth of premises would guarantee the truth of the conclusion. An argument is **inductive** if it is intended that the truth of premises would render the truth of the conclusion probable or likely.

An argument is **valid** if, and only if, it is (*logically impossible*) for the premises to be true and the conclusion to be false together.

The terms "*possible*"/"*impossible*" are systematically ambiguous, i.e., they can have entirely distinct meanings in a different context. The relevant notion for defining validity is **logical impossibility**. Something is logically impossible if it is



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not conceivable without contradiction. Thus, in evaluating an argument's validity, we are not allowed to assume *background beliefs* (however commonsensical) that are not in the stated premises. Adding such beliefs to the premises of the argument means we are not assessing logical impossibility but some other notion of possibility (e.g., physical possibility, epistemic possibility). Hence, we are not assessing the stated argument's validity. The only background beliefs that we are allowed to use in assessing validity concern *the meanings of the words used to state the argument*. This is unavoidable: if you don't know what the argument means, you can't understand it, let alone assess it.

A valid argument is one whose premises provide perfect **conditional support** for its conclusion: *if* all of its premises are true, then its conclusion must be true. To put it another way, a valid argument is *truth-preserving*. A valid argument with all true premises is **sound**. (Hence), a sound argument has a true conclusion. However, if even one of the premises is false, then the fact that an argument is valid/truth-preserving provides no reason to believe its conclusion. Similarly, even if the premises are all true, if the argument is invalid, it provides no reason to believe its conclusion.

So, to judge whether an argument gives us reason to believe its conclusion, we assess its soundness, i.e., we must verify *two entirely distinct things*:

- (i) The argument is valid.
- (ii) The premises are all true.

It is easy to fail to carefully separate these two tasks, and hence, to incorrectly assess an argument's validity and/or soundness.

Moreover, we are all susceptible to **belief bias**: judging an argument as valid, merely because we already believe its conclusion to be true. This should be a source of great concern, since it can give a powerful illusion that a belief is well supported by arguments when the arguments in question are defective.

An incompletely stated argument is an **enthymeme**. Often the unstated/missing premises are the controversial ones. Making the missing premises explicit is an important tool for avoiding sloppy reasoning and for uncovering the reasons why people disagree about important matters. That is why we insist on validity in assessing deductive arguments.

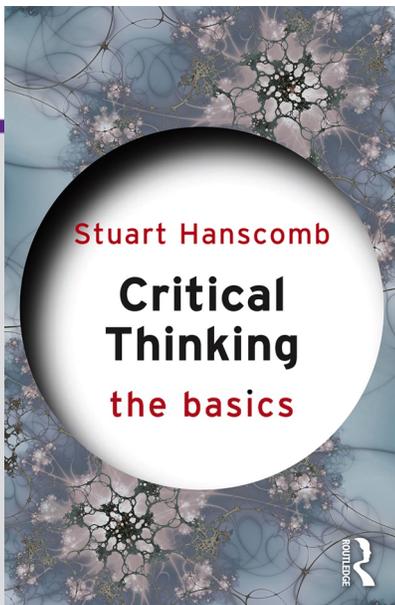
The **fallacy of equivocation** is where a single word or phrase is **ambiguous**: it has two or more meanings, so that an argument has the appearance of being sound, even though it isn't. There is no single reading of the ambiguous term that makes all the premises true.



CHAPTER

4

CRITICAL THINKING AND DISPOSITIONS



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Critical Thinking: The Basics
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CRITICAL THINKING AND DISPOSITIONS

Excerpted from *Critical Thinking: The Basics*

It is not enough to have a good mind, rather the main thing is to apply it well.

(René Descartes, *Discourse on Method* [1641] 1968)

My husband says I'm overly sensitive to criticism. BUT WHAT DOES HE KNOW? WHO IS HE TO CRITICISE ME? HE'S LUCKY I DON'T DIVORCE HIM!

(Sacha T. Burnstorm, pers. comm.)

Learning about heuristics and biases is not the same thing as learning to think in ways that avoid their negative effects. Critical thinking is something that we need to *do*, not just *know about*. However, the doing is particularly challenging because of the automaticity of System 1 thinking. We need to develop the habit of critical thinking in order to counteract the powerful tendency to think quickly in situations where thinking slowly would be more beneficial. The skills of critical thinking thus aim to instil more constructive habits of *thought*.

A further level is added, though, in which these skills are motivated by **dispositions** to think critically. To be a critical thinker in this sense is having what Ennis calls an 'inclination' to think critically. According to this approach, we do not just 'do' critical thinking, but 'become' a critical thinker. 'Becoming' a critical thinker, however, does not mean some cultish, full-blooded transformation in your personality, as seems to be suggested by some theorists. Harvey Siegel, for example, says that 'when we take it upon ourselves to educate students so as to foster critical thinking, we are committing ourselves to nothing less than the development of a certain sort of person' (1988, p. 41). Learning critical thinking can certainly change the way we approach our beliefs about ourselves and the world, and the ways in which we make decisions, but this is usually about shifts in emphasis and the nurturing of existing dispositions rather than the emergence of dominant traits or attitudes. Even if creating 'a certain sort of person' is possible, this will not be a desirable profile for many of us, but this should not stop us attempting to develop and enhance critical thinking dispositions. For each individual, these tendencies will merge with the rest of their personality so that no two critical thinkers will be recognisably 'alike' in any generalised sense. Instead, what we would expect are similarities in certain dispositions they exhibit in deliberations and other situations in which arguments are exchanged.

Two further points should be highlighted before proceeding. The first is that we must be careful not to see these dispositions as simply enabling critical thinking in a practical sense, but as motivating it as well. Critical thinking is valued,



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and should we find we are not thinking critically on an occasion in which we should, then we are moved by this omission; disappointed in ourselves, perhaps angry.

The second point concerns the distinction between encouraging dispositions that will tend to make us better critical thinkers, and seeing critical thinking as a discipline that will foster these dispositions. Writings in this area tend to be framed in terms of the former, but the latter is implied as well. Therefore, answers to Robert Ennis' question, 'What dispositions does an ideal critical thinker possess?' (1996b) tell us: (1) which characteristics we need to develop in order to have a readiness for, or be predisposed towards, thinking critically; and (2) which characteristics can be acquired as a result of learning critical thinking knowledge, values and skills. These will, of course, be mutually reinforcing, but from an educational point of view, the second should be the primary aim. Education will develop dispositions in students, whether this is intended or not, but this largely occurs as part of the intellectual and social practices they are being inducted into, rather than as a separate aim. For this reason, teaching critical thinking dispositions in order to be a better critical thinker seems to put the emphasis in the wrong place. Instead, the knowledge, skills and values of critical thinking are taught, and we then expect certain dispositions to develop out of this culture.

There have been a number of attempts to formulate lists of critical thinking dispositions, including those by Richard Paul (1995, Chapter 13), Robert Ennis (1996a, pp. 368–9), and Peter Facione (2006). The discussion that follows is informed by several of these, and by other scholars interested in what are known as 'epistemic virtues'. Dispositions (or virtues) tend to be highly interdependent, so that possessing one requires possessing many others as well. Any list of critical thinking dispositions has the potential, therefore, to be very long indeed. To avoid this, I will focus on the ones that I believe have the most direct influence: love of truth, open-mindedness, flexibility, modesty, self-knowledge, meta-cognition, and what I'm calling 'dialogical dispositions'. Where appropriate, however, I will also indicate related or complementary dispositions.

2.1 Love or Truth

According to Ennis (1996a, p. 9), ideal critical thinkers will 'care that their beliefs are true, and that their decisions are justified; that is, care to "get it right" to the extent possible, or at least care to do the best they can'. The critical thinker has a



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commitment to the value of truth, and thus to the appropriate processes for reaching the truth. A 'justified' belief here refers to one that is established on the basis of rational enquiry – the use of reason and evidence. It is important to recognise that we can have a love of truth, but not a commitment to rational enquiry as a means of attaining it. Instead we could regard notions like faith, feeling or intuition as roads to truth. In some domains (e.g. religious and spiritual beliefs), this might be appropriate, but even here the critical thinker would need to provide an argument for why these domains require a different type of knowledge.

One thing we need to be aware of, in ourselves and others, is the desire to be right posing as the desire for truth. Many of the dispositions discussed below have a bearing on this distinction. The desire to be right implies competitiveness rather than love of truth, and it will leave us especially vulnerable to the **confirmation bias** and other ego-defensive biases that serve the self rather than objective knowledge. Juror 4 in the film *Twelve Angry Men* is the reasoned voice of the guilty vote in that he is intelligent, calm, and willing to look at the evidence on its own merits. But unlike Juror 8, he seems to also have excessive pride in being *right*, and it is arguably this need that dampens his inquisitiveness and makes him unwilling to go to the lengths of Juror 8 in scrutinising the arguments put forward by the prosecution.

2.2 Open-Mindness

Since seeking truth requires us to listen to the views and reasoning of others, and an appreciation of the fallibility of our own beliefs and convictions, then open-mindedness must be a fundamental disposition of the critical thinker. Open-mindedness is a corrective to the confirmation bias. It does not mean that we should have no opinion on an issue in order to deal with it fairly, but it does mean that we are able to bracket – put aside – this opinion in order to more objectively assess its worth. Instead of looking for premises that support a conclusion already reached, we should be looking closely at what premises present themselves and what conclusion these should then lead us to. This is what John Dewey calls the 'attitude of suspended conclusion' (1910, p. 13), or as Johnson and Blair (2006, pp. 50–1) put it: 'To engage in [argumentation] ... is to admit in principle the possibility that your premises do not constitute good grounds for your conclusion (even though at the moment you think they do).'

A good critical thinker understands the limitations of her individual perspectives and the value of other perspectives (and thus the value of dialogue)



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as a way of opening her mind. Often other people will have positions and arguments that we had not thought of before listening to what they are saying. Open-mindedness entails a willingness to change one's mind, either in the direction of another's view, or towards a new conclusion not previously considered by the discussants. But, says physicist David Bohm in his book *On Dialogue*,

such communication can lead to the creation of something new only if people are freely able to listen to each other, without prejudice, and without trying to influence each other ... If, however, two people merely want to convey certain ideas or points of view to each other, as if these were items of information, then they must inevitably fail to meet. For each will hear the other through the screen of his own thoughts, which he tends to maintain and defend, regardless of whether or not they are true or coherent.

(2004, p. 3)

Open-mindedness is hard to achieve because we must bracket, not just our current belief in some abstract sense, but also the conviction that will typically accompany it. In order to truly *listen*, we need to be calm. And as already indicated, carefully attending to what the other is saying is a fundamental requirement for critical thinking.

2.3 Flexibility

In the passage from Bohm just quoted, he also states that each participant in a dialogue 'has to be interested primarily in truth and coherence, so that he is ready to drop his old ideas and intentions, and be ready to go on to something different, when this is called for'. The critical thinker recognises that beliefs are often provisional, open to being disconfirmed by subsequent evidence and argument. If open-mindedness is a willingness to change our mind, then flexibility of thought is the ability to do so. Both are challenging. In the case of flexibility, the firmness of commitment that is needed to act is psychologically opposed to the 'openness to being wrong' that critical thinking demands. For this reason many other philosophers writing in this field – such as Valerie Tiberius (2008, Chapter 3), and Douglas Walton (1992, pp. 267–70) – recognise and support the value of trying to be as flexible as possible in this way. The critical thinker must try to be highly tolerant of – to function well in the world in spite of – uncertainty.

Endurance is also required in circumstances where open-minded decisions



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need to be made. As we know, **System 2** thinking is energy-sapping, slows us down, and is characterised by John Dewey as 'mental unrest and disturbance' (1910, p. 13). Facing dilemmas, we need to have the fortitude to maintain what psychologist Irvin Yalom (1980, p. 312) calls 'simultaneous ambivalence'. This is the result of remaining clearly focused on the for and against of both (or all) the options available, rather than letting one of them dominate our attention and, therefore, that way incline us to a less troublesome, but biased, decision.

As well as the need for conviction, we must also recognise that a vital feature of a fulfilled life is substantial time spent being 'unreflectively absorbed by what we value' (Tiberius, 2008, p. 67). This is also a different psychological mode to critical thinking, and one that is similarly at odds with it. If both this type of absorption and reflective thinking are so important, then we can see how being 'ready' (to use Bohm's expression) to move between the two is also important.

2.4 Modesty

Modesty (or humility) is primarily understood as possessing accurate perceptions of ourselves and the status of our beliefs in relation to others. The exaggerate pride in being right we identified in Juror 4 is the opposite of modesty. This is a person for whom it is important to see himself as better than others, whereas in the modest or humble person, we find a generalised sense of equality. They will thus bring an absence of egocentricity to a discussion that allows for more open debate.

Also, however, modesty is important for critical thinking for a slightly different reason. Critical thinking is empowering in terms of the insights it provides, and how it improves our ability to successfully interrogate the arguments of others. These are no mean abilities, and have the potential to create a sense of superiority in the learner. Modesty is a corrective to this. It will incline us, for example, to realise that critical thinking is just one among many important practices; that virtually anyone can become a better critical thinker if they commit themselves to learning it; and, perhaps most important of all, to recognise that if people are not schooled in this way, it does not follow that: (1) they are unintelligent; (2) they do not have worthwhile beliefs; or (3) they are not worthy or respect. (For more on this kind of issue, see the section, 'Don't be a smart arse', below.)



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2.5 Self-Knowledge

Knowledge of one's self in part comes from an appreciation of the strengths and frailties humans share, including the intellectual frailties that are of interest to critical thinking. It also comes from the actual content of what we believe and feel. This will include relatively superficial and practical knowledge, but also *deep personal attachments to values and worldviews* (such as religious, political and ethical beliefs) that can be an impediment to open-mindedness.

These attachments are part of what it is to be a person, and they will not always be something that critical thinking believes we should be prepared to bracket in the context of a discussion. That is a choice for an individual. However, what is important for critical thinking is that we are aware of what these deep-seated commitments are. One reason for this is that it allows us a clear choice about what we do and do not want to put out there for critical appraisal by others. A similar reason is that it permits us to assess which of our assumptions we want to question and which we do not. Also, foundational beliefs will permeate many of our other beliefs, so recognising what Walton refers to as 'dark side commitments' (1992, p. 255) will provide important premises in arguments concerning a very wide range of topics.

2.6 Meta-Cognition

Closely related to self-knowledge is the disposition to be meta-cognitive. The most specific meaning of this term refers to an awareness of our thought processes, and is exemplified by ideas like 'alertness to loss of control of one's thinking', and 'the impulse to stand back and take stock' (Perkins *et al.*, 1993, p. 8). It is not about formal knowledge of our cognitive biases, but rather the disposition to monitor and assess the quality or mode of our thinking in different situations. An important aspect of this concerns knowing when to think critically and when not to. For example, Perkins *et al.* refer to the importance of the 'detection of complex thinking situations' (*ibid.*, p. 8), which will include knowing when to switch from System 1 to System 2 thinking.

David Bohm discusses the 'blocks' we have that make us unaware of some of the contradictions in our beliefs, and therefore less open-minded. To assist in our understanding of these blocks, he suggests we become sensitive to mild emotional responses to ideas that we encounter. 'If one is alert and attentive,' he says,



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he can see for example that whenever certain questions arise, there are fleeting sensations of fear, which push him away from the consideration of these questions, and of pleasure, which attract his thoughts and cause them to be occupied with other questions. So one is able to keep away from whatever it is that he thinks may disturb him. And as a result, he can be subtly defending his own ideas, when he supposes that he is really listening to what other people have to say.

(2004, p. 5)

With reference to ideas discussed in Chapter 1, we might call this the development of an intelligent affect heuristic.

We should not lose sight, however, of how these considerations are part of a broad sweep of activities and practices making up a life, including ones where meta-cognition is simply not welcome or necessary: painting for pleasure, unself-conscious dancing, and an evening with a *Breaking Bad* boxset come to mind. Many such occasions can be sought out and (reflectively) worked into the composition of one's life. It might require critical thinking and its associated dispositions to determine and facilitate these happenings, but many of the resulting experiences are then justifiably pressing meta-cognition's snooze button.

2.7 Dialogical Dispositions

Critical thinking does not necessarily occur in the context of a dialogue, but it usually does. Written arguments (in academic journals, opinion pieces in news media, social media forums, and the like) are invariably a response to other arguments, and are responded to in turn. Arguments presented in spoken, and in particular face-to-face, dialogue can be some of the most persuasive, and are of course found in multiple professional, personal, political and legal settings. We present arguments to convince others of our position; arguments provoke questions and counter-arguments, and via this process the open-minded, flexible, self-aware person should be able to edge closer to the truth about the issue under discussion. Good quality dialogues are thus profoundly important, and so the ability to conduct them constructively has equivalent importance. In part, this is a matter of knowing and applying certain rules (see below), but there are also dispositions that facilitate this process and embody its value and significance. These include a genuine desire to listen to others' positions, and a desire to



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present your own position as clearly as possible. And this means providing not just your conclusion, but the reasons supporting that conclusion as well.

I will discuss some important dialogical dispositions – courage, staying focused, respect for others, and not being a ‘smart arse’ – before providing some basic rules for constructive dialogues.

Courage

One reason we might be reluctant to be clear about our reasons for holding the beliefs we do is fear of these beliefs being cast into doubt. This is one reason why an important dialogical disposition is courage. Another is that critical thinking is about independence of thought and thus taking responsibility for one’s convictions, and this can sometimes mean standing alone in the face of significant social pressure to conform. *Twelve Angry Men* and the Milgram experiments (which will be discussed in Chapter 5) are dramatic examples of pressures associated with **groupthink** and forms of authority, but as we saw in Chapter 1, the underlying processes are common. Social media is a prime example; one academic researcher writes about how she came to the 2015 UK general election as a floating voter who raised questions about the policies on all sides, but who was confronted ‘time and time again’ by ‘posts from my peers packed full of expletives implying that I was bigoted for even doubting the Labour or the Green economic approach’.

There are two types of reprimand that the person challenging a group norm can face: one relating to the content of their opinion, the other to the process of speaking out itself. Speaking out can be perceived as problematic for a number of reasons, including ‘rocking the boat’ (destabilising an established, possibly hard-won, equilibrium). In certain circumstances or at certain times, critical thinking (or at least its expression) is not appropriate, and, depending on the exact context, ‘boat rocking’ could be one of them. However, as the previous discussion of the characteristics of groupthink demonstrates, this is often not a judgement call that is easy to make. It takes courage.

Another consideration that affects motivation for critical thinking is that it exposes us to the dark underbelly of existence. By this, I do not mean human deviousness or folly, but two of the fundamental existential concerns that continually and inevitably haunt us: that we must take responsibility for our decisions and that there is no preordained order to our lives (no final set of truths or essential self to be discovered). At a cultural level, Kant meant something like



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this when he described the Enlightenment as an emergence from a ‘tutelage’ that is ‘self-imposed’, not by an inability to reason, but by a lack of ‘resolve and courage’. Critical thinking gains much of its significance from a profound freedom that comes with the understanding that existence has no ultimate answer or purpose. Words like ‘active’ and ‘judgement’ serve as reminders that in a very important sense our lives are what we choose to make of them. There is a freedom and excitement associated with this recognition, but also an anxiety, and it is this anxiety that can make critical thinking off-putting. It is strangely disquieting.

Staying Focused

In dialogues it is very easy to become side-tracked, so the critical thinker always tries to stay focused on the overall point of the discussion. Losing focus can happen by accident, but it can also be the aim of tactics employed by an arguer who feels they are losing, or who wants to end the discussion prematurely.

Fallacies associated with losing focus include **ad hominem arguments** (see Chapter 5), **red herrings** (see Chapter 8) and **straw man arguments** (see Chapter 3).

Part of the art of staying on track is asking the right questions at the right times. Ennis (1996a, pp. 373–5) identifies various types of questions:

- ‘Clarification questions’ like:

Would you say a little more about that?

What do you mean?

- ‘Main point’ questions like:

Let me see if I have this right. Is this your main point ...?

I’m afraid I don’t quite see what you’re driving at. Could you say a little more about it?

- ‘Reason-seeking’ questions, or requests, like:

Perhaps you could elaborate on why you believe that?

- And ‘relevance’ questions like:

How does that support the conclusion?

Are you assuming that ...?

Other terms for ‘staying focused’ might be persistence or perseverance, and it is



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noteworthy that John Dewey includes the former in his definition of critical thinking: 'Active, persistent, and careful consideration of a belief ... in the light of the grounds which support it' (1910, p. 6). Persistence is part of the courage discussed above, but it can also be valuable when faced with an absence of clarity or deliberate attempts to divert the discussion.

Respect for Others

Among critical thinking scholars, there is some disagreement about whether respect, or care, for others should be counted as a critical thinking disposition. Peter Facione (voicing the view of the majority of scholars at the time) says:

Good critical thinking has nothing to do with any given set of cultural beliefs, religious tenets, ethical values, social mores, political orientations, or orthodoxies of any kind. Rather, the commitment one makes as a good critical thinker is to always seek the truth with objectivity, integrity, and fairmindedness.

(2006, p. 11)

'Integrity and fairmindedness' can of course be ethical dispositions, but what Facione has in mind here is their role in truth-seeking – in other words, as epistemic dispositions. Respect and concern for others – qualities that seems to be present in *Twelve Angry Men's* Juror 8, but not in master problem-solver Walter White (from *Breaking Bad*) – are not, according to this view, part of the profile of the ideal critical thinker.

It is interesting though that, while recognising it is not a defining characteristic, Ennis sees the need to include 'care about the dignity and worth of every person' among his list of critical thinking dispositions. His reason is it would serve as a 'corrective' against critical thinkings misuse, implying that it is a powerful ability that has the potential to hurt (humiliate, disempower, oppress) others. However, I will argue: (1) that this is not enough of a reason to include it as a core disposition; but also (2) that there is another reason why we should regard respect and concern for others as having particular importance for critical thinking.

Critical thinking dispositions can indeed be used for unethical purposes, but this is true of most sets of practice-related dispositions, such as those relevant to being a good sports person or a good business person. The good sports person is not the same things as a good person more generally conceived, but if we want



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them not to use their talents and dispositions for ill-intent, then they need to also have virtues such as respect and compassion for others. So, in a sense, we would add this basic ethical disposition to all other lists of dispositions. A general respect for the welfare and dignity of others is a disposition we would hope to promote and instil in our children, whether or not we are promoting critical thinking; and most professions these days have ethical codes of conduct.

So, in this sense, the ethical dimension is relevant, but Ennis has not provided a reason why it should have *special* relevance for critical thinking, and to this extent Facione and others have a point. I believe, though, that there are some more specific reasons why care for others should be seen as, if not core, then as having greater importance to critical thinking than it has to other practices (such as sport). The reasons in question concern the functioning of constructive dialogues, and the first of these I will initially express in terms of **premises** and **conclusion**:

Premise 1: Constructive dialogue is crucial for critical thinking.

Premise 2: Constructive dialogue is less likely if we do not have concern for the welfare of the people we are in a dialogue with.

Conclusion: Therefore concern for the welfare of others is a disposition of an ideal critical thinker.

The initial premise has already been explained, but the second is in need of some elaboration. One reason constructive dialogue is less likely if we are not respectful towards other participants is that it could be an incentive for them to disengage. A person detecting signs of disrespect might leave the discussion entirely, or be reluctant to give it their full energy, or to be entirely open about their position and reasons for holding it.

This point brings us to a second argument for why concern for others is so important for critical thinking. The reasoning here is less about the functioning of the dialogical process, and more about our ability to understand the positions that others hold. It has already been established that open-mindedness is fundamental to critical thinking, but this is not just a matter of being able to detach ourselves from our commitments in order to objectively assess alternatives, it is also the ability to really listen to those alternatives with the right degree of attentiveness. Often the bases of people's beliefs are subtle and highly contextual, and in order to truly understand them, we need to be willing to devote time and energy, and a kind of selflessness, to others' belief systems. John Stuart Mill (1962, p. 164) felt strongly



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about this:

Ninety-nine in a hundred of what are called educated men are in this condition; even of those who can argue fluently for their opinions. Their conclusion may be true, but it might be false for anything they know: they have never thrown themselves into the mental position of those who think differently from them, and considered what such persons may have to say; and consequently they do not, in any proper sense of the word, know the doctrine which they themselves profess ... [T]hat part of the truth which turns the scale, and decides the judgment of a completely informed mind, they are strangers to; nor is it ever really known, but to those who have attended equally and impartially to both sides, and endeavoured to see the reasons of both in the strongest light.

To be willing to do this, I would argue, we need to have a prior respect for the other as the holder of these beliefs. It is this respect that helps motivate careful and sustained listening. Also, to repeat the point made above, the person who suspects that this respect is not present will be reluctant to fully divulge their beliefs and the reasons supporting them. And since the whole point of critical thinking is to *scrutinise* beliefs, it is even more important that this is carried out against a background of trust: trust that others are doing it for the right reasons, and that they are aware that beliefs do not exist independently of believers.

Beliefs and Believers

'Argument, on this model,' says Michael Gilbert about his theory of 'coalescent argumentation,' 'is among persons, not between theories' (1994, p. 112). Because many of our beliefs – and certainly many of those worth debating – are personal, then to enter into argumentation dialogues can be to run a significant risk. It is more than a matter of the possibility of finding out you are wrong in a way that is analogous to getting an answer on a test wrong; it is finding out that a belief that is central to your values and commitments is wrong. To take this on board can require quite a far-reaching re-evaluation of aspects of one's life. This is a risk we will be more likely to take if we feel that our partners in dialogue are appreciative of this fact, and correspondingly motivated to listen to us in a way that is underpinned by basic respect.

Sadly, the way that critical thinking is taught (and how its aims and methods are communicated), too often runs counter to this attitude. In his article



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'Argument is War ... and War is Hell' (1995), Daniel H. Cohen is critical of the adversarial, combative way in which argumentation tends to be understood. This, he says, runs the risk of creating 'not just able arguers, but *argumentative* arguers: proficient, pedantic and petty ...' (ibid., pp. 180–1). Taking pleasure in argument for argument's sake, or seeing the aim as winning the argument rather than establishing truth, is all part of the dispositional profile of an adversarial approach. It is something that is readily apparent in the practice of formal debates, and in the way court cases in many countries are conducted.

In place of the 'war' metaphor, Cohen suggests a number of alternatives, including collaborative frames such as 'brainstorming' and the nineteenth-century American tradition of 'barn raising' (which is still practised by communities like the Amish). In place of listening in order to defeat, there is listening motivated by inquisitiveness. In place of 'me against you', there is 'me and you trying to sort out a problem, the solution to which we might not have been able to reach alone, and which could end up being a hybrid or synthesis of our initial, individual positions'.

A side-effect of this attitude to dialogues can be a kind of intimacy that, especially if reciprocated, is profoundly rewarding. The careful, respectful listening and thus opening up of the other's world is one reason for this. Another is that the sharing of ideas in a dialogue towards new, mutually generated, important insights is an excellent basis for bonding. Philosopher Bertrand Russell describes his meeting with novelist Joseph Conrad in a way that demonstrates this potential:

We talked with continually increasing intimacy. We seemed to sink through layer after layer of what was superficial till gradually both reached the central fire. It was an experience unlike any other that I have known. We looked into each other's eyes, half appalled and half intoxicated to find ourselves together in such a region. The emotion was as intense as passionate love, and at the same time all-embracing, I came away bewildered, and hardly able to find my way among ordinary affairs.

(Cited in Yalom, 1980, p. 396)

This is an example of what has come to be known as 'flow'; the experience of focused engagement with an intrinsically rewarding task that you are skilled at and in control of, but which is suitably challenging and provides immediate feedback. It is associated with an experience of timelessness (being lost in the moment); nonself-consciousness (the boundaries of the ego are more supple than usual), and calmness. According to the concept's originator – Mihaly



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Csikszentmihalyi (2002) – it can be elicited by a range of activities, including sport, creative work, and one-to-one social encounters. A non-dialogical variation of flow is what Dewey (1910) calls ‘wholeheartedness’. In contrast to the perseverance needed to maintain concentration in some deliberative situations, wholeheartedness is an intellectual absorption in a subject where ‘the material holds and buoys his mind up and gives an onward impetus to thinking’. It is complex, reflective thinking with its own momentum, in which questions and ideas arise ‘spontaneously’.

Overall, it can be seen that care for the well-being of others is an important disposition for a critical thinker to possess, but it should also be apparent that the practice of critical thinking, if encouraged in the right ways, can serve as a gateway to understanding and compassion. Critical thinking can thus be motivated not just by truth-seeking, but by connection and intimacy.

Don't Be a Smart Arse

Becoming a critical thinking can change a person in a couple of respects. On the one hand, they have, or have honed, the dispositions so far discussed, and, on the other, they have a vocabulary that is distinctive. In terms of exercising one’s ability, one has to be aware that this can, as Ennis (1996a) puts it, ‘intimidate and confuse’ others who have not had this training, or who are not otherwise inclined to think in this way.

However, this does not mean that we should not engage people who are less inclined to think in this way in dialogue, or even ‘push’ them to do so, but it does mean that we should do this sensitively. We need to be careful with the language we use, and we must not believe that we are in some sense superior.

For Ennis, then, the ideal critical thinker will ‘take into account others’ feelings and level of understanding, avoiding intimidating or confusing others with their critical thinking prowess’ (ibid.). In other words, *don’t be a smart arse*. On the whole, we need to be very careful when using comedy routines as examples of arguments, because for the most part their intention is to entertain rather than to seek the truth. (It should be recognised, however, that there are genuine hybrids, such as Comedy Central’s *The Daily Show*, and the work of people like Michael Moore, Mark Thomas and Dave Gorman.) However, I’m going to break this rule here and consider a story told by comedian Stewart Lee. It is an example that I believe is justified because the comedian’s own published reflections seem to make it



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clear that this was a real event and that this is how he felt about it. During one of his shows, Lee is making a point about intolerance, and the context is a cab driver who says to him, out of the blue, 'All homosexuals should be killed.' Lee asks him for his reasons.

And then there was a pause, because he'd never had to go to the next level of the argument, fraternising mainly with cab drivers ... where that was just accepted as a point. ... after a moment he said 'Well, because homosexuality is immoral.'

Offering the example of the ancient Greeks, Lee then explains to him that 'morality is not a fixed thing' and therefore not the best basis from which to argue this point. The cabbie's response is: 'Well, you can prove anything with facts, can't you?'

Lee continues:

For a minute I went, 'Yeah.' And then I thought, 'Hang on! That's the most fantastic way of winning an argument I've ever heard! ... I'm not interested in facts. I find they tend to cloud my judgement. I prefer to rely on instinct and blind prejudice.'

As abhorrent as the cabbie's stated view is, Lee is being a smart arse because the argument he presents is going to derail him. It deals in historical facts and abstract concepts like moral relativism that the cabbie probably will not be familiar with. Lee is talking over his head, and so understood more charitably, the response 'you can prove anything with facts' should not be taken literally. Instead it should be interpreted along the lines of 'I don't understand what you're talking about', or 'displaying familiarity with technical terms and giving the appearance of clever arguments can fool some people, but not me', or perhaps simply, 'I know when I'm being patronised.'

The virtue that has been called 'deliberative friendliness' captures the type of constructive approach that would mitigate smart-arsery. It has been defined as: 'the willingness to entertain discussion in a manner that does not unnecessarily offend or alienate interlocutors' (Aikin and Clanton, 2010, p. 415). It does not directly refer to the respect for others previously discussed, but to the style of one's engagement. This should be critical but encouraging, 'sporting' rather than 'quibbling and quarrelsome', and resolutely not one that 'takes any argumentative failure on the other's side to be evidence of cognitive asymmetry between the two' (ibid., p. 415).

In summary, the features of arguments and argumentation that arise from



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this aspect of the discussion of dispositions are these:

- Dialogues can be valuable for reaching mutually satisfying and edifying answers, rather than a win-lose framework.
- A recognition of the complexity and hard-to-get-at nature of the basis of many of the beliefs that we hold. This means that dialogues involving these issues need to be conducted with respect, sensitivity, and tolerance (including for apparent dogmatism).
- Increased or deepened knowledge of others will often be a result, and can be an additional aim, of argumentation.
- Increased or deepened self-knowledge will often be a result of argumentation, and can be an additional aim.
- Careful and sustained listening is privileged as a skill, and as a disposition (the desire to discover another's worldview).
- Sensitivity is required, not just to the complexity, subtlety and distinctiveness of the positions others hold, but to their style of thinking, vocabulary and conversational norms. These are not necessarily those of the critical thinker, but this is not the same as being unintelligent or uninformed. And even if someone is these things, that does not mean they cannot be engaged in some level of argumentation.

2.8 Guidelines for a Constructive Dialogue

In addition to this analysis of dialogical dispositions, it might be helpful to provide a summary of rules of conduct (influenced by Ennis, 1996a; Walton, 2006; and the work of pragma-dialecticians such as Eemeren and Grootendorst, 2004) that should be followed in order to give dialogue the best chance of success. The person embodying critical thinking dispositions will be inclined to these ways of behaving, in which case, these guidelines can serve as a kind of summary of how the ideal critical thinker comes across when engaging in argumentation. It can also, however, function as a stand-alone checklist that has value regardless of underlying dispositions to conduct oneself in these ways.

1. The discussants should be allowed to speak freely – both in terms of expressing their view, and in terms of being critical of the views of other discussants.
2. If a discussant is asked to explain their viewpoint (for example, provide more clarity, or provide reasons why they hold that view), they must be



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- prepared to do so. This is especially important since premises are often implicit. (See Ennis' list of 'clarification questions', above.)
3. Discussants have a duty to listen carefully to, and avoid misrepresenting, each other's views.
 4. Unless the issue is about the person (or persons) involved, personal attacks (ad hominem arguments – see Chapter 5) should be avoided where possible. Often these are fallacious, but even when they are not, their emotive nature can cause the discussion to descend into a quarrel.
 5. Discussants should address each other in a civil manner.
 6. Discussants should follow basic rules of conversation such as turn-taking.
 7. The discussion should usually only end when all the parties agree that they have said all that they need to say (including asking for clarifications and explanations from others), and that all the issues have been given due consideration (even if some of these are postponed to a later time). Also, note that dialogues should only start under at least implicit agreement by all parties that they want to enter into a discussion (or must enter into a discussion, as in the case of a jury).

Exercises

1. A particularly valuable exercise I have used in class involves watching (and/or reading) *Twelve Angry Men* and assessing the critical thinking dispositions of some or all of the characters in the play/film. The quality of the content of their arguments, and in particular the way they interact with one another will serve as clues to the presence or otherwise of dispositions and behaviours that have been the subject of this chapter. The same approach can of course be applied to characters from other stories or from real-life contexts (such as political debates) as well.
2. A good way to loosen up our biases is through what is known as 'counter-attitudinal advocacy'. This means writing or speaking in favour of a position that you do not hold and/or to argue against a position that you do hold. Its effectiveness with respect to changing minds is well established in psychology and communication research (see Petty and Cacioppo, 1996, Chapter 8), but its weakness is that you can only get people to act in this way under particular circumstances. A critical thinking class is just such a circumstance, however. For example, class members' views on



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contentious contemporary issues can be sought and a debate organised in which the participants argue counter-attitudinally.

3. As an exercise in personal reflection (rather than class discussion), you might want to attend to the presence and development of your own critical thinking dispositions and behaviours as you work your way through this book and/or your critical thinking class. (For a discussion of the relationship between academic work and dispositions, see Hanscomb, 2015.)



CHAPTER

5

THE SURPRISING TRUTH ABOUT HYPOCRISY



WHY WE ARGUE
(AND HOW WE SHOULD)
A GUIDE TO POLITICAL DISAGREEMENT
IN AN AGE OF UNREASON



SCOTT F. AIKIN
AND ROBERT B. TALISSE

SECOND EDITION

This chapter is excerpted from
Why We Argue (And How We Should)
by Scott Aikin and Robert Talisse

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Excerpted from *Why We Argue (And How We Should)*

Al Gore urges us all to reduce our carbon footprint, yet he regularly flies in a private jet. William Bennett extols the importance of temperance, but he is a habitual gambler. Pastor Ted Haggard preached the virtues of “the clean life” until allegations of methamphetamine use and a taste for male prostitutes arose. Mother Teresa ran a hospital for the dying and destitute of Calcutta, but she went to only the best European hospitals when she was ill. When he was a senator representing Idaho, Larry Craig voted against equal rights for homosexuals, but he was charged with soliciting gay sex in an airport bathroom. Eliot Spitzer prosecuted prostitutes as Attorney General in New York, but it was revealed that he was a regular client of a prostitution service.

These famous failings of public figures all involve hypocrisy. In its standard form, hypocrisy occurs when an individual does not live according to the precepts he or she seeks to impose on (or strongly recommend to) others. Charges of hypocrisy are common in debates because they are highly effective. We feel compelled to reject the views of hypocrites. We rightly see hypocrisy as a vice, specifically a symptom of incompetence or insincerity. Yet we should be exceedingly careful about letting our moral and emotional reactions to apparent hypocrisy color our judgments of substantive issues.

In fact, one general truth about hypocrisy is that it is often totally irrelevant to what’s at issue. The fact that someone is a hypocrite does not have anything to do with whether his or her position on an issue is false. Environmentalists who litter do not thereby disprove the claims of environmentalism. The fact that a pro-life activist once sought an abortion for her daughter does not mean that abortion is acceptable. Even if every animal rights activist is exposed as a covert meat-eater, it still might be wrong to eat meat. In short, just because someone’s a hypocrite doesn’t mean that what they say is false.

Allegations of hypocrisy are treacherous because they can function as argumentative diversions, drawing our attention away from the task of assessing the strength of a position and toward the character of the position’s advocate. Such accusations trigger emotional reflexes that dominate our capacity to see the matter clearly. It is for this reason that arguments from hypocrisy are often called *tu quoque* (Latin for “you, too”) fallacies. “You do it, too!” is a regular retort to critique, and we admit that it feels emotionally satisfying to score a point like that. The trouble is that it is precisely in the hard and pressing cases that our emotional reflexes of rejection are most often inadequate. Thus, listeners should temper such knee-jerk reactions toward the messenger and instead independently consider the



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character of the message itself. It also pays to closely examine what the duplicitous deeds really mean. For sure, there are times when the fact that someone can't keep their story straight or can't walk their own talk is a relevant consideration. Surely, if you are making a decision about having a reliable and sincere person in some position of authority, whether they are a hypocrite is a worthy matter of concern. And from some vantage points, such behavior may actually support a hypocrite's point of view. That's right. Hypocrisy can sometimes *support* the hypocrite's view. That's a surprising truth about hypocrisy. We'll say more about it in due course.

In the second presidential debate of 1988 (October 13), moderator and CNN correspondent Bernard Shaw asked Michael Dukakis, the Democratic candidate, the following hypothetical question: "If Kitty Dukakis [Dukakis' wife] were raped and murdered, would you favor an irrevocable death penalty for the killer?" Unsurprisingly, Dukakis, a known death penalty opponent, answered that he would not. Nonetheless, Shaw's line of reasoning was clear enough: Though Dukakis does not think so *now*, were some crucial things different, he *would* think differently. By Shaw's standards, Dukakis was a hypocrite.

The implication underlying Bernard Shaw's hypothetical question is a special instance of a *tu quoque* argument. In its most general sense, a *tu quoque* argument alleges that someone is wrong because her words and actions conflict, and in this case with Dukakis, it is not Dukakis' *actual* actions, but actions he *would take*, at least as far as Shaw sees it.

The argument Shaw seems to have employed is captured roughly along the following lines:

You are against capital punishment now, but what if your wife were taken, beaten, sexually abused, and then murdered? Ten to one, you'd change your tune.

The core of the argument is that were critics of capital punishment to experience the grief and horror consequent of certain crimes, their vengeful inclinations would be sparked. They would see the value in giving others the full measure of retribution. Schematized:

- P1: *Now*, you say capital punishment is wrong.
 P2: Under special conditions X (namely, conditions under which someone you love had been victimized), you would say it is right.

The crucial thing about the assumption behind this line of argument is that it seems that Shaw and many proponents of the death penalty accept the following



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additional premise and conclusion:

- P3: Special conditions X are the appropriate conditions under which to make a judgment regarding the death penalty, and the normal conditions that prevail now are inappropriate conditions.
- C: Therefore, the death penalty is right and you (Michael Dukakis) are not only wrong, but hypocritical, to oppose it.

If P3 were true, then the premises would become relevant to the conclusion and the argument could be saved. The problem is that P3 is false.² Being a victim (and even an *indirect* victim) of a crime tends to distort one's judgments concerning the requirements of retributive justice. That's a pretty heavy thought, so let's break it down a bit.

First, victims maximize assessments of their suffering and perpetrators minimize the suffering they cause, and so if a victim is then placed in the position of determining a proportionate punishment for a perpetrator, there will be a *magnitude gap* between the harms (see Baumeister 1999: 160 and Mandel 2002: 186). Think about it this way: Everybody who's ever had the chance to "get back" at another has faced the serious temptation to give back more than they got. When you were a kid, if your brother hit you, you hit him back harder. When your sister said something mean to you, you tried to think of something even meaner to say in response. There's a reason why that's the case. It's the magnitude gap, and it distorts the way we can evaluate what the appropriate punishment is for those who've wronged us.

Imagine that your neighbor has a really nice mug, and it just broke. He's now throwing a meltdown tantrum about it. It's disappointing for him, to be sure, but we may say that ultimately he's just got to deal with the loss. Next imagine your grandmother's precious china sugar bowl, the one that you've prized since she gave it to you, just broke. Sure, you've got to deal with it just like your neighbor, but when the loss is *yours*, it becomes much more difficult to react appropriately. Our point is that in both cases the loss is roughly the same, but when the loss is *yours*, you can very easily blow it out of proportion. That's the magnitude gap, and that's why victims shouldn't determine the punishment for the crimes they have suffered. They will opt for a punishment that is more severe than the crime.

What's wrong with making punishments more severe than the crimes? Well, for one thing, perpetrators deserve only as much punishment as the crime is bad. To punish someone more severely than the damage that was done by their crime is



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to commit a moral error. For sure, people who commit crimes deserve punishments, but those punishments must be proportionate to the crime committed. That's what it is for punishments to *fit* the crime. Remember some moral error you may have committed as a child. You may have been rude to a relative or you may have told a lie to your parents. That was wrong. Now imagine that you were caught in the rude moment, your lie is detected. And next imagine that as a punishment you were beaten to within an inch of your life. And once you got better from that beating, you were given another beating. And then another. And then another. You get the picture. Sure, rude children may deserve punishment and lying kids need correction. But a series of severe beatings is excessive, no matter how rude the kid was to her aunt or how big the lie was. To punish excessively is morally wrong.

Now let us put these two points together. First, victims have a magnitude gap when they assess the damage done to them and what the perpetrators deserve. They will regularly function so as to give back much more punishment than the harm they suffered. Second, it is unjust to punish anyone more than they deserve. Putting these two facts together, we see something important. If victims determine the punishment, they will likely opt to punish excessively and thus unjustly. That's a sad fact, but it nevertheless is a fact. And that's the heavy thought broken down.

Return to the Dukakis case. That Michael Dukakis, an opponent of the death penalty, would burn with murderous vendetta under the conditions of knowing his wife was brutally murdered is irrelevant to the question of what the proper punishment for the murder is. We now know why—the magnitude gap. Of course, one could hold that the victim's perspective is relevant to deciding the degree of punishment that is appropriate; however, we know that that victim's perspective cannot be definitive of what the appropriate punishment is. So even if Michael Dukakis would indeed burn with murderous rage upon hearing that his wife was brutally murdered (which, by the way, he denied he would), it wouldn't be relevant to his principled stance against the death penalty. Sometimes hypocrisy is totally irrelevant to determining the truth of a belief. However, even when they are raised within the context of a hypothetical example (as in the Dukakis case), charges of hypocrisy can move people. Dukakis was roundly taken to have lost that debate, primarily because of how he answered Shaw's question. Yet the exchange with Shaw over the death penalty was completely devoid of proper argumentative content.

Let's take a step back. For our purposes, we will understand that *tu quoque*



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arguments, broadly speaking, hinge on speaker inconsistencies. Such inconsistencies are manifested in two ways: inconsistencies between a speaker's claims—what can be called *cognitive* inconsistency—and inconsistencies between a speaker's claims and his or her deeds—what can be called *practical* inconsistency. Practical inconsistencies are instances of hypocrisy.

The basic schema for *tu quoque* arguments is as follows:

Tu Quoque

1. Speaker S advocates X.
2. S fails to X.
3. *Therefore*: S is cognitively or practically inconsistent.
4. *Therefore*: S's claim X is false or unacceptable.

Textbooks of logic and critical thinking usually include the *tu quoque* in their lists of fallacies of relevance, because, as we have noted, facts about the speaker's inconsistency do not necessarily bear on the truth or falsity of the speaker's claims. So when someone alleges that Al Gore's claims about global warming are false because he drives a gas-guzzling car and lives in a big house, she is guilty of the fallacious variety of *ad hominem tu quoque*.

More Latin. *Ad hominem* arguments are generally arguments against the person, instead of what the person said. So the general *ad hominem* tactic is to say something like:

He's a drunk, so his views on politics are false.

In this case, we're substituting an evaluation of the person for an evaluation of what the person says. The trouble is that it's often the case that whether the person has some vice or other is irrelevant to an assessment of what the person says. And in our example, the fact that the person drinks too much doesn't mean he has false views about politics. In fact, *it may be because he knows too much about politics that he drinks so much*. (That joke kills in our logic classes.)

Tu quoque arguments are of the *ad hominem* family, because they are cases of where a speaker is criticized for some vice (specifically hypocrisy) and then taken to be wrong about what she's been talking about. And so, they generally have the form:

She's a hypocrite, so her views are false.

It seems strange to note that this, actually, is all there is to hypocrisy charges when deployed as refutations. They seem simply and obviously silly.



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Sometimes, however, one does not intend a *tu quoque* to allege that a speaker's claims are false. One's argument, in fact, might be *formally* similar to the fallacious variety of *ad hominem tu quoque* in that it rebuts a speaker's argument on grounds of inconsistency between thought and action. Such arguments may not be intended to demonstrate the falsity of a speaker's claim that *p*, rather, they may rightly shift the burden of argument back onto the speaker to explain the inconsistency between claims that *p* and actions that seem inconsistent with it.

Direct use of the *tu quoque*, then, is to the falsity of the view in question. Indirect use of *tu quoque* opens a wider discussion of the issue. So, to put things formally:

Direct: S is a hypocrite, so S's claims are false.

Indirect: S is a hypocrite, so S must explain the apparent contradiction between his claims and his actions.

Thus, while their direct use is fallacious, their indirect use might serve an important dialectical role. That is, if a speaker has been inconsistently claiming that we should do X, that is a relevant consideration for a full discussion of the matter. The reasoning may go: *You say that we should do X, but you, yourself, don't do that. What gives? Perhaps things are more complicated than we had assumed? Or maybe the speaker has recently changed his or her mind based on some new information. Consider, for example, a child who objects to an early bedtime and asks the parents why they get to stay up late. Or imagine someone who objects to driving the speed limit when ambulances, police cars, and fire trucks get to drive over the speed limit and run red lights. These are occasions to clarify the situation, so that one can say that, in fact, there is no real inconsistency. Parents can stay up later because they need less sleep than children. Emergency vehicles get to speed because they are responding to emergencies. Insofar as one has posed a challenge of inconsistency as an occasion for clarifying a complex phenomenon, it's not a fallacy *per se*. It, really, pushes critical dialogue along, in that we now have an occasion to make some distinctions. The indirect *tu quoque* posed here functions as a directive for the speaker to further clarify his/her position or elaborate on her evidence. We call the use of *tu quoque* to open further discussion of the issue *dialectical tu quoque*.*

We believe the familiar charge of flip-flopping is a form of *tu quoque* argument. The core of that kind of charge is that at one time, a person thought X was a good idea, but now does not. The charge is that the flipflop can't make up



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his mind, perhaps isn't sincere, or maybe is confused about the issue. Once the charge sticks, it doesn't matter much which diagnosis is correct, since any one of the charges impugns the person's character, and that is then taken as a case against the person's views. But this is often too quick. Why? Because reasonable people change their minds about things all the time! New information can come to light, new experiences can be had, the facts may change, or one's assessment of what the facts mean can shift. Only a blinkered dogmatist would be opposed to changing his mind as new evidence arises. And so, we think that sometimes flip-flopping on an issue shows that a person is really thinking about things, that he is attending to the issue.

Consider a charge that was often brought against Mitt Romney in the run-up to the 2012 presidential election. It was frequently claimed that Romney is a flip-flopper on abortion and state-mandated health insurance. When running for Senate in Massachusetts in the 1990s, Romney said he would support abortion rights. When later seeking the Republican nomination for president and as the nominee, he stood firmly against abortion. While governor of Massachusetts, Romney enacted a large-scale state governmental health care mandate. But as the Republican nominee for president, Romney stood against a very-similarly structured federal mandate introduced by President Obama. He seems to have flip-flopped on two highly important issues.

But consider that Mitt Romney's later views may be the results of his experiences, what he has come to learn, and what he has seen since adopting his former views. In fact, this is how Romney explains the changes to his positions. He says he changed his mind about abortion in 2007 when he was discussing stem cell research with a group of scientists. They described how the stem cells are harvested from embryos, and Romney found himself reacting. Here is Romney's account:

It hit me very hard that we had so cheapened the value of human life in a *Roe v. Wade* environment that it was important to stand for the dignity of human life. ... We learn with experience. We gain perspective over time, but the principles remain the same. I have a number of principles, and the principles remain the same.

Mitt Romney changed his mind, and he says that it was because he came to see the moral relevance of unborn babies. It took the experience of discussing stem cells and how they are harvested with scientists for him to rethink his position on abortion.



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And that's how it should be. We, the authors, regularly teach courses in ethics, and we very often see people's minds change about important moral issues. A good conversation can change your perspective. Sometimes in the course of a conversation we hear a good argument, one we'd never heard before or even thought of. That's why college classes are good for us—they limber up our minds. Regardless of whether we're right about the value of ethics classes in college, one thing is clear: Some questions are hard, and it takes a long time to think them all the way through. Indeed, one who never changes his or her mind about such matters is very shortsighted. More importantly, adopting the policy of never changing one's mind is cognitively unhealthy, especially when the policy is motivated by social pressures to avoid flip-flopping.

Let's pause for a moment to consider another element of hypocrisy charges. Sometimes, they aren't about what the person says or does at all, but they are entirely about the person, full stop. Consider how flip-flopping charges are sometimes deployed entirely for the sake of impugning the person's character, showing that someone simply has no judgment or will just say what is most convenient at the time. An example of this line of argument is how people have criticized President Donald Trump's character. In the leadup to the 2016 election, *Time* magazine ran a story titled, "How Donald Trump Flip-Flopped on Three Major Issues." Here's the core charge:

Before he became a candidate, Trump reversed course on several issues. He used to be pro-choice; now that he's running in the Republican primary, he's pro-life. He used to support assault weapons bans; now he is against them. He told Howard Stern in 2002 that he supported the invasion of Iraq; now he calls it a mistake.

Further, the story details other changes of course on the status of Syrian refugees, allowing worker visas, and the use of torture for interrogation. After the election, there was the question of how well now President Trump kept the promises he made as a candidate. He did not label China a currency manipulator (which he promised to do "on day one"), he played more golf than his predecessor (despite having criticized him for almost every round he played), and his promise to "drain the swamp" in Washington yielded a cabinet of executives from Goldman Sachs. And there were many, many, more cases to consider.

The objective with hypocrisy charges along these lines, again, is not to show that the target—in this case, President Trump—is wrong in any of these cases, but only that he is a *hypocrite*, and that is it. These are unabashed *ad hominem*



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arguments—their objective is to make the case that he has bad character, and that is all. Sometimes, in the midst of thinking about the issue, you can't help but think about the people at the center of the issue. And when we do that, it's hard not to assess their character as honest arbiters or as cheaters and manipulators. It's not wrong to do that, but it is important to make it clear how the reasoning proceeds.

The standard way to read *ad hominem* arguments is to take them as fallacies of relevance. If we are to make an inference about what the person being evaluated is saying, they regularly have no bearing on the conclusion. So whether Alice drinks too much isn't relevant to the conclusion of her argument, and whether Barry has an annoying voice doesn't have much to do with whether what he says with that voice is true or false. But in the case of deliberating about who should be president of the United States, character counts. And so if the fact that a presidential candidate will say anything or has no core beliefs can be revealed by a record of flip-flopping, then it is a relevant consideration. Consequently, it is clear that hypocrisy can be relevant in at least the cases where it's important to have a clear picture of someone's intellectual character. In particular, it's important to know the difference between a case of hypocrisy and an instance where someone has simply updated their beliefs and actions in light of new evidence. As we showed earlier, the only way to defend against these sorts of charges is to give an account of how one changed one's mind by attending to the evidence.

President Trump has taken care to explain his apparent flip-flopping. In his 2016 campaign, candidate Trump promised to “repeal and replace Obamacare” (the Affordable Care Act). However, upon taking office, the new president found that this was a more challenging task than he realized. He famously complained:

Now, I have to tell you, it's an unbelievably complex subject. Nobody knew health care could be so complicated.

That's an explanation for the change, of course, but notice something important. It's simply not true that *nobody* knew health care laws are complicated. That there is a whole specialization among lawyers—and entire departments in law firms—devoted to health care law should suffice to confirm this. Further, there's a reason why the Affordable Care Act was as long as it was (approximately 20,000 pages of regulations): designing, funding, and regulating healthcare for a large country is complicated. So, yes, the president updated his views in light of evidence, and that's a good thing. However, this also reveals that his previously held views (and explicit campaign promises) were not based on any evidence or reflection whatsoever. That's a bad thing.



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So far, our general point has been this: Just because a person does not have the fortitude to live up to his or her professed convictions, it does not mean that those convictions are false or dismissible. Moreover, a person can change their mind in light of new evidence. Thus, it seems obvious that charges that a speaker is a hypocrite prove nothing about the truth of the speaker's beliefs. So we must ask: Why are charges of hypocrisy so potent?

The answer is that allegations of hypocrisy summon emotional, and frequently unconscious, reactions to the speaker that undermine his or her credibility, and thus undermine his or her views. Put otherwise, charges of hypocrisy serve as attacks on the cognitive authority of their targets. When we label a person a hypocrite, we verbally punish him or her. The punishment not only comes in the form of overtly chastising the person, but we also strip that person of the moral standing to speak to the issue about which he or she has been inconsistent. Pointing out hypocrisy is a way of saying: *Don't lecture me about how to live—just look at how you're living!* And, as we've argued, sometimes people don't have the moral authority to speak to things, and hypocrisy charges make that clear.

From this point about moral authority and hypocrisy, we think an interesting and surprising consequence can arise. Once a speaker's clout is undermined in this way, the stage is set for dismissal of the speaker's position. Consider the following two cases:

Smoking Dad

DAD: You shouldn't smoke, son. It's bad for your health and it's addictive.

SON: But, Dad! You smoke a pack a day!

Gore's Airplane

AMY: Have you seen Al Gore's *An Inconvenient Truth*? We need to reduce our carbon footprint right away.

JIM: Al Gore? You know he leaves a huge footprint with all his private jet flights!

In "Smoking Dad," the son feels that his father is not an appropriate source of information on smoking because Dad, being himself a smoker, is a hypocrite. The accusation of hypocrisy does not so much defeat Dad's position as nullify it, leaving the situation almost as if Dad had never spoken. The same holds in "Gore's Airplane," although the speaker, Amy, is not the alleged hypocrite but rather it is Gore, the authority to which she appeals. In both cases, hypocrisy is proffered as



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evidence of the insincerity or incompetence of a source, providing justification for ignoring his or her advice or instruction. That's how charges of hypocrisy work.

Now, let's take another look at those arguments. Further examination reveals that Son and Jim would be foolish to dismiss Dad and Gore—and not only because their alleged hypocrisy is not pertinent to the perils of smoking or the human contribution to global warming. Consider what Dad's persistent smoking suggests. Dad believes smoking is bad for him, *yet he continues to smoke*. He continues, of course, because he's addicted to smoking. Thus, Dad's behavior—his hypocrisy—actually supports his point that smoking is addictive. That's interesting and surely worth noting. Sometimes a speaker's hypocrisy is not only relevant to the issue, but counts in favor of what the person says. As we mentioned above, that's a surprising truth about hypocrisy.

Consider that Gore's behavior also bolsters one of his arguments for a change in energy policy. Our national systems of energy use require that active members of society leave a large carbon footprint, *no matter how hard they try to be environmentally responsible*. Gore purchases offsets, he works to reduce (not eliminate) his footprint, but he, nevertheless, lives as a member of our society, and *even he* cannot manage to live in an ecologically responsible way. That's troubling, isn't it? Think of this: Gore should be highly motivated not to be a hypocrite. He's criticized for hypocrisy all the time. But still he cannot eliminate his carbon footprint. That's not evidence that Gore is stupid, insincere, or incompetent. That's evidence that he's right! He is correct to urge that there needs to be a massive revamping of our energy and transportation systems. That Al Gore is a hypocrite shows that one can't live in our society without doing significant environmental damage. And that's a crucial element of Gore's tion. Again, that's a surprising truth about hypocrisy.

Of course, hypocrisy cannot always be parlayed into support for the hypocrite's view. Eliot Spitzer's repeated visits to an escort service do nothing to reinforce his official opposition to prostitution. Neither do Ted Haggard's dalliances with illegal drugs and male prostitutes support his recommendations to live the clean life. That is, not all hypocrisy arguments are created equal. So it is important to examine each instance individually. In some cases, hypocrisy has precisely the significance that Son and Jim assign to it. In other cases, however, hypocrisy is either irrelevant or actually constitutes evidence in favor of the hypocrite's position.

The trouble is that what determines the significance of hypocrisy is often



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our judgment concerning the truth of the position proposed by the hypocrite. For those who reject Gore's views about global warming, his hypocrisy has the significance that Son attributes to Dad's: that is, it cancels his position. For those who agree with Gore about global warming, his hypocrisy only strengthens his case. Consequently, the significance of hypocrisy sometimes depends on whether the hypocrite's position is true. But a person should assess that question by considering the strength of the evidence and arguments that support this position versus an opposing view. So, once again, whether any particular individual is a hypocrite is argumentatively irrelevant.

Now we see more clearly the danger of charges of hypocrisy. People often present them as sufficient for dismissing the views of their targets. But as we have seen, hypocrisy is not sufficient for dismissing the hypocrite's view. At best, they are only cases against their authority to speak on an issue. In any case, since whether the hypocrisy is relevant or not depends on whether the view espoused by the hypocrite is correct or not, dwelling too long on hypocrisy is an argumentative distraction.

There's a difference between dwelling excessively on hypocrisy and seeing how hypocrisy charges can clarify an issue. Recall our distinction between *direct* and *indirect* versions of inconsistency arguments. Direct inconsistency clearly suffers from relevance issues, but indirect arguments present occasions for clarification. It is important to highlight the dialectical role that inconsistency charges play in reasoning about a point of controversy. Philosophers often invoke the methodological principle: *When faced with a contradiction, make a distinction*. A charge of inconsistency often leads to the introduction of further nuance and precision. Consider the following exchange about bedtimes we mentioned earlier:

DADDY: Time for bed, little one. It's 8:00. It's bedtime.

DAUGHTER: Alright, Daddy. But ... how come you get to stay up? That doesn't seem fair that I have to go to bed but you get to stay up. If bedtime's at 8:00, you should go to bed, too.

Of course, this could be a case in which Daughter is merely stalling before bed; asking Daddy to clarify a rule delays bedtime. But it nonetheless is a perfectly legitimate question. Daughter is pointing out what looks to her like an inconsistency. If Daddy says bedtime is at 8:00, then why is it that *he* gets to stay up? And if he says that only after 8:00 do the good shows come on, that doesn't seem fair. But the rule has some inexplicit nuance—8:00 is the bedtime for children, adults can stay up later. Now Daughter can ask: Why the different



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treatment? And Daddy can respond: Because children need lots and lots of sleep, because their brains are still growing; without the sleep, the brains don't get the rest they need. He can continue: Adults don't need the same amount of sleep, because their brains are grown. He could then say something like the following: Moreover, adults, if they don't get enough rest the night before can drink coffee; kids don't like that stuff. And so it goes.

Dialectical *tu quoque*, then, occasions a discussion, one where clarifying distinctions are made, justifications given, and explanations provided. Sometimes they work out, as with the bedtime case above. But sometimes they don't. For example, imagine one of Ted Haggard's parishioners asking him the question: *You preach the clean life for us but turn around and use methamphetamines and sleep with male prostitutes ... what gives?* Haggard obviously couldn't introduce the kind of distinction Daddy gave to Daughter in the case above. Imagine him saying: *You see, preachers are different from those in the congregation ... you live the clean life, we preachers need the speed and prostitutes.* That just won't work.

And imagine, further, all these questions being posed to President Trump about his "flip-flopping" on a variety of issues. Imagine him saying about these cases something similar to what he has said about healthcare "nobody knew healthcare is so complicated"):

Look, I said that when I was running for office. Then, I only needed to act like I knew what I was talking about. And I thought then that being president just meant that I gave orders and they happened. Now that I'm really president, it turns out, I didn't really know what I was talking about. Nobody knew that being president is so complicated. Live and learn!

Again, given what Trump regularly said, it turns out that this statement is accurate with respect to many issues. He didn't expect the judicial branch of government to exercise any of its checks or balances, and it turns out that he also has to cooperate with Congress, too. Who knew that being president is so complicated?

Tu quoque arguments come in a variety of forms and they are deployed for a number of different purposes. The key to replying to them, then, depends on first identifying the forms and purposes they have. For the most part, we've seen that the *tu quoque* argument form has the regular trouble that comes with attacking the person instead of the person's claims. *Ad hominem* arguments that are merely abusive name-calling are clear failures. So if the point of an argument from inconsistency is just to score the point that someone's a hypocrite, then it's little more than pointless name-calling. Again, because we seem to naturally react so



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negatively to hypocrisy in others, it's a pretty effective rhetorical tool. But it is not a good means of argument. However, replying to arguments of this kind takes some judgment.

The reality is that we are not perfect, and it is likely that even if you're right about some moral principle or some political proposal, you haven't consistently lived in accord with it. Vegetarians regularly have this trouble, as they may eat the odd burger here and there. Or they may wear a leather belt, or have a pair of horn-rimmed glasses. In these cases, it is best, when charged with hypocrisy, to admit it. A vegetarian could say something like: *Look, meat is delicious and things made from the bodies of animals are often cool and really nice. That doesn't make using them right, and when I'm saying that we should be consistent vegetarians, I'm also addressing myself. I admit that I need to work harder at it, too.* That's honest, and it's probably exactly how to handle the situation. It turns the matter back to the principle, focuses on why the principle needs an argument, and then even acknowledges that if we live with the principle it may have costs, costs that even someone making the case for vegetarianism can acknowledge.

The same admission could be made in the Ted Haggard case, too. He says that we should live the clean life, but he fails pretty spectacularly at doing so. That's not a surprise, as most demanding moral perspectives are hard to live by. After all, that's what makes them demanding. It's not as if Haggard or any Christian would want to hold that the life of righteousness is free of tests and trials. Temptation wouldn't be temptation if it weren't hard to resist. To be sure, the Haggard case is galling for other reasons, as most of us are able to resist the temptation to binge on drugs with prostitutes. But, hey, maybe we're just lucky to have that kind of self-control.

Things are somewhat similar with the indirect forms of *tu quoque* argument. Most often the best response is to begin by acknowledging the apparent inconsistency. But then the task is to find some relevant difference in the apparently inconsistent cases. In the bedtime example, the father presents reasons for the difference in the policies governing adults and children. If the distinction is indeed relevant, then we've acknowledged the apparent inconsistency, but resolved it by means of the new distinction. Of course, everything turns on whether the proposed distinction can actually serve as a good basis for the difference between the seemingly contradictory cases. Consider the following exchange:

MOLLY: Hey Mike. You pay men \$10 an hour, but women only \$8 an hour for the same work. What gives?



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MIKE: Molly, that may seem inconsistent, but, you see, men are the breadwinners for their households. They need to be paid more than women.

Here Molly has posed a dialectical *tu quoque*, and Mike has provided an answer. But Mike's answer fails on two important criteria. First, it is just not true that only men are the breadwinners in their households. The easiest counter-examples are single-parent households where the parent is a woman, but there are of course others. Second, Mike's reason, even were it true, doesn't support his policy of unequal pay. As an employer, Mike pays his employees for their work; if the women and men are doing the same job, they deserve equal pay. Mike is being inconsistent, and Molly is right to challenge it. Mike's response is inadequate, and so there's an important fact that has been brought to light—there are unequal, and unfair, pay practices in Mike's business.

The upshot is that charges of inconsistency are not always irrelevant. Sometimes, they are relevant, but actually help the hypocrite's case. And sometimes, they show deep problems with the views and practices of those who are inconsistent. That's why, even given the regular troubles with hypocrisy charges, it is important to consider them and respond to them. Sometimes, in examining alleged hypocrisy, we uncover something significant.

For Further Thought

1. Suppose Gore is a hypocrite. Suppose also, as has been suggested, that Gore's hypocrisy provides further evidence of the truth of his views about climate change. Does this make him any less blameworthy for the hypocrisy?
2. Does the significance of hypocrisy charges change when they are directed at arguments that have in their conclusions not statements about what's right (or wrong), but rather commands to do (or refrain from doing) something?
3. Are there cases in which it is appropriate to dismiss what someone says simply on the basis of the fact that he or she is a hypocrite?
4. Notice that both arguments by analogy and *tu quoque* arguments rely on a background principle of treating similar cases similarly. Analogy requests consistent treatment, and *tu quoque* charges inconsistency. But if argument by analogy is open to backfire problems, could *tu quoque*?
5. What exactly is it for someone to have moral authority to speak to an issue,



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and why does hypocrisy seem to attack that?

Key Terms

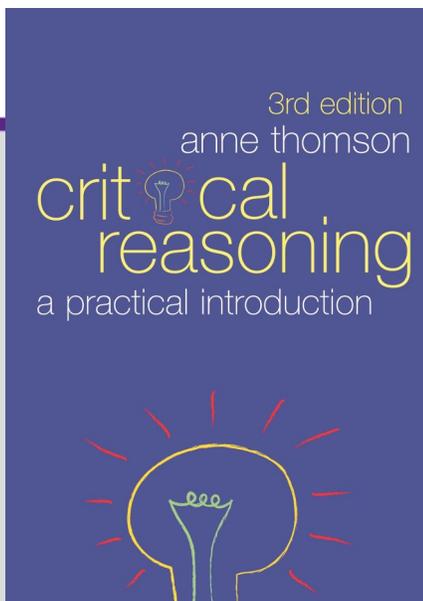
| | |
|------------------------------|---|
| <i>Tu quoque</i> arguments | Arguments that conclude that a speaker is wrong or has no authority on an issue because they have been inconsistent (either in word or deed) on it. |
| <i>Ad hominem</i> arguments | Arguments that attack the person for some perceived vice and thereby conclude that the person's claims are unacceptable. |
| Magnitude gap | The tendency for those suffering a loss to judge the loss greater than impartial viewers. |
| Fallacy of relevance | A particular kind of fallacy wherein the truth of the premises has no bearing on the truth or acceptability of the conclusion. |
| Dialectical <i>tu quoque</i> | A challenge of inconsistency that is posed as a request to clarify an issue. |



CHAPTER

6

EXERCISING THE SKILLS OF REASONING



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Critical Reasoning: A Practical Reasoning
by Anne Thomson.

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Most of the reasoning which you will encounter and want to assess – in, for example, newspapers, journals and textbooks – will not be presented in neat, short passages typical of the majority of those in this book. Instead, you will often find that you have to extract the reasoning from a long passage which may contain some irrelevant material, and which may present reasons and conclusions in a jumbled way, rather than setting them out in what would seem to be a clear series of steps. The task of assessing a long passage also differs from most of the exercises in this book, in that, rather than focusing on one particular skill, it requires you to bring all your reasoning skills into play. You will have to play the whole game, choosing the appropriate skills, just as tennis players have to play a game, choosing whether their well practised forehand drive or their beautifully honed backhand volley is the appropriate shot.

You have already had the opportunity to practise your skills on some longer passages in Exercise 13 (p.67). In this chapter, we shall show some examples of analysis and evaluation of long passages of reasoning, and end with some passages with which you can get to grips yourselves.

Longer Passages of Reasoning

Dealing with longer passages of reasoning can seem daunting at first, but it helps if we remember that the same skills are called for, whatever the length of the passage. We shall present the important steps, expanding on the list set out in Chapter 2.

Analysing and evaluating

- 1 The first task is to identify the conclusion and the reasons. You may find conclusion indicators (such as 'therefore' or 'so') and reason indicators (such as 'because' or 'since') to help you to do this. But some passages will contain no such words, and you will need to identify the conclusion by understanding the main message of the passage. So start by reading the whole passage, and asking yourself 'What is this passage trying to persuade me to accept or believe?'. When you have answered this, ask 'What immediate reasons or evidence is it presenting in order to get me to believe this?'. It may be helpful at this stage to write a brief summary, on the following lines:



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This passage is trying to get me to accept that

on the grounds that,

first

second, and so on.

With very long passages, it may also be helpful to break the passage down into smaller sections, and look for themes in different parts of the text, before writing your summary.

- 2 When you have sorted out what reasons are being offered, you need to consider what assumptions are being made. These could be:
- assumptions which function as support for basic reasons, or as unstated additional reasons, or as unstated intermediate conclusions,
 - assumptions about the meanings of words or phrases, so look for ambiguous words and terms which require more precise definition,
 - assumptions that one case or one situation is analogous to or comparable with another, so look to see if any comparisons are being made; and
 - assumptions that a particular explanation of a piece of evidence is the only plausible explanation, so look out for explanations.

In identifying assumptions, you are reconstructing the background of a particular piece of reasoning.

- 3 Once you are clear about the reasoning and its background, you need to evaluate it. Consider how far you can go in assessing the truth of the reasons and the unstated assumptions. Think about how you would seek further information to enable you to assess the truth of reasons.
- 4 Does the reasoning rely on evidence from sources whose authority is questionable?
- 5 Do you yourself have any knowledge which strengthens or weakens the conclusion? Or can you think of anything which may be true and which would have a bearing on the conclusion? (Remember to subject your own 'knowledge' to the same standards of scrutiny as you apply to the claims made by other people!)
- 6 If you have identified any explanations in the passage, are they plausible, and are they the only plausible explanations of what is being explained?



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- 7 If you have found comparisons in the text, are these comparisons appropriate – that is to say, are the two things which are being compared alike in the relevant respects?
- 8 From the information in the passage, can you draw any important conclusions not mentioned in the passage? Do any of these conclusions suggest that the reasoning in the passage is faulty?
- 9 Is the reasoning in the passage (or any part of the reasoning) similar to – or parallel with – reasoning which you know to be faulty?
- 10 Do any of the reasons or assumptions embody a general principle? If there is any such general principle, can you think of any applications of it which would suggest that there is something wrong with the principle?
- 11 Assess the degree of support which the reasons and assumptions provide for the conclusion. If you believe that the conclusion is not well supported, can you state the way in which the move from reasons to conclusion is flawed? Your answers to questions 5 to 10 above may help you to do this.

This list is primarily applicable to passages which do contain a recognisable argument, with a main conclusion and with some reasons or evidence offered in support of it. It is, however, possible to find passages which contain reasoning, but do not come to a major conclusion. Perhaps they examine evidence from two opposing sides of an issue, and leave the readers to draw their own conclusions. Or perhaps they are seeking to explain something, as did the passages in Exercise 12. Even for passages without a main conclusion you will find it useful to go through the steps listed above in attempting to evaluate the reasoning.

Two Examples of Evaluation of Reasoning

Example 1: We should recycle the dead to help the living

There is a crisis in organ donation. In the UK, around 5,000 people a year need kidneys alone, and there are fewer than half the number of donors registered to meet the demand. Worse, 30 per cent of relatives of people who have died refuse to allow organs to be used. This means that many hundreds of people are dying every year for want of donor organs in the UK alone. World-wide, it is a major problem with 50,000 people waiting for organs in the US and 70,000 in India.



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The donor card scheme is clearly failing us all. We must get away from the idea that people can allow their bodies and those of their relatives to be simply buried or burned when they die. This is a terrible and cruel waste of organs and tissue that may save life or restore health.

The problem is that we, as a society, have leant over backwards to make sure that potential donors and their relatives are protected against anything that might cause them distress or unease. But the same consideration has not been shown to potential organ recipients and their families. Both are entitled to our concern. There are then two groups of people we must consider: donors and recipients. If we ask what each group stands to lose if their preferences are not respected, we get very different answers. One group stands to lose their lives. The other group has already lost theirs and, at worst, will know prior to death that one of the many things they want will not come to pass.

One way of expressing an equality of concern for both groups of people, bearing in mind what both stand to lose, would be to ensure, through legislation, that all organs from dead bodies should be automatically available at death without any consent being required. The dead, after all, have no further use for their organs; the living do.

Such a proposal, if accepted, would have many advantages. It would mean that virtually all cadaver organs were automatically available and doctors would not have to ask dying people if they consent to their organs being used. Neither would they have to ask grieving relatives such a difficult question at perhaps the worst possible moment.

People think that there would be many religious objections to such a simple proposal. This seems doubtful since there has never been an outcry against the present system in which coroners may order post-mortem examinations of the dead without any consent being required. No one may opt out and there is no provision for conscientious objection. Moreover, as is now well known, organs are often removed during such examinations and not replaced. We have all accepted that there is an important public interest at stake here. It matters very much both that murders do not go undetected and that illnesses and accidents that cause death be properly understood so that others may be protected. There is a clear and important public interest here. But how much more so in the case of organ donation. Organs are required to save life, not merely to explain suspicious deaths. If there is a public interest in the one case, there is surely also a strong public interest in providing donor



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organs to save lives.

Some fears have been expressed that if organs can be automatically used, doctors may have less incentive to strive to keep people alive if there are people waiting to receive organs. There are two important things to note about such fears. The first is that there is absolutely no evidence that people who currently carry donor cards have ever been given anything other than the best possible care because they are eligible as donors. But perhaps even more crucial – if people are worried about their chances of survival – is the fact that they are more likely at the moment to need an organ and not get it than to be ill and not properly treated. So prudential self-interest also supports the automatic availability of cadaver organs.

Some people will have strong objections to their bodies being tampered with after death. Some of their objections will be based on religious belief or cultural practice. Any decent society will try hard to accommodate genuine conscientious objection to whatever practice. Since people with strong, enduring and conscience based objections to cadaver transplants are likely to be few, it is almost certain that we can accommodate such views and still save the lives of all those who are dying for want of donor organs.

The crunch, of course, comes when this is not the case and conscientious objection will cost lives. Then we have a hard choice to make. It is surely far from clear that people are entitled to conscientiously object to practices that will save innocent lives. However, if we make sure that conscientious objection really is just that, and apply tests comparable to those for people who claim conscientious exemption from military service in time of war, it is likely that the exceptions will be sufficiently few for such hard choices to be avoided. We may note that there is no provision, so far as I am aware, for conscientious objection to compulsory post-mortem examinations.

Fully consensual schemes are always best. But when so much is at stake, we must consider even mandatory schemes. The scheme that I have proposed will save lives, and the costs, while significant, are not incompatible with the values of a decent democratic society – as coroner ordered post-mortem examinations demonstrate.

(John Harris, *The Independent*, 19 February 1999)

Let us evaluate the argument, using the eleven steps listed earlier.

Conclusion and Reasons. We must first try to write a brief summary of the passage



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setting out what it seeks to persuade us to accept, and the reasons it gives as to why we should accept it. The article is clearly recommending the introduction of a new scheme by means of which more organs will be made available for transplant. Our initial summary could read as follows:

This article aims to convince us that 'all organs from dead bodies should be automatically available at death without any consent being required', on the grounds that such a scheme will save lives, and that, although there will be significant costs, these 'are not incompatible with the values of a decent society'.

The reasons can be set out in more detail:

- There is a crisis in organ donation.
- The donor card scheme is failing us all.
- Both potential donors (and their relatives) and potential recipients (and their families) are entitled to our concern.
- We have not shown the same consideration to these two groups.
- Making organs available without consent being required would express an equality of concern for these two groups.
- The dead have no further use for their organs; the living do.
- The proposal (to dispense with the need for consent) would have many advantages.
- It seems doubtful that there would be many religious objections.
- Prudential self-interest supports the automatic availability of cadaver organs.
- It is almost certain that we can accommodate 'conscience based objections', and still save the lives of those who are dying for want of donor organs.

Reasons (a) and (b) are given support by figures (5,000 needing kidney transplants, fewer than half the registered donors to meet the demand, 30 per cent of relatives refusing consent) aiming to show that many hundreds of people are dying every year in the UK for want of donor organs.

Reason (d) is offered support by the statement that as a society we have leant over backwards to make sure that potential donors and their relatives are protected against anything that may cause them stress or unease. Presumably this refers to the practices of asking for the consent of relatives to use the organs even of those who carry donor cards, and of not using these organs without such consent.

Support is offered for reason (e) by contrasting what each group stands to



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lose if their preferences are not respected. The potential recipients will lose their lives. The potential donors who are unwilling to donate will know that one of their wishes will not be respected.

The advantages cited in support of reason (g) are that more organs would be available, and that doctors would not have to ask dying people or grieving relatives for consent.

Reason (h) is supported by comparing a non-consensual scheme for organ donation with coroner ordered post-mortems, which cannot be vetoed by relatives of the dead person. The suggestion is that in both cases there is a strong public interest in not having to seek consent and not allowing anyone to opt out. It is claimed that since there has never been an outcry against compulsory post-mortems, it is unlikely that there would be an outcry against compulsory organ donation.

To support reason (i) the author presents two reasons why people need not be afraid that doctors will not strive to keep them alive if their organs are wanted. They are:

- there is no evidence that donor card carriers have not been given the best possible care;
- and
- each of us is more likely to need an organ and not get it than to be ill and not properly treated.

Support is presented for reason (j) by suggesting that a scheme of conscientious objection to organ donation, similar to schemes for conscientious objection to military service, would be feasible.

Assumptions. There is an assumption associated with reasons (c) and (d) that showing equal consideration to potential donors and potential recipients requires us to take measures to save the lives of potential recipients even if that means overruling the wishes of potential donors.

Associated with reason (g) is an assumption that it would be a good thing if doctors did not have to ask dying people or grieving relatives for consent to use organs – though it is not clear whether this is thought to be good from the doctors' point of view or from that of patients and relatives.

Assessing reason and assumptions. To what extent can we assess the truth of the reasons and unstated assumptions? There is no reason to doubt the claims



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associated with reasons (a) and (b) – i.e. the figures quoted, and in particular the claim that many people die who could be saved by transplants if more organs were available. The figures could in principle be checked.

Reason (c) is undeniably true – that both potential donors and potential recipients are entitled to our concern – but reason (d) is disputable. Who has not shown the same consideration to the two groups, and what would have to be done in order to show the same consideration? The author does not mean that medical staff do not show the same consideration to those in need of transplants – nurses and doctors can treat potential recipients of organs with consideration even if a transplant is not possible. The author means that ‘society’ has not shown the same consideration in that potential donors are allowed the choice as to whether to donate, and relatives are allowed to veto donation. Reason (e) provides the author’s answer to what would show the same consideration: making organs available without having to get consent. The assumption associated with reasons (c), (d) and (e) that, in relation to organ donation, the duty to save lives is more important than the requirement to get consent, is open to dispute. Clearly those in the medical profession have both duties, but the question as to which should take precedence where the two duties are in conflict is contentious.

Reason (f) is clearly true, if we interpret ‘having a use for an organ’ as meaning ‘being able to benefit physically from the functioning of the organ’.

In relation to reason (g), it is almost certainly true that the proposed policy would result in the availability of more organs for transplant. The other supposed advantage is more debatable. It probably would be better for doctors if they did not have to ask difficult questions to dying people or grieving relatives. But would it be better for the general population? This would depend upon whether people think it is preferable to have no choice as to whether to donate their organs, or to be asked difficult questions at a distressing time.

The truth of reason (h) – that it is doubtful that there would be many religious objections – is questionable. This will be discussed in more detail under ‘Further evidence’ and ‘Comparisons’ below.

We identified two claims supporting reason (i). There is no reason to question the first of these, which suggests that donor card carriers receive the same care as anyone else, if ill or injured. If this implies that everyone who is ill or injured is ‘properly treated’, then the other claim is true also, i.e. that each of us is more likely to need an organ and not get it than to be ill and not properly treated. However, it should be noted that some people may have very little risk of needing



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a transplant, so it is not obvious that for each one of us 'prudential self-interest ... supports the automatic availability of cadaver organs'.

The truth of reason (j) depends on the meaning of 'conscience based objections'. The author refers to them arising from religious belief or cultural practice. Perhaps it is true that there would be sufficiently few of these to be able to exempt such people and still have enough organs to meet demand. He does not specify exactly what criteria someone would have to satisfy in order to be exempted, and perhaps it would be difficult in practice to distinguish between those who have conscience based objections, and those who just don't like the idea of their organs being used.

Authorities cited. To what extent does the reasoning rely on authorities? No authorities are mentioned in the article. The source of the figures quoted in the first paragraph is not given, but there is no reason to think the author would mislead us about these.

Further evidence. Can we think of any further information on this topic which strengthens or weakens the conclusion? Three important points can be made here.

- As long ago as 1999 when this article was written, there had been publicity about objections by parents to the organs of their dead children being used for medical research. More recently there has been outrage about the news that Alder Hey Hospital retained thousand of organs and body parts from deceased children, without seeking their parents' consent. It has been reported that subsequently fewer organs have been available for transplant, presumably because relatives will not give consent. This suggests that there may be massive opposition to the kind of scheme proposed by John Harris.
- 'Scandals' such as Alder Hey raise questions about ownership of body parts. One could simply say that of course deceased persons do not own their organs after death, because only living beings can be owners of anything. And yet we do recognise the right of people to have their property disposed of as they would like when they die – why should kidneys differ from monetary wealth, which could prolong someone's life by paying for dialysis machines and health care? Moreover, we recognise the right of individuals to say in advance how they would like their remains to be disposed of, by burial or cremation; and of relatives to determine such matters on behalf of the deceased. Many parents of children who died in



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Alder Hey Hospital were greatly distressed by the thought that they had buried their child ‘incomplete’, and that the child had not been properly laid to rest. This suggests that a major shift in attitudes may be needed in order for Harris’s proposal to gain general acceptance.

- If the aim of the proposed scheme is to increase the supply of organs in order to meet the demand for transplants, we could consider how other countries solve this problem. The article by Lewis Wolpert in Exercise 20 (p.110) tells us that Spain and Austria have a scheme whereby individuals opt out of being a donor, rather than opting in – i.e. if you object to being a donor, you carry a card to say so, otherwise it is assumed that you consent. He also claims that this means more organs are available for transplant than in Britain. Harris does not consider this possibility, but perhaps it could deal with the shortfall without too much public opposition.

Explanations. No explanations are offered in the passage.

Comparisons. Does the passage make any comparisons? Yes, a comparison is made between compulsory coroner ordered post-mortems and compulsory organ donation. The claim is that in both cases there is a clear and important public interest at stake, and we are invited to conclude that they will be alike also in that there would be few objections to compulsory organ donation.

It is probable that this comparison is made partly in order to convince us that we shouldn’t object to compulsory organ donation, but also it is used as evidence that there wouldn’t be much objection. We have already suggested that there is further evidence which casts doubt on this. Perhaps attitudes to the two practices differ because fewer people are affected by coroner ordered post-mortems than would be affected by compulsory organ donation, and perhaps many people do not see that the public interest is equal in both cases.

Further conclusions. No obvious firm conclusions can be drawn, though it is possible that there could be a better solution to the problem, as discussed under point 11 below. See also the comments in section 10 below about the implications of principles.

Parallel reasoning. No parallel arguments come to mind.

General principles. Can we identify any principles upon which the argument relies? Underlying the argument is the principle of ‘equality of concern’, and this is clearly an important principle. We should be equally concerned about the welfare of those whose illness could be cured by an organ transplant, and those who are ill or dying



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and do not want to donate their organs. The difficulty in applying this principle occurs when giving one group what they want requires denying the other group what they want. This difficulty could be expressed as a conflict between two further principles – that we should always do everything possible to save (or prolong) life, and that we should always respect people’s choices about what happens to their own bodies. It is clear that Harris thinks that in relation to organ transplantation, the former principle overrides the latter. What is not clear is whether the principle that we should always do everything possible to save (or prolong) life is meant to be an overriding principle with general application. If so, this could mean, for example, that governments should take the wealth of individuals and use it to save lives in poorer countries. Such issues take us into difficult philosophical and ethical territory, and they are discussed in more detail in my book, *Critical Reasoning in Ethics – a Practical Introduction*.

Do the reasons support the conclusion? What degree of support do the reasons and assumptions provide for the conclusion? In relation to arguments which recommend a policy, we must consider:

- would the recommended policy or action be likely to achieve the desired aim?
- would it have some undesirable effects?
- are there other, possibly better, ways of achieving the aim?

Let us assume that the aim of the policy is to ensure that the supply of organs meets the demand for transplants, or at least to save more lives of those in need of transplants. Yes, the policy would be likely to save more lives, and Harris did not have to produce much controversial reasoning to support this. The policy would probably meet the demand for transplants, if the criteria for conscience based objections were stringent. Would there be undesirable consequences? There would be likely to be much more opposition to the introduction of such a policy than Harris envisages, and, judging from the reactions of parents in the Alder Hey ‘scandal’, a certain amount of distress on the part of relatives. There may be difficulties in determining the conditions for conscientious objection, and those denied exemption may feel that their rights were being infringed.

Could there be a better way of achieving the aim? It is, of course, possible that attitudes

could change over time, and that most of us could come to accept that our bodies do not



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'belong' to us, and that the state has the right to use parts of them for the benefit of others. But, given what appears to be resistance to this idea at present, a better solution may be to adopt the Spanish and Austrian schemes, which assume that everyone consents to the use of their organs after death, unless they carry a card forbidding this. If this scheme were tried, we could find out whether it would meet the demand for organs – and in the current climate of distrust, it may not. But perhaps it would provide enough organs, and if it did, this would surely be better than a compulsory scheme which upsets large numbers of people, even if we think their distress is not very logical.

We should refer back here to our initial summary of Harris's reasoning, which included the idea that, though there would be significant costs to his proposed scheme, these 'are not incompatible with the values of a decent society'. Although the author clearly wants to solve the problem of shortage in the supply of organs, his aim does not seem to be simply to solve this practical problem. He also wants to make ethical points about the values which any society should have. His comments suggest that a decent society would not allow us (except for a few conscientious objectors) to opt out of organ donation when people are dying for want of organs. However, a decent society should also take account of the concerns of all its citizens, and in particular of people's concern that their wishes about the use of their bodies should be respected. If the practical problem could be solved by a scheme like those in Spain and Austria, which do not deny freedom of choice, then would this not be what a decent society should do?

Example 2: Getting to the heart of the matter

Drinking red wine will help you live longer? This is a fallacy

Red wine is good for you. It confers protection against heart disease and makes you live longer. Right?

It's funny how a story like that catches on, multiplies, and is never corrected. I don't hold out much hope that what I am about to say will have much effect, but I am determined to knock red wine off its pedestal. So, here goes.

Most people justify the benefits of red wine using an argument based on French statistics. This runs as follows.

Deaths from heart disease are three to four times lower in France than they are in Britain. Yet known risk factors such as smoking levels, and fat or cholesterol consumption are similar in the two countries. (In fact, French fat consumption patterns are very similar to those in the US.)



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The French, however, consume much more alcohol than the British. And, in particular, they drink a lot of red wine – which everyone now knows is full of antioxidants. Therefore, runs the argument, it must be red wine that is reducing the French incidence of heart disease.

Unfortunately, there is very little epidemiological evidence to support the red wine theory – charming as it must be to red wine producers.

Over the past two decades, there have been a number of longitudinal studies on the effects of alcohol on health. Such studies are fraught with difficulty.

For example, in some early studies, the non-drinkers were actually ex-drinkers who had given up because they were ill. (This is an effect that, in early studies of smokers, appeared to bias ‘non-smokers’ to high levels of mortality.)

Moreover, the correlation between drinking habits and lifestyle – which includes diet, smoking and exercise levels – can also confound the issue.

However, from the available evidence (and there is now quite a lot), it does seem that one or two alcoholic drinks per day can reduce the risk of heart disease by about 20 per cent. What is not the case is that red wine confers any special advantage not also conferred by white wine, spirits or beer.

This was first demonstrated in studies which compared those who drank only red wine with those who drank only white wine; but recent comparisons of red wine and beer drinkers have led to the same conclusions.

What does sometimes differ between drinkers with a taste for a different tittle is their drinking pattern. For example, beer and spirit drinkers are more likely to drink heavily once or twice a week, whereas wine drinkers may tend to spread out their consumption.

It seems that alcohol protects against heart disease by preventing the formation of blood clots. Since the thinning effects of alcohol on the blood are thought to last less than 24 hours, drinkers who take a small amount each day are more likely to benefit than those who take a lot at once.

When this is taken into account there is no difference in the relative benefits of drinking different tipples.

(And anyone who is younger than their mid-40s, and therefore at low risk of heart disease will probably not benefit from alcohol at all – at least in this sense.) Moreover, this is confirmed at a physiological level. Little difference has been detected between blood samples in people who have imbibed the same amount of alcohol but in different forms.

Rather, the positive effects of the alcohol itself – a shifted balance of



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cholesterol among the different constituents of the blood, and a reduced likelihood of blood aggregation – are common to all drinks. Certainly, no one has yet found evidence that the fabled anti-oxidant phenolic compounds present in red wine actually increase in the bloodstream with the amount of red wine drunk.

So, it's halfway down from its pedestal. Red wine is only as good for you as beer. But it is possible to go further than this. After all, every gem of epidemiologically based advice comes with a handful of caveats – and there is much more to death than heart disease.

The first caveat is that alcohol (including red wine) is not so good in sub-Saharan Africa. For every man who dies there from heart disease, two will die a violent death. And in this situation, it seems that red wine consumption will not stop you being murdered.

The second caveat is that alcohol (once again, including red wine) is not so beneficial for women as it is for men.

In part, this is because women have a lower risk of heart disease to start with. But it is also because the risks of drinking increase faster for women than they do for men.

For instance, women have a greater susceptibility to liver damage; and the risk of breast cancer in women increases by about 10 per cent for each additional drink per day. (Which may make you wonder, is a woman who drinks red wine for medicinal purposes making a trade-off of one disease for another?)

The third caveat is that alcohol (still including red wine) is not necessarily beneficial for French men either.

The rate of death from heart disease in the UK may be three times that of France. But the rate of deaths from alcohol-related causes (including cancer of the mouth, cirrhosis of the liver and alcohol-related motor vehicle accidents) is three times higher in France than it is in the UK.

(And, incidentally, in the UK, where alcohol consumption is rising, the death rate from cirrhosis of the liver is also increasing.)

That's probably all we need to know about red wine. But what about France? If there is nothing especially protective about red wine, what's special about France? Why do the French have such a low incidence of heart disease?

Earlier this year, in the *British Medical Journal*, Malcolm Law and Nicholas Wald, epidemiologists at the Wolfson Institute of Preventative Medicine at St. Bartholomew's Hospital in London, published an alternative explanation to the red wine hypothesis.



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'In France, the greater alcohol consumption is caused by more drinks per drinker rather than more drinkers. And all alcohol products protect against heart disease, but maximally at one to two units per day', says Law. So the greater alcohol consumption of the French is not giving them any extra protection.

So what has? According to their analysis, it is the effect of time-lag. The discrepancy exists simply because the French diet has been changing and it takes decades of eating a high-fat, high-cholesterol diet for your arteries to firm up.

'Although French fat consumption now is similar to that in America, the high level is relatively recent. They haven't been eating it for as long', says Law. Red wine has nothing to do with it.

(Thomas Barlow, *Financial Times*, weekend 10/11 July 1999)

Conclusion and Reasons. The clue to the main conclusion is given in the introductory comment which heads the article – 'Drinking red wine will help you live longer? This is a fallacy'.

What exactly is meant by 'fallacy' here? Sometimes the word is used to mean 'false statement', and this interpretation would lead us to summarise the conclusion as 'Drinking red wine will not help you live longer'.

However, the more precise meaning of 'fallacy' (used by logicians and critical thinkers) concerns the unsoundness of a process of reasoning. This interpretation would allow us to summarise the conclusion as 'The idea that drinking red wine will help you live longer is based on unsound reasoning or evidence'. Note that this interpretation does not imply that the statement 'drinking red wine will help you live longer' is false – merely that the evidence or arguments presented for it do not establish that it is true.

The article clearly does rely on the second interpretation of 'fallacy'; in the first five paragraphs it sets out the argument usually presented to support the claim about red wine, and then attempts to show what is wrong with it. But perhaps the article also aims to show that it is probably untrue that drinking red wine will make you live longer, since it presents some possibly adverse consequences of red wine consumption.

Let us consider the reasoning in relation to the stronger claim – does it support a conclusion that 'Drinking red wine will probably not make you live longer'?

There are three broad themes of reasoning aimed at supporting the following intermediate conclusions:



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- red wine is only as good for you as beer [or white wine or spirits];
- drinking red wine is disadvantageous for some groups; and
- red wine has nothing to do with the low incidence of heart disease amongst the French.

Let us consider each of these in turn.

(a) Red wine is only as good for you as beer [or white wine or spirits]

The reasoning towards the first of these intermediate conclusions is also intended to show that there is something wrong with the argument summarised in paragraphs 4 and 5, in particular the assumption made by that argument that the association between red wine consumption and low heart disease rates in France is a causal one.

The reasons given in support of the intermediate conclusion are as follows.

To support the claim that white wine is as effective as red wine:

- This was first demonstrated in studies which compared those who drank only red wine with those who drank only white wine

The reasons to support the claim that beer and spirits are as effective as red wine:

- It seems that alcohol protects against heart disease by preventing the formation of blood clots.
- The thinning effects of alcohol on the blood are thought to last less than 24 hours.
- Beer and spirit drinkers are more likely to drink heavily once or twice a week, whereas wine drinkers may tend to spread out their consumption.

These reasons are offered in support of the following intermediate conclusions:

- Drinkers who take a small amount each day are more likely to benefit than those who take a lot at once.
- When [the differences in drinking patterns are] taken into account there is no difference in the relative benefits of drinking different tipples.

Some additional reasons to support the claim that the effects of red wine are no different from the effects of other alcoholic drinks:

- Little difference has been detected between blood samples in people who have imbibed the same amount of alcohol but in different forms.
- The positive effects of the alcohol itself – a shifted balance of cholesterol



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among the different constituents of the blood, and a reduced likelihood of blood aggregation – are common to all drinks.

- No one has yet found evidence that the fabled anti-oxidant phenolic compounds present in red wine actually increase in the bloodstream with the amount of red wine drunk.

(b) Drinking red wine is disadvantageous for some groups

The reasons offered for the second intermediate conclusion are as follows.

Reasons relating to Africa:

- for every man who dies there from heart disease, two will die a violent death;
- and in this situation, it seems that red wine consumption will not stop you being murdered.

The above reasons are offered in support of the following intermediate conclusion:

- alcohol (including red wine) is not so good in sub-Saharan Africa.

Reasons relating to women:

- women have a lower risk of heart disease to start with;
- also . . . the risks of drinking increase faster for women than they do for men. For instance, women have a greater susceptibility to liver damage; and the risk of breast cancer in women increases by about 10 per cent for each additional drink per day.

These reasons are offered in support of the following intermediate conclusion:

- alcohol (once again, including red wine) is not so beneficial for women as it is for men.

Reasons relating to French men:

- the rate of death from heart disease in the UK may be three times that of France;
- but the rate of deaths from alcohol-related causes (including cancer of the mouth, cirrhosis of the liver and alcohol-related motor vehicle accidents) is three times higher in France than it is in the UK.

These reasons are offered in support of the following intermediate conclusion:

- alcohol (still including red wine) is not necessarily beneficial for French



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men either.

Some additional reasons relating to effects of alcohol consumption:

- (and, incidentally, in the UK, where alcohol consumption is rising, the death rate from cirrhosis of the liver is also increasing.)
- (and anyone who is younger than their mid-40s, and therefore at low risk of heart disease will probably not benefit from alcohol at all – at least in this sense.)

(c) Red wine has nothing to do with the relatively low incidence of heart disease amongst the French

This intermediate conclusion is supported by a short argument and an alternative explanation for the low incidence of heart disease amongst the French.

The argument is as follows.

Reasons:

- in France, the greater alcohol consumption is caused by more drinks per drinker rather than more drinkers.
- and all alcohol products protect against heart disease, but maximally at one to two units per day.

Conclusion:

- so the greater alcohol consumption of the French is not giving them any extra protection.

The alternative explanation for the low incidence of heart disease amongst the French, offered by two epidemiologists, is that until relatively recently the French diet has not been high enough in fat and cholesterol to produce as high a rate of heart disease at present as that in Britain.

Assumptions. The following assumptions can be identified:

- The studies comparing the effects of red wine consumption and white wine consumption are reliable.
- If red wine were more effective than other alcoholic drinks in protecting against heart disease, blood samples of those who had drunk red wine would differ from the samples of those who had imbibed other alcoholic drinks.
- It is unlikely that anti-oxidant phenolic compounds enter the bloodstream



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- as a result of drinking red wine.
- Drinking alcohol before the mid-40s cannot confer any protection against heart disease in later life.
 - The explanation given by the two epidemiologists of the low rate of heart disease amongst the French is the correct one.

Assessing reasons/assumptions. For the most part the truth of the reasons and assumptions cannot be assessed without either scientific knowledge or confirmation of statistics. There are claims about the effects of alcohol on the blood – information which derives from scientific evidence. And there are claims relating to statistics which could in principle be checked; for example, patterns of consumption of different forms of alcohol, rates of deaths from various causes, levels of risk of suffering from various diseases. There is also a claim about changes in the French diet.

Authorities cited. No authorities are mentioned in relation to the studies of the effects of alcohol. If we wish to judge the accuracy of the scientific evidence, we would have to find out who had carried out the various studies and consider whether they had any vested interest in making people believe that drinking specific forms of alcohol would reduce the risk of heart disease. For example a scientist paid by red wine producers could be said to have more of a vested interest than a scientist financed by the health service. Remember also the importance of corroboration – that if the same results are reported by a number of different studies, the more confident we can be about the accuracy of their claims.

Two scientists are mentioned in relation to the explanation of the French incidence of heart disease – Malcolm Law and Nicholas Wald, epidemiologists at the Wolfson Institute of Preventive Medicine at St Bartholomew's Hospital in London. There is no reason to doubt their expertise, since they are epidemiologists (specialists in patterns of disease); there is no reason to think they have a vested interest, given that they work for an institute which aims to find out the truth about causes of disease; and there is no reason to think that their research was not carried out properly, since their paper was published in a respectable journal (the *British Medical Journal*) and would have been peer reviewed (that is, critically assessed by other scientists) before publication.

Note, however, that their explanation is a *possible* explanation. We still need to assess it, which we shall consider under the heading *Explanations* below.

Further evidence. Further evidence could be sought in relation to the possible



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explanations of the differing rates of heart disease. If you have not already come up with suggestions, think about it now, before you read the next section.

Explanations. There are explanations of three different facts:

- the difference in rates of heart disease between wine drinkers and those who drink beer or spirits;
- the fact that women benefit less than men from drinking alcohol; and
- the lower incidence of heart disease amongst the French.

Although not explicitly stated, it is implied that wine drinkers have lower rates of heart disease than beer drinkers or spirit drinkers. The explanation is that this is due to different patterns of drinking. If it is true that beer and spirit drinkers drink less often, and that the beneficial changes to the blood from alcohol consumption last for only 24 hours, then this is a reasonable explanation.

It is not absolutely clear what is meant by – ‘alcohol (once again, including red wine) is not so beneficial for women as it is for men’ – but the explanations offered suggest two ways in which it may be less beneficial. The comment that women have a lower risk of heart disease than men suggests that what is being explained is that female alcohol drinkers do not reduce their risk of heart disease to the same extent as male alcohol drinkers. No evidence (such as statistics of susceptibility to heart disease for both men and women, and both drinkers and non-drinkers) is given to show that this is so, and it is not clear that this could be explained by women having a lower risk in the first place. Even if it were a good explanation, it would not show that it is not beneficial for women to drink alcohol, since that will reduce their risk to some extent.

The other explanation for women benefiting less than men is that the risks of drinking – in the sense of increased susceptibility to other diseases – increase faster for women than they do for men. This suggests that the fact which is being explained is that women who drink alcohol do not increase their chance of living longer to the same extent as do men who drink alcohol. Again, no evidence (in this case, of statistics on average life-spans of male and female drinkers and non-drinkers) is given for this. If it were true, then it could be explained by increased susceptibility for women to liver damage and breast cancer.

The explanation for the lower incidence of heart disease amongst the French is a major theme of the article. The explanation in terms of the beneficial effects of drinking red wine is rejected, and some good reasoning is given for this, assuming that the following claims are true:



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- in France, the greater alcohol consumption is caused by more drinks per drinker rather than more drinkers.
- and all alcohol products protect against heart disease, but maximally at one to two units per day.

If the percentage of the population who consume alcohol is the same in the two countries, and if only two drinks per day are needed (regardless of whether one is French or British) in order to gain maximum protection against heart disease, then it cannot be the greater consumption of alcohol in France which accounts for the difference in rates of heart disease (although it could be different patterns of drinking between wine and beer drinkers – as the author would concede).

The alternative explanation offered in the article is plausible – that past differences in diet account for the difference in heart disease rates, especially since diet is known to have an effect on susceptibility to heart disease. If this is the correct explanation, and if it is true that fat or cholesterol consumption is now similar in the two countries, we would expect to see the rates of heart disease rising in France in future years. If this happens, it will help to confirm this explanation. If it does not, other possible explanations will need to be sought; for example, genetic differences between the two populations, differences in exercise habits, or other differences in diet – perhaps consumption by the French of foods which compensate for the increasing fat consumption.

Comparisons. The article discusses comparisons between different countries (France, Britain and the USA), between men and women, and between different alcoholic drinks. However, for the most part, it does not rely on simple unexamined analogies to support its conclusions.

For example, it challenges the idea that because the French consume a lot of red wine and have a low rate of heart disease, the British would lower their rate of heart disease if they consumed more red wine.

It does accept that red wine, white wine, beer and spirits are comparable in their effects on the heart. This is based on accepting the results of scientific studies, and the appropriateness of the comparison needs to be assessed by considering the reliability of the source of evidence.

There is an implicit comparison which could be challenged. The point of mentioning the adverse effects of alcohol on French men is to get us to accept that alcohol is not necessarily beneficial for men in general – hence we are being invited to accept that French men who drink alcohol and British men who drink alcohol are comparable in important respects. But the way in which they would



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have to be comparable in order to conclude that red wine would not be beneficial for British men is that they would have to consume similar amounts. However, we are told near the end of the passage that in France the greater alcohol consumption is caused by more drinks per drinker. So it is possible that British men could drink enough red wine to benefit the heart without risking cancer of the mouth and cirrhosis of the liver.

Further conclusions. The last sentence in the section above identifies a conclusion which the author could have drawn from his own comments, and which is at odds with one of the author's themes.

Parallel reasoning. No obvious parallel arguments come to mind.

General principles. The argument does not rely on any general principles.

Do the reasons support the conclusion? We shall consider each of the three main themes which we have identified.

(a) Red wine is only as good for you as beer [or white wine or spirits]

The evidence from studies which compare the effects of red wine with the effects of other alcoholic drinks gives strong support (assuming that the studies are reliable) to a conclusion that drinking red wine is no more effective than certain other alcoholic drinks at reducing the risk of heart disease. However, it does not support the main conclusion, since it does not show that drinking red wine will not make you live longer than if you consumed no alcohol.

(b) Drinking red wine is disadvantageous for some groups

The comments about deaths in sub-Saharan Africa do nothing to support either the intermediate or the main conclusion, but perhaps the author does not offer them as serious reasons. The fact that red wine does not make murder victims live longer cannot support the claim that drinking red wine will not make some people live longer by making them less susceptible to heart disease. The appropriate way to interpret the conclusion 'Drinking red wine will probably not make you live longer' is as meaning 'Drinking red wine will not increase anyone's chance of living longer', and not as meaning 'Drinking red wine will not prevent early death'.

The evidence concerning the effects of alcohol on women's health could only support a conclusion that for women drinking red wine may not result in a longer life. However, the evidence quoted is insufficient even to support this limited conclusion, because we are not given information about the level of intake



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of alcohol which is likely to lead to liver damage and breast cancer. It is possible that women could avoid liver damage and breast cancer, and at the same time gain some protection against heart disease, if they drank small amounts of red wine each day.

The comments about French men are presumably intended to make us accept that alcohol is not necessarily beneficial for men in general. However, the same criticism can be made as is made above in relation to the claims about women. We are not told what level of alcohol intake is required in order to suffer the adverse effects on health, but we are told that the French consume more drinks per drinker. It is possible that men could drink enough red wine to gain the benefits without being at risk of cancer of the mouth and cirrhosis of the liver. The comment about deaths in motor vehicle accidents is irrelevant – those who die in motor vehicle accidents caused by drink driving may not themselves be the drinkers, or the drivers, and those who drink a small amount of red wine each day are not necessarily going to drive whilst drunk.

(c) Red wine has nothing to do with the relatively low incidence of heart disease amongst the French

This section of the reasoning depends partly upon the plausibility of the explanation offered by the two epidemiologists. Their explanation is not implausible, but more evidence will be needed to confirm it.

It depends also on the claim that the greater consumption of red wine in France is caused by more drinks per drinker, which, if true, gives strong support to the intermediate conclusion.

However, the intermediate conclusion itself does not give strong support to a main conclusion that ‘Drinking red wine will probably not make you live longer’, because even if the difference in red wine consumption is not the correct explanation of the lower incidence of heart disease amongst the French, nevertheless red wine could confer some protection. Indeed the author concedes that it does confer protection – to the same extent as other alcoholic drinks.

Exercise 21: Ten longer passages to evaluate

Now you can try your hand on the following ten passages. Use the same eleven steps that we used in evaluating the two examples above.

1 *Cry-babies and colic*



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Summary: Assessing an argument

Analysing

1 Identify conclusions and reasons:

- look for 'conclusion indicators',
- look for 'reason indicators',
- ask 'What is the passage trying to get me to accept or believe?'
- ask 'What reasons or evidence is it using in order to get me to believe this?'

2 Identify unstated assumptions:

- assumptions supporting basic reasons,
- assumptions functioning as additional reasons,
- assumptions functioning as intermediate conclusions,
- assumptions concerning the meanings of words,
- assumptions about analogous or comparable situations,
- assumptions concerning the appropriateness of a given explanation.

Evaluating

3 Evaluate truth of reasons and assumptions:

- how would you seek further information to help you to do this?

4 Assess the reliability of any authorities on whom the reasoning depends.

5 Is there any additional evidence that strengthens or weakens the argument?

- anything that may be true?
- anything that you know to be true?

6 Assess the plausibility of any explanation you have identified.

7 Assess the appropriateness of any analogies or comparisons you have identified.

8 Can you draw any conclusions from the passage? If so, do they suggest that the reasoning in the passage is faulty?

9 Is any of the reasoning in the passage parallel with reasoning that you know to be flawed?

10 Do any of the reasons or assumptions embody a general principle? If so, evaluate it.

11 Is the conclusion well supported by the reasoning? If not can you state the way in which the move from the reasons to the conclusion is flawed? Use your answers to questions 5 to 10 to help you to do this.



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Some mothers suffer agony from incessantly crying babies during the first three months of life. Nothing the parents do seems to stem the flood. They usually conclude that there is something radically, physically wrong with the infants and try to treat them accordingly. They are right, of course, that there is something physically wrong; but it is probably effect rather than cause. The vital clue comes with the fact that this so-called 'colic' crying ceases, as if by magic, around the third or fourth month of life. It vanishes at just the point where the baby is beginning to be able to identify its mother as a known individual.

A comparison of the parental behaviour of mothers with cry babies and those with quieter infants gives the answer. The former are tentative, nervous and anxious in their dealings with their offspring. The latter are deliberate, calm and serene. The point is that even at this tender age, the baby is acutely aware of differences in tactile 'security' and 'safety', on the one hand, and tactile 'insecurity' and 'alarm' on the other. An agitated mother cannot avoid signalling her agitation to her new-born infant. It signals back to her in the appropriate manner, demanding protection from the cause of the agitation. This only serves to increase the mother's distress, which in turn increases the baby's crying. Eventually the wretched infant cries itself sick and its physical pains are then added to the sum total of its already considerable misery.

All that is necessary to break the vicious circle is for the mother to accept the situation and become calm herself. Even if she cannot manage this (and it is almost impossible to fool a baby on this score) the problem corrects itself, as I said, in the third or fourth month of life, because at that stage the baby becomes imprinted on the mother, and instinctively begins to respond to her as the 'protector'. She is no longer a disembodied series of agitating stimuli, but a familiar face. If she continues to give agitating stimuli, they are no longer so alarming because they are coming from a known source with a friendly identity. The baby's growing bond with its parent then calms the mother and automatically reduces her anxiety. The 'colic' disappears.

(Desmond Morris, *The Naked Ape*, New York: Dell Publishing Co. Inc., 1967, pp. 98–99)

2 The good news is that sport is bad for us

Thomas Sutcliffe

When I was at school I regularly used to be hurled to the ground by boys much larger than myself. My face would be mashed into an icy compound of mud and



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grit, my shins kicked, and my clothes torn. And the teachers did not merely condone this brutality, they looked on approvingly and yelled incitements until they were red in the face.

This was because somewhere in the vicinity – as far away from me as I could contrive – a slippery oval ball was being fought for with a fury that would give check to an anarchist mob. To add to the general torment, the offal rendering plant located next to the school playing fields ensured that what we sucked into our racked lungs was as distant from good fresh air as was compatible with the languid Health and Safety regulations.

But it wasn't the stench or the physical discomfort I minded most. It wasn't even the scorn and contempt regularly visited on sporting inadequates. It was the repeated insistence that this unpleasant ordeal was actually morally improving.

So when I say that I greet every new revelation of sporting corruption and malpractice with an inner whoop of glee I hope you'll understand that this isn't simply a demonic exaltation at the triumph of vice. What makes me want to sing and skip is the delicious sound of another nail being hammered into the coffin of a tyrant – the bullying fallacy that sport can tone up the ethical muscles. If it isn't quite dead yet, the notion is surely in a vegetative coma.

On one side the captain of the South African cricket team, a paragon of sportsmanship, admits to lying and is accused of worse. The International Cricket Council meets to inquire into match-fixing. Scottish and Welsh rugby players fudge their ancestry to play on the national teams (your grandfather once bought a bag of Edinburgh rock? Oh, that'll do) and the Tour de France buckles under the weight of illegal drugs. Premier League football clubs strip their supporters of cash like ants milking aphids. Everywhere a landscape of rules broken, corners cut, justice defaced and reputation traded for cash.

You could argue – and they do – that this has nothing to do with sport. What we're seeing, they say, is the canker of money eating into an essentially noble ideal. There are two answers to that. The first is that a true sportsman doesn't need a financial incentive to cheat. Just think of the scandals that regularly erupt in the humble worlds of skittles and pub darts, where there is often nothing more at stake than village pride.

The second is that, if the basic argument has any value at all, sportsmen and women should be even better armoured against temptation than ordinary mortals, annealed by their efforts into a stainless rectitude.

It isn't as if these are complicated or ambiguous rules either –



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businessmen may justifiably argue that it's sometimes difficult to see when aggressive competition turns into something less reputable, but in sport the sidelines couldn't be more clearly marked.

The truth is, though, that most top sportsmen aren't slightly better people than the rest of us, they're slightly worse – because their definition of 'winning at all costs' will always be broader and more ruthless. And sport rewards ruthlessness since it is a zero-sum game – for someone to win another person must lose. 'Nice guys finish last', as the American baseball coach, Leo Durocher famously put it. Because of this sport will always be morally vulnerable; like water on limestone, money simply finds its natural weakness and inexorably opens it up.

Of course, there are things to be said for sport. Yes, it can provide examples of human transcendence and moments of great beauty. It can even, I have discovered, be fun. But as a moral tutor you'd have to admit it's an absolute loser.

(The Independent, 4 May 2000)

3 Demi-gods and mortals

John Harris

We are all programmed to age and die, but it doesn't have to be that way. If cells were not programmed to age, if the telomeres, which govern the number of times a cell may divide, didn't shorten with each division, if our bodies could repair damage due to disease and ageing 'from within', we would certainly live longer and healthier lives and might even become immortal.

Scientists from all over the world are reporting research which could, in principle, lead to the indefinite extension of life, reprogramming cells so that they did not age, making telomeres that would constantly renew themselves, and repairing cell and tissue damage as it occurred. Next month in this country the Chief Medical Officer's Expert Group is due to report to ministers on advances into human embryonic stem cells, which constitute the most promising avenue of research into increased longevity.

Suddenly the prospect that humankind could become immortals is more than a science fiction fantasy.

There is, of course, a sense in which we already have the secret of eternal life. Our genes are 'immortal' in that they come from our earliest humanoid ancestors, and their genes came from the earliest forms of life on earth. The genes we pass on to the next generation, by whatever method of reproduction, may survive indefinitely into the future. But, of course, the quest is for personal



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immortality. Yet if that can be achieved, though many individuals will be delighted humanity will be in deep trouble.

There is a key difference between trying to make existing people immortal and engineering immortality into future generations. To make you and me immortal scientists would have to make each type of our cells capable of regeneration. This would be a comprehensive task, which might be achieved by putting into the bloodstream many differently programmed stem cells. They would have targeting molecules attached that would cause them to colonise the different bodily systems which might be affected by disease. Since no technology is 100 per cent effective, repeated interventions would be necessary, but it might be possible in this way to extend existing lives indefinitely.

But in the long term it may be possible to 'switch off' the ageing process and maintain a repair programme in cells, by modifying the cells of the early embryo or even the gametes prior to conception. If all the early stem cells in an embryo had their ageing programme switched off, and were programmed to regenerate, then this immortality would be passed on as the cells multiplied and differentiated, eventually affecting every cell in the body as it was formed. The resulting children would be truly immortal.

But immortality is not the same as invulnerability and even these immortals could die or be killed. We do not know when, or even if, such technologies could be developed and made safe enough to use. But if it did happen it would have serious implications.

One thing we do know is that the technology required to produce such results would be expensive. For existing people with multiple interventions probably required, the costs would be substantial. To modify every new embryo, people would have to be determinedly circumspect about procreation and would probably need to use reproductive technologies to have their immortal children. Even in technologically advanced countries 'immortality' or increased life expectancy would be likely to be confined to a minority of the population.

In global terms the divide between high-income and low-income countries would be increased. We would face the prospect of parallel populations of 'mortals' and 'immortals' existing alongside one another. While this seems inherently undesirable, it is not clear that we could, or even that we should, do anything about it for reasons of justice. For if immortality or increased life expectancy is a good, it is doubtful ethics to deny palpable goods to some people because we cannot provide them for all. We don't refuse kidney transplants to some patients unless



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and until we can provide them for all with renal failure. We don't usually regard ourselves as wicked in Europe because we perform many such transplants while low-income countries perform few or none at all.

This brings us to the central issue: would immortality be a benefit, a good? There are people who regard the prospect of immortality with distaste or even horror; there are others who desire it above all else. In that most people fear death and want to postpone it as long as possible, there is some reason to suppose that the prospect of personal immortality would be widely welcomed. But it is one thing to contemplate our own personal immortality, quite another to contemplate a world in which increasing numbers of people were immortal, and in which all or any future children would have to compete indefinitely with previous generations for jobs, space and everything else.

But even if such a prospect made immortality seem unattractive it is not clear what could be done to prevent the development and utilisation of techniques for substantially increasing longevity and even engineering immortality. For immortality is not unconnected with preventing or curing a whole range of serious diseases. It is one thing to ask the question 'should we make people immortal?' and answer in the negative, quite another to ask whether we should make people immune to heart disease, cancer, dementia and many other diseases, and decide that we shouldn't. It might be appropriate to think of immortality as the, possibly unwanted, side effect of treating or preventing a whole range of diseases. Could we really say to people: 'you must die at the age of 30 or 40 or 50 because the only way we can cure you is to make you immortal or let you live to be 200 or 300'?

But now we are moving into uncharted waters. We might be facing a future in which the fairest and the most ethical course is to go in for a sort of 'generational cleansing' which would involve deciding collectively how long it is reasonable for people to live in each generation, and trying to ensure that as many as possible live healthy lives of that length. We would then have to ensure that they died (suicide or euthanasia?) in order to make way for future generations.

If that seems unacceptable, we might, if we could, do something that amounts to the same thing, namely programme cells to switch off the ageing process for a certain time (number of cell divisions or whatever) and then switch it back on again when a 'fair innings' had been reached. This, of course, would be much like the system nature has in place, with the important difference that most people would live a full lifespan.

Immortality would certainly be a mixed blessing, but we should be slow to



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reject cures for terrible diseases even if the price we have to pay for those cures is increasing life expectancy and even immortality. Better surely to accompany the scientific race to achieve immortality with commensurate work in ethics and social policy, to ensure that we know how to cope with the transition from the status of mortals to – what would it be – demi-gods?

(The Independent on Sunday, 16 January 2000)

4 I like traffic lights, but only when they're dismantled

Martin Cassini

What causes traffic jams? That's easy: too many cars. No, wrong. Think again. What causes much of the congestion on our streets are traffic lights.

Think of all the hours in your life wasted as your car journey is stopped by lights to let non-existent traffic through. And then ask yourself this: who is the better judge of when it is safe to go – you, the driver at the time and place, or lights programmed by an absent regulator? Traffic lights exist as a 'cure' for a man-made malady – the misconceived priority rule. This rule confers superior rights on main-road traffic at the expense of minor-road traffic and pedestrians. To interrupt the priority streams, lights are 'needed'.

Before 1929 when the priority rule came into force, a sort of first-come, first-served rule prevailed. All road users had equal rights, so a motorist arriving at a junction gave way to anyone who had arrived first, even the humble pedestrian. Motorists had a simple responsibility for avoiding collisions, and a duty of care to other road users.

In other walks of life the common law principle of single queuing applies, but the law of the road, based on the priority rule that licenses queue-jumping and aggression, creates battlegrounds where we have to fight for gaps and green time. But when lights are out of action – when we're free of external controls and allowed to use our own judgment – peaceful anarchy breaks out. We approach slowly and filter in turn. Courtesy thrives and congestion dissolves. And when the lights start working again, congestion returns.

As reported in yesterday's Times, the less regulation-obsessed Conservatives are openminded

about scrapping white lines, signs and traffic lights from Britain's high streets. Certainly in Dutch cities, where lights have been scrapped, accidents and congestion have melted away. In Drachten 24 sets of lights were removed. The



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result? Typical journey times have been halved; and accidents and congestion have all but disappeared. The beneficial effect of fewer controls can be seen elsewhere. In Montana the abolition of speed limits led to a 30 per cent drop in accidents and a 7mph fall in average speeds.

It is clear that human beings have evolved to negotiate movement and resolve conflict in the blink of an eye. Traffic controls merely interfere with those innate skills. They encourage us to take our eyes off the road to watch the signals, rather than do the safer thing: weigh up what other motorists, cyclists or pedestrians are intending to do.

Not only do traffic lights help to impede journeys pointlessly, but the UK's galaxy of 24-hour traffic lights amounts to GPH (grievous planetary harm). About 30 per cent of our CO₂ output is from traffic. Professor David Begg, the influential transport expert, admits that 40 per cent of that comes from traffic idling. Every litre of fuel burnt produces 2.4kg of our CO₂ and other greenhouse gases. Multiply the minutes of enforced idling at mandatory lights (and next to often unused, all-day bus lanes) by the hours in the day – and night – by the days in the year, by the number of vehicles and the environmental impact becomes clear.

As well as being environmentally unfriendly, traffic lights are also expensive. A set of lights at a typical crossroads can cost up to £100,000 to install and £10,000 a year to maintain. Since gaining power, Ken Livingstone, the Mayor of London, has imposed more than 1,800 new sets of energy-guzzling lights. Someone is making a lot of money at public expense.

But how do policymakers get away with it? Is it because traffic lights are so ingrained that we can't imagine life without them? Or could it also be because Transport for London – Public Enemy No 1 when it comes to counterproductive traffic controls in the capital – has a large budget and pays 76 of its managers £100,000 a year for producing what? Congestion?

At a recent talk – entitled, without a hint of irony, 'London's Moving' – the congenial former mayoral candidate, Steve Norris, listed the causes of congestion. Not once did he mention traffic lights. But he did argue for more high-cost, high-tech equipment. Is it a coincidence that he is chairman of ITS (the mis-titled Intelligent Traffic Systems), which supplies much of the control technology that keep our roads so dangerous and congested.

To those who say scrapping lights won't work, the answer is: it has never been tested in Britain. I have been asking traffic bosses to collaborate on a monitored trial to test the idea that we are better off left to our own devices, but



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they always say 'no'. The Berlin Wall of the multibillion traffic control establishment is manned by highly paid experts. As a traffic-light-free world threatens their *raison d'être*, perhaps their resistance is understandable.

Mandatory traffic lights, all-day bus lanes, motorbikes banned from bus lanes, ferocious parking controls, premature congestion charging, one-way systems that make you go via XYZ to get from A to B . . . traffic controls turn our road network into a nightmare obstacle course.

Yes, the sheer volume of traffic can be a drama. But volume + controls = crisis. If we restored the common-law principles of equal rights and responsibilities, and allowed road users to filter in turn; if we got rid of lights and dismantled the traffic control behemoth, at a stroke we would make our roads safer, life greener, the traffic flow more smooth and we would soothe the rage of the needlessly halted motorist.

(The Times, 23 January 2007)

The following article refers to Maxine Carr, the partner of Ian Huntley who murdered two girls in Soham, Cambridgeshire, in 2002. Carr was convicted for perverting the course of justice by providing a false alibi for Huntley, although the court accepted that she had done this only because she believed he was innocent.

5 Why do we go on imprisoning women?

Janet Street Porter

Depressing news – prisons chief Martin Narey has bowed to public opinion and refuses to release Maxine Carr. You may consider what follows sexist, crazy or just plain stupid. On the other hand, I hope you agree with me, in which case start writing to Mr Blunkett [then Home Secretary] immediately.

Given that our prisons are full to bursting, that the number of people in them has risen by over 50 per cent in the last five years, and the number of people reoffending shows no sign of dropping, can anyone tell me why we bother to imprison women? Does stripping a woman of her dignity by putting her in a uniform, incarcerating her for hours on end, serving her substandard food and depriving her of her children serve any purpose, apart from achieving a dubious target set by a Home Office bean counter?

Prison certainly hasn't worked for Patricia Amos, the first mother to be jailed for her children's truancy. In May 2002, Mrs Amos was sentenced to 60 days' imprisonment, and released on appeal after 28 days. Now her daughter is refusing



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to go school again, and Mrs Amos is back in court facing another prison sentence. Earlier this week newspapers carried the distressing photograph of another distraught mother facing two years' imprisonment. Heather Thompson was found guilty of causing death by dangerous driving after she crashed the car she was driving at high speed and killed her daughter and her 12-year-old friend. There is no doubt that her dreadful driving has caused immense pain and suffering to two families, but is a custodial sentence really the way to make amends to the bereaved or to give the person responsible the equipment to restart her life?

Just as I can see no reason for imprisoning anyone under 18, and find it a scandal that the Home Office still justifies the incarceration of minors, so I can't see why a socially aware Labour government cannot lead the world and treat most female offenders differently. It costs a lot of time and money to lock women up, and inflict a lot of petty rules and regulations on some of the most deprived people in our society, and to what end? Currently there are more than 70,000 people in prison, and the number of women has risen steadily (at a rate of 15 per cent, between 2001 and 2002, compared to the 6 per cent increase in the number of men) to almost 4,500. Over a ten year period we have seen an astonishing 140 per cent rise in the number of women locked up.

Women are not generally running major crime syndicates, drugs factories, or huge financial frauds. Women are not generally burglars or robbers using guns. Almost 40 per cent of women in prison are there for drug offences, often carrying drugs or selling drugs for other people. A large number are users, who committed crimes to fund their habit, in which case they need treatment, which could be provided in secure accommodation in the community.

The next largest category (16.6 per cent) is for 'violence against another person', and presumably Mrs Thompson will be considered part of that statistic. But women are not inherently violent. They might be thoughtless, uneducated and selfish. They might be driven by passion and feelings of rejection, but few women kill or harm because it gives them a thrill. These women should be having psychiatric care, not spending hours alone in a cell surrounded by a culture where drugs are freely available and tender loving care is at a premium.

New figures reveal that the incidence of self-harm among prisoners has increased five-fold since 1998, and that the number of women harming themselves in prison has soared. One spokesman admitted that as [sic] 80 per cent of all prisoners suffer from some kind of mental illness. Most women in jail are illiterate, from abused families and at the bottom end of the social scale. You can't tell me



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that the social demographic of Holloway mirrors that of Epsom or Cheltenham.

David Blunkett's belief that good parenting can be absorbed via a custodial sentence is plainly ludicrous, depriving needy children of their parents and causing more of them to be taken into care. I don't doubt that many mothers need help in how to stand up to their children and how to get them through the school gates. They need support and advice on how to impose order on young lives full of chaos and bullying, with the ever-present threat of gang culture and peer pressure. But I don't think that these parenting skills are best learnt behind bars.

It would be far more effective to impose some form of community service on mothers whose children are out of control, and in the process show them how they can contribute positively to the area in which they live. Once we help women to be better mothers, educate and support them and give them self-esteem, they will start raising daughters who don't indulge in benefit fraud, credit-card theft, and think it's acceptable to shoplift and handle stolen goods.

The new Director of Public Prosecutions is considering whether mothers who [are] accused of killing their babies should be spared prosecution and dealt with outside the courts, as in some European countries. Now is surely the time to extend this thinking to many other offences for which we currently imprison women. Unless, of course, we want to lock up even more women next year and wait for them to harm themselves. Are we that callous?

(The Independent, 13 February 2004)

6 Extract from 'Is suicide always a selfish act?'

Johann Hari

When it comes to allowing people to choose death, Western societies are in the middle of a painful ethical transition. We are moving from a Judaeo-Christian belief in the sanctity of life to a more nuanced understanding that quality of life can be more important. The debate about whether people should kill themselves might seem obtuse; who, after all, can stop people doing it? But it matters because any conclusions we reach about suicide inevitably affect our conclusions about assisted suicide.

The important question underlying both debates is: do you own your own life, and do you have a right to end it if you want to? If we believe you do, then it cannot reasonably be denied to people too infirm, physically incapacitated or just plain cowardly to perform the physical act. A willing doctor handing the patient the medical equivalent of hemlock – or delivering a lethal injection – is simply



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delivering suicide by other means. The ethical difference between me killing myself and a willing doctor helping me seems slight, and it is often exaggerated by the opponents of euthanasia.

These are particularly important questions at the moment because, as part of the Mental Incapacity Bill currently before Parliament, the Government is proposing to introduce legally binding 'living wills'. Already in place in most European countries, this new law will give you the right to stipulate circumstances in which you would prefer death to life. The most common scenarios are if you are mentally incapacitated, or if you could only survive in extreme physical pain. This Bill is a little-noticed tipping point, a moment when we should be forced to look at our slowly evolving moralities and realise how far they have shifted. Iain Duncan Smith [the leader of the Conservative Party in 2004] has condemned the Bill as 'government-sanctioned suicide' and 'euthanasia by the back door'. These are pretty accurate descriptions. The Government should stop ducking the debate and denying the obvious euthanasia implications. They should argue back against [Iain Duncan Smith] and defend your right to choose the time of your own death.

[Iain Duncan Smith], like most opponents of euthanasia, argues that all lives – no matter how unwilling or miserable – are worth preserving equally. This sounds attractive at first. Yet almost nobody, not even the Vatican, believes that the 'sanctity of life' ethic (to use the philosophical label) can be consistently followed any more. Look at Anthony Bland, one of the victims of the Hillsborough disaster. He was left in a persistent vegetative state, and kept alive for four years by medical technology. He had no more self-awareness than a cabbage, and no cure was ever going to be possible. But he was undoubtedly alive; if you believe in souls, then he presumably still had one.

If you really believed in the sanctity of life at all costs – irrespective of quality of life – then you would have to argue against switching off the machines and killing him, which was finally done in 1993. Hardly anybody did. This was an admission that sometimes quality of life can be so poor that it overrides the sanctity of life and makes death preferable. Once you make this admission, we are simply haggling over how bad life can get before allowing (or helping) a person to die is justified.

This is slowly being understood by the British public, but many people feel understandably uncomfortable that the old ethic is dying away without a clear replacement. We need to craft an alternative – a legally protected right to choose the timing of your own death, if you wish to exercise it. This should not be



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restricted to the terminally ill, even though they are almost always the focus of this debate. While they are obviously the most sympathetic candidates for the cause – they have the most emotionally blackmailing case – the vast majority of people who want to die are suffering from no physical illnesses except life itself. If these are firmly resolved to do it and they have pursued reasonable medical treatments and found them ineffective, they should be given medical help to end their lives.

Dignitas, the voluntary euthanasia society, has helped four people with a history of severe depression travel to Switzerland to be helped to die over the past three years. This has attracted a great deal of condemnation. But, given that these patients had exhausted the medical options and were in unbearable psychological pain, I think it was a compassionate act to help them leave life in a dignified way of their own choosing.

If I had been born just a decade earlier – before the creation of SSRIs, antidepressants that actually work – I might have chosen the same route for myself. The small minority of British people who find life too painful to endure should be given this option – and the Mental Incapacity Bill is a very small, faltering step in that direction. It provides us with an opportunity to move away from the rotting carcass of Judaeo-Christian ethics and acknowledge that sometimes – just sometimes – death is the least bad option.

(The Independent, 12 November 2004)

7 Smacking children should be socially unacceptable

Two parliamentary reports have called for an end to the archaic legal defence of 'reasonable chastisement' for hitting a child. According to the Commons Health Select Committee and the Joint Committee on Human Rights, that legal defence has too often been used to excuse violence against children.

David Hinchliffe, the chairman of the health committee, may have gone too far when he describes the torture and murder of eight-year-old Victoria Climbié as an escalation of discipline and punishment that had started with little slaps. But he and his parliamentary colleagues are erring on the right side of the argument.

For while examples as appalling as the Climbié case are extremely rare, physical abuse of children is much more common. As things stand, about 80 children die from physical abuse each year in England. Tellingly, in Sweden, where smacking has been outlawed, there have been no deaths in the past 10 years at the hands of parents and carers. We do not need to beat children to bring them up.



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The danger is not that some parents may face prosecution for a trivial tap on a child's knuckles, an eventuality that ought to be safely ruled out by sensible policing. The real danger is that the use of violence against children continues to be seen [as] an acceptable social norm.

Nothing would make a greater difference to this situation than a change in the law. That is why the Government's predictably weak response to the MPs' call is so disappointing. A generation ago, it was socially acceptable for people to drink and drive. Then came a change in the law, extremely unpopular at the time and widely seen by those affected as unnecessary and unenforceable, just like the proposed ban on smacking children. Yet within a relatively short space of time, and with the support of an extensive advertising campaign, drink-driving soon came to be seen as antisocial and confined to an incorrigible minority.

As other countries have demonstrated, we could quite quickly establish a situation in which hitting children is not only against the law but socially unacceptable. All it would take is a reasonable amount of political will.

(Editorial, *The Independent*, 25 June 2003)

8 Extract from 'What's the point of giving 16-year-olds the vote?'

John Curtice

Little wonder then that our politicians have been searching high and low for ways of encouraging more people to vote. In local elections they have experimented with all kinds of electronic voting. So far this seems to have done little to dispel apathy. More successful has been old-fashioned snail mail. Getting everyone to vote by post seems able to increase the dismal turnouts otherwise recorded in local elections by about 15 per cent. Indeed, that is why the government has insisted that the 10 June elections should be conducted by post in four regions of England, including throughout Labour's northern heartlands.

But changing the way we vote is perhaps no more than applying a sticking plaster. It does nothing to reverse the underlying causes of ever-growing disaffection and disinterest. In particular, it would seem to do little to reverse the apparently ever-growing cancer of apathy that has emerged among younger voters, probably less than two in five of whom voted in 2001. There is, it appears, a danger that we are raising a generation for whom abstention is the norm rather than the exception.

How might we solve this more fundamental problem? Perhaps if we can



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catch people early enough and give them the chance to vote before apathy sets in, then maybe they will pick up the voting habit for life. How about, then, reducing the voting age to 16?

For a Prime Minister [Tony Blair] who might like to revive his 'Cool Britannia' image this idea probably has some superficial attractions. But if the Prime Minister, along with his fellow politicians, really wants to increase turnout he should pause for thought. For of the things that politicians can actually do to raise or lower turnout, this is one of the few that could be guaranteed to exacerbate their collective plight.

There is nothing new about young people not voting. They have always been less likely to vote than their elders. Fortunately they do not remain young for ever. Life with a mortgage and a marriage (or at least a long-term relationship) is a little less carefree and politics comes to matter more. As people enter their twenties and thirties more of them express an interest in politics and so make the journey to the polling station.

And what is true of adults is also true of teenagers. Rare indeed is the 12-year-old who evinces an interest in politics. At least by the time they are 18 some have caught the bug. So in giving 16 and 17-year-olds the chance to vote we will simply be extending the franchise to a group in which the majority will have even less interest in politics and voting than 18 and 19-year-olds.

Proponents of lowering the voting age argue that the change would help to stimulate teenagers' interest in politics. But if that were the case why does reaching voting age apparently have so little effect on 18-year-olds at present? Harold Wilson's decision in the 1960s to lower the voting age from 21 to 18 simply helped create the large pool of disinterested young voters that politicians currently bewail. It is difficult to see why history would not repeat itself.

More subtle is an argument based on the observation that those who do vote when they first get the chance to do so are more likely to vote in subsequent elections. So, it is claimed, if we can catch people earlier we are more likely to create voters for life.

But, alas, people do not suddenly acquire an interest in politics and voting simply because they have been to a polling station when they are 18. Rather, they go to the polling station at 18 because they are already one of those rare teenagers who has developed an interest in politics.

Of course, if we want younger people to vote, then their interest needs to be stimulated. But giving them the chance to record their first abstention at an



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even earlier age than now will not do the trick. Rather they, like the rest of us, need to be convinced that voting will make a difference.

(*The Independent*, 5 May 2004)

9 Scrap speed cameras now

Paul Smith

British road safety is in trouble. The number of road deaths isn't falling as expected and recent figures from Europe put our rate of road safety improvement behind 20 other European nations. We used to have the safest roads in the world but we have been overtaken.

Although it appears that the Department for Transport (DfT) targets are being met, it's only the trend in serious injuries that provides this positive result. Unfortunately for the DfT, and for the rest of us, the numbers being hospitalised following road crashes haven't fallen for a decade. The only reasonable conclusion is that serious injuries are not falling either, but DfT statistics suffer an increasing degree of under-reporting.

When asked to investigate why road deaths were not falling as expected, the Transport Research Laboratory (TRL) deduced that 'some drivers must be getting worse'.

I have spent the last six years looking at road safety as a system and I'm pretty sure I know what's going wrong. Modern traffic policies are making drivers worse. This has been allowed to happen because the DfT has no working definition of what it means to be a good driver or even a proper understanding of what drivers really do. Yet driver behaviour, specifically the quality of driver behaviour, is the hidden fundamental on which all road safety depends. Unfortunately, the DfT has been taking driver quality for granted or possibly ignoring it altogether, an issue that Sir John Whitmore addressed in his most recent Telegraph Motoring column (June 2).

The process of driving is one of real-time risk management. Drivers who manage risk well stay out of trouble. They recognise risky situations and wait, hang back or steer clear.

Of course the potential risks involved in driving are enormous. Shutting your eyes for 20 seconds would probably cause a crash, possibly ending or ruining several lives. And while driving blind would certainly be daft, this actually tells us something important. It's not so much what we see that matters, but what we do with what we see. We use it to manage risk.



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Sadly, most people haven't been taught to drive as risk managers. We are taught manual skills (steering, clutch control, gear changing) and rules (go this way or that, stop here, don't stop here, don't speed, don't drink and drive).

The necessary risk management skills are acquired gradually with experience (at least as far as that experience goes in everyday driving) and they are easy to overlook because they are mostly subconscious. We learn where to look, how to recognise danger and how to respond to danger when we see it, making all sorts of subtle, semi-automatic judgements.

In particular, we learn to adjust our speed in order to remain safe in the prevailing road, weather and traffic conditions. The speed at which you choose to drive is an output from your own internal risk management system. Yet the DfT regards speed as an 'input'.

Road safety policy should have one overarching purpose – to make our roads safer. And the critical measure of success is the way road deaths are changing. If the number of road deaths isn't falling as expected in Britain, but it is falling as expected in other countries with similar economic conditions, then we know that something is wrong with our policies.

And there is something wrong with our policies. Not only do they neglect driver quality, but they are actively making us worse. We are prioritising and concentrating on the wrong things. At the heart of our policies are speed cameras, which have largely replaced comprehensive traffic policing. The dream is that cameras reduce risk, but the reality is that they are reducing the quality of our risk management.

Cameras give us legal compliance targets, not safety targets. And the divergence between the two is now very marked. We now have a nation of drivers concentrating on compliance rather than safety. The whole concept of speed cameras denies that we are capable of managing risk, yet road safety absolutely depends on individual risk management in real time. So the DfT has not only failed to understand what driver quality is but has given us policies that undermine it. Worse, it has fed us a false dogma to justify its policies. That false dogma has infected our road safety industry, with millions now believing that the only way to safer roads is slower traffic.

Yet our roads are not becoming safer. After falling for decades in spite of vastly increasing traffic, the number of fatal crashes has remained fairly static since the DfT replaced traffic police with speed cameras. If it had announced that all those traffic officers would be issued with blinkers and stopwatches and would sit



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on a chair at the side of the road looking neither to left nor right, we would have thought it madness.

The only possible route forward is for the DfT to admit its fatal mistake and pull the plug on the failed speed camera programme. This would certainly be a dramatic step, but it is an essential one, as a mere change of emphasis would leave the false dogma intact.

We really need a fundamental change of attitude. We need to lead the world again and show the way.

Speed cameras and the official propaganda that justifies them are the cause of our current problems, not the solution. They have to go and they have to go now.

(<http://www.telegraph.co.uk/motoring/main.jhtml?xml=/motoring.2007/06/23>)

10 Rise above the hot air and carry on flying

Anatole Kaletsky

For once, I agree and sympathise with Tony Blair. Like the Prime Minister, I do a great deal of flying, for business and pleasure, and I haven't the slightest intention of altering my travel plans in any way. Mr Blair's one mistake in flying to Florida for a family holiday was to offer a half-baked apology. He would have done much more good, for the global environment, and for the quality of public debate in Britain, by sticking to his original position, pithily summarised by *The Guardian's* front-page headline on Tuesday: 'Carry on flying, says Blair – science will save the planet.'

This headline was meant ironically, but it offered an excellent summary of what should be done about climate change. We should carry on flying as much as we want, but we should also create economic conditions to ensure that science does 'save the planet'. More precisely, we should express our justified anxiety about climate change not by feeling guilty or changing our lifestyles, but by putting in place incentives to reduce carbon emissions, not only in Britain and Europe, but much more importantly in China, Indonesia and Brazil.

Why is more flying compatible with a serious attitude to climate change, given aircraft emissions are the fastest-growing cause of global warming? The answer breaks down into four parts – arithmetic, technology, economics and politics.

Start with simple arithmetic. Although they are growing quickly in



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percentage terms, aircraft emissions start at such a low level that they will remain an almost imperceptible factor in global warming, even 50 years from now. According to the figures in the Stern review, aviation currently generates just 1.6 per cent of global emissions. Assuming that recent rapid growth rates remained unchecked this would increase to 2.5 per cent by 2050.

Because aircraft emit carbon high in the atmosphere, the greenhouse effects are stronger than they are on Earth, by a multiple of 2 to 4 times. Thus, the true contribution of aircraft to global warming according to Stern is today about 3 per cent (with an upper estimate of 6 per cent) and could rise to about 5 per cent in 2050 (with an upper estimate of 10 per cent).

Aircraft emissions, therefore, are a tiny contributor to global warming – far smaller than road transport, which creates 10 per cent of greenhouse gases or industry and agriculture, which create 14 per cent each. Air travel is totally dwarfed by the two main causes of carbon pollution – electricity generation, which accounts for 24 per cent, and deforestation at 18 per cent. Half of this deforestation – accounting for 9 per cent of global climate change – is due to the annual destruction of rainforests in only two countries, Brazil and Indonesia. Thus, if Indonesia and Brazil could be persuaded to stop their environmental vandalism for one year, the consequent preservation of rainforests would be sufficient to neutralise the climate impact of all the aircraft in the world until 2050. The same would be true if just one third of fossil-fuel electricity were replaced by renewables or nuclear power.

That British Airways and other airlines have failed to convey these elementary facts to the British public – and indeed done nothing to counter the belief that air travel is among the main causes of global warming – is a testament to something that passengers have long known: airlines are among the worst-managed companies in the world.

Now consider technology. Aircraft may be a relatively minor source of greenhouse gases, but their emissions are much more difficult and expensive to eliminate than those of other industries. While there are plenty of methods of generating electricity without any carbon or powering cars with much lower emissions, there is currently no alternative to kerosene as an aircraft fuel, and none is in sight on the technological horizon. This means that, to the limited extent that aircraft do contribute to global warming, their effect can only be mitigated by ensuring that planes are fully loaded, and by creating mechanisms to offset the emissions produced by flying with carbon reductions from power generation or



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land use, where such savings are much easier and cheaper to achieve.

So to economics. To make aircraft fly as efficiently as possible, governments should replace the present, irrational passenger levies with fuel taxes or, better still, a system of carbon trading that would force airlines to buy emission rights from other sectors, such as nuclear power or forestry, which can easily and cheaply eliminate carbon on the ground. The purpose of such levies should not be to discourage travel, but to increase incentives for emission-reducing activities, whether nuclear generation in Britain or rainforest regeneration in Brazil.

This leads us finally to politics. China and Brazil will only develop their economies in a globally responsible way if they are offered technologies and incentives that allow them to approach Western levels of comfort and mobility with lower emissions. This is not just a pipe dream. Rainforests could be defended with quite modest subsidies and necessary technologies for nuclear and solar power and low emission vehicles already exist, but they will be commercialised only if carbon emissions become very expensive, while non-polluting energy is subsidised in the early years.

This is where increased air travel could play a constructive role. Carbon trading by airlines could channel large sums of money into low-emission energy. The more people fly, the more profitable low-emission technologies would become.

To judge by their obsession with air travel, however, many so-called greens are really only puritan ideologues who care more about what they see as selfish capitalist lifestyles than they do about controlling climate change. But sincere environmentalists who genuinely want to reduce emissions should stop trying to induce guilt and exhorting politicians to set an example by changing their lifestyles. Instead they should campaign for economic arrangements that would make it financially attractive for Western businesses and governments in developing countries to eliminate carbon.

They should remember what is perhaps the most important insight in political philosophy, as expressed by Adam Smith: 'It is not from the benevolence of the butcher, the brewer, or the baker, that we expect our dinner, but from their regard to their own interest.' Economic self-interest offers the only solution to global warming. Everything else is hot air.

(The Times, 11 January 2007)