

FIFTH EDITION



CRITICAL THINKING

A Concise Guide

TRACY BOWELL, ROBERT COWAN AND GARY KEMP



critical thinking

- We are frequently confronted with *arguments*. Arguments are attempts to persuade us – to influence our beliefs and actions – by giving us reasons to believe this or that. *Critical Thinking: A Concise Guide* will equip students with the concepts and techniques used in the identification, analysis and assessment of arguments, whatever the subject matter or context. Through precise and accessible discussion, this book provides the tools to become a successful critical thinker, one who can act and believe in accordance with good reasons, and who can articulate and make explicit those reasons.

Key topics discussed include:

- Core concepts in argumentation;
- How language can serve to obscure or conceal the real content of arguments;
- How to distinguish argumentation from rhetoric;
- How to avoid common confusions surrounding words such as ‘truth’, ‘knowledge’ and ‘opinion’;
- How to identify and evaluate the most common types of argument;
- How to distinguish good reasoning from bad in terms of deductive validity and induction.

This fifth edition has been revised and extensively updated throughout, including a significantly expanded range of ‘complete examples’, the introduction of Venn diagrams and the discussion of fake news and related phenomena arising in the contemporary scene.

The dynamic Routledge *Critical Thinking* companion website provides thoroughly updated resources for both instructors and students, including new examples and case studies, flashcards, sample questions, practice questions and answers, student activities and a testbank of questions for use in the classroom. Visit www.routledge.com/cw/bowell.

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Reviews of the previous edition

'The way in which this text combines clear and detailed explanations of technical concepts with a comprehensive set of contemporary and relevant examples is excellent. Whilst the focus is largely on developing the practical skills of argument reconstruction and analysis, the authors never lose sight of the larger philosophical picture, and this makes the book a joy both to teach with, and to learn from.'

Joel Walmsley, *University College Cork, Ireland*

'*Critical Thinking* is the best textbook by some distance for undergraduate students approaching the subject for the first time. It is clearly written and introduces the fundamental concepts of the subject in an accessible and systematic way. The fourth edition contains welcome new material on probabilistic reasoning, as well as continued improvements throughout the book. It remains the clear first-choice textbook for my course.'

Graham Stevens, *University of Manchester, UK*

'The book is still the best guide around to the habits of reflective argument reconstruction and assessment – that undergraduate philosophy majors are expected to form.'

Steven Jauss, *University of Arkansas at Little Rock, USA*

Reviews of earlier editions

'This concise guide offers relevant, rigorous and approachable methods.... The authors focus on analysing and assessing arguments in a thoughtfully structured series of chapters, with clear definitions, a glossary, plenty of examples and some useful exercises.'

Will Ord, *Times Educational Supplement*

'In my view this is the most useful textbook on the market for its stated audience. It provides exceptionally clear explanations, with sufficient technical detail, but without over-complication. It is my first-choice text for teaching critical thinking to first-year undergraduate students.'

Dawn M. Wilson, *University of Hull, UK*

'This is the best single text I have seen for addressing the level, presumptions, and interests of the non-specialist.'

Charles Ess, *University of Oslo, Norway*

TRACY BOWELL,
ROBERT COWAN
and
GARY KEMP

critical thinking

A CONCISE GUIDE

FIFTH EDITION

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PREFACE TO THE FIFTH EDITION

Like all authors of texts on critical thinking or critical reasoning, we have tried to write a book that is genuinely useful – useful for the practice as opposed to the theory of critical thinking. But our conception of what is useful differs somewhat from that of most of those authors.

On the one hand, we have largely avoided formal methods. Whereas the application of formal methods is justified primarily by its value in coping with complex logical structure, the logical structure of everyday argumentation is very seldom so complex that an argument's validity, or lack of it, cannot be revealed to ordinary intuition by a clear statement of the argument in English. Yet no formal means short of the first-order predicate calculus is sufficient to represent the logic of the majority of everyday arguments. Rather than compromising by presenting less-comprehensive formal methods that are useful only in a narrow range of cases, we have largely avoided them, except for brief sketches for the sake of those interested in seeing how what they are learning connects with formal logic and probability theory.

On the other hand, we have discussed and employed the concepts of logic more thoroughly than is customary in texts that avoid formal methods. We have defined them as accurately and in as much detail as we could, without superfluous refinement or inappropriate theoretical elaboration. We have done this for three reasons. First, it is only by grasping those concepts clearly that the student can achieve a stable and explicit understanding of the purposes of presenting and analysing arguments. Second, facility with those concepts enables the student to think and to talk about arguments in a systematically precise way; it provides a common currency in terms of which to generalise about arguments and compare them. Third, experience, including our own teaching experience, suggests that the concepts of logic themselves, when they explicitly appear in argumentative contexts, are among the most persistent sources of confusion. A symptom of this is the relativism that is so often encountered and so often lamented. At the root of this, we assume, are certain equivocations over the word 'truth'. We have tried to clear these up in a common-sense and non-dogmatic way, and thereby to clarify further concepts that depend on the concept of truth, such as validity, probability, inductive force,

soundness, justification and knowledge. We hope that clarity about these concepts, and the ability to use them correctly and with confidence in analysing arguments, will be among the most valuable accomplishments to be acquired by studying this book.

We do not entirely accept the view that examples and exercises in a book on critical thinking should be real, or even that they should be realistic. Of course, the aim is that students should be able to deal with real arguments. But, whereas real examples typically call for the exercise of several strategies and the application of various concepts at once, those strategies and concepts have to be learned one at a time. Unrealistic, trumped-up examples and exercises are often much more useful for illustrating and learning isolated concepts and points of strategy. We have tried to vary the realistic with the artificial as the situation recommends.

For this edition, the most substantial changes include an expansion of the section on extended examples in Chapter 6, and the addition of Venn diagrams in Chapter 3. And, as we did for previous editions, we've taken the opportunity to streamline, clarify, rewrite and reorder in sundry smaller but sometimes significant ways, and update many examples and exercises.

For this and the previous editions, we have a great many tutors, teachers and other readers to thank, but we would especially like to single out Helen Beebee, Stephanie Gibbons, Justine Kingsbury, Chris Lindsay and the memory of Lawrence Goldstein. We also thank the Faculty of Arts and Social Sciences, University of Waikato, for funding Howell's visit to Glasgow in autumn 2018.

Tracy Howell, University of Waikato
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10 January 2019

• introduction and preview

We are frequently confronted with *arguments*: these are attempts to *persuade* us – to influence our beliefs and actions – by giving us *reasons* to believe this or that. This book will equip you with concepts and techniques used in the identification, analysis and assessment of arguments. The aim is to improve your ability to tell *whether* an argument is being given, exactly *what* the argument is, and whether you ought to be persuaded by it.

Chapter 1 introduces the concept of argument as it should be understood for the purposes of critical thinking. Argument is distinguished from explanation, and from other linguistic means of getting people to do and to believe things. We introduce a method for laying out arguments so as to understand them more clearly.

Chapter 2 begins with a detailed discussion of various ways in which language can obscure an arguer's intended meaning. We then return to non-argumentative techniques of persuasion, introducing what we call *rhetorical ploys*. Common species of rhetorical ploys are considered, as well as jargon and spin.

Chapter 3 introduces *validity* and *soundness*, the main concepts required for the analysis and assessment of *deductive* arguments. These are arguments whose premises, if true, guarantee the truth of the conclusion. We discuss the assessment of validity and soundness, and explain the meaning and use of the principle of charity. For those interested, we provide a sketch of the connection between critical thinking and symbolic logic, or between informal logic and formal logic, plus a section on the use of Venn diagrams for the logic of the syllogism.

Chapter 4 continues our coverage of the concepts central to this book, this time for the analysis and assessment of *inductive* arguments: *inductive force* and *inductive soundness*. We also discuss *inductive inferences* and *degrees of probability*. Again for those interested, we provide a sketch of the connection between induction as discussed here and the mathematics of probability.

Chapter 5 covers in more detail the techniques required for reconstructing arguments and discusses specific issues that tend to arise in practice. We demonstrate techniques for deciding which material is relevant to an argument; for dealing with

ambiguous and vague language; for uncovering an argument's hidden premises; for adding connecting premises; for dealing with practical reasoning; and for dealing with causal arguments.

Chapter 6 is concerned with further concepts and techniques for argument-assessment. We introduce the concept of *rational persuasiveness*, and introduce further techniques for assessing arguments and, where appropriate, for refuting them. We also include several complete worked examples, applying and illustrating the analytical techniques and concepts developed during the course of the book.

Chapter 7 is a detailed discussion of fallacies and faulty argument techniques, two species of what we call 'pseudo-reasoning'. Common species of each are considered and, using the concepts and techniques covered in previous chapters, we provide a method for exposing fallacious reasoning and explaining what is fallacious about it. We also consider common mistakes in reasoning about statistical data.

Finally, in Chapter 8 we consider some of the philosophical issues underlying the concepts and techniques used here. We discuss truth, and its relationship to belief and knowledge, and relate these issues to the concept of rational persuasiveness. We sketch some connections to philosophical questions in the theory of knowledge.

Each chapter begins with a chapter overview – to remind you what to expect in the chapter – and concludes with a chapter summary and exercises. Answers to selected exercises and a comprehensive glossary are at the end of the book. Where appropriate, the reader is strongly encouraged to look outside the book for further examples to serve as exercises.

1

• introducing arguments

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Chapter overview: In this chapter we introduce the basics of critical thinking – what arguments are, why they are important and why you should care about them, how to distinguish them from other uses of language, how to identify their constituent parts, and how to set them out clearly so that they can be best understood and analysed. It is important that you gain a firm grasp of these concepts and techniques before moving further in the book since understanding them properly will lay the groundwork for becoming a successful critical thinker who avoids the pitfalls of believing and doing things without good reason.

The focus of this book is written and spoken ways of persuading us to do things and to believe things. Every day we are bombarded with messages apparently telling us what to do or not to do, what to believe or not to believe: buy this mobile phone; upgrade to this operating system; try this beer; register to vote;

eat at least five servings of fruit and vegetables a day; don't text and drive; drink [alcohol] in moderation; buy fair trade goods; euthanasia is murder; abortion is murder; meat is murder; aliens have visited the earth; climate change threatens our way of life; make sure you reference all of your sources; Build the Wall!! and so on. Some messages we just ignore, some we unreflectively accept and some we unreflectively reject. Others we might think about and question, asking, 'Why should I do, or refrain from doing, that?' or 'Why should I believe that, or not believe it?'

When we ask the question 'Why?', we're asking for a **reason** for doing what we are being enjoined to do, or for believing what we are being enjoined to believe. Why should I register to vote, or buy this particular mobile phone? Why should I believe that meat is murder, or that climate change threatens our way of life? When we ask for a reason in this way, we are asking for a **justification** for taking the action recommended or accepting the belief; not just a reason, but a good reason – one that ought to motivate us to act or believe as we are recommended to do. We might be told, for example, that Wheetybites are a nutritious, sugar-free, low-fat, high-fibre breakfast cereal; if this is so, and we want to eat a healthy breakfast, then we've been given a good reason to eat Wheetybites. If, on the other hand, we are presented only with marketing techniques – for example, images of some supposedly aspirational lifestyle with happy, healthy-looking people eating Wheetybites with fresh-looking berries out of stylish crockery – then, although an attempt has been made to persuade us to buy Wheetybites, it would not appear that any attempt has been made to provide good reasons for doing so.

To attempt to persuade by giving good reasons is to give an **argument**. We encounter many different types of attempts to persuade.¹ Not all of these are arguments, and one of the tasks we will concentrate on early in this book is learning how to distinguish attempts to persuade in which the speaker or writer intends to put forward an argument from those in which their intention is to persuade us by some means other than argument. Critical thinkers should primarily be interested in arguments and whether they succeed in providing us with good reasons for acting or believing. But we also need to consider non-argumentative attempts to persuade, as we need to be able to distinguish these from arguments. This is not always straightforward, particularly as many attempts to persuade involve a mixture of various argumentative and non-argumentative techniques to get us to accept a point of view or take a certain course of action. The crucial point of difference for arguments, though, is that when we argue we attempt to give reasons. In non-arguments there is an absence of an attempt to give reasons.

You may find it surprising to think of an 'argument' as a term for giving someone a reason to do or believe something – telling them why they should buy certain products or avoid illicit drugs, for instance. Perhaps in your experience the word 'argument' means a disagreement – raised voices, slamming doors, insults, sulking, etc. In fact, in some of those situations the participants might actually be advancing what we mean by an argument, putting forward a well-argued case for loading one's own dishes into the dishwasher, for example, but in many cases they will not

be arguing in the sense that we have in mind here; rather they will just be disagreeing with each other. In public debate and discussion reasoned argument is increasingly replaced by disagreement and a refusal to engage in proper argument, and often those disagreements are expressed in highly emotive and divisive language that is unlikely to lead to reasoned agreement.

That said, the sort of argument we have in mind does still occur frequently in ordinary, everyday situations. It is by no means restricted to the works of Plato, Descartes and other scholars famous for the arguments they put forward. You and your friends, family and colleagues give each other reasons for believing something or doing something all the time – why we should expect our friend to be late for dinner, why we should walk rather than wait for the bus, and so on. In television and radio broadcasts (especially current affairs shows), on Twitter and in online forums and blogs you'll find people arguing their case (though they may well also resort to other persuasive techniques as well). Open a newspaper or magazine (on almost any topic) and you'll find arguments in the letters section, editorials and various other discussion pieces. The same thing occurs in a more academic form at universities and colleges. Throughout your time as a student you will hear lecturers and other students arguing for a point of view, and in readings and videos you will encounter attempts to persuade you of various claims about all manner of issues. In the workplace you may find yourself having to argue for a particular course of action or solution to a problem, or arguing on behalf of a client or associate.

If you develop your ability to analyse people's attempts to persuade so that you can accurately interpret what they are saying or writing and evaluate whether or not they are giving a good argument – whether, for example, they are providing you with a good reason to reduce your consumption of single-use plastic – then you can begin to liberate yourself from accepting what others try to persuade you of without knowing whether you actually have a good reason to be persuaded, and this can prevent you from doing or believing the wrong thing.² What's more, you can apply these techniques of analysis to your own attempts to persuade and avoid giving bad arguments yourself.

But then, you may ask, why is it liberating to demand reasons before you are persuaded to adopt new beliefs or to do something? Isn't it less trouble to go through life unreflectively, doing more or less as you please, and not worry too much about whether you have good reason to do or believe something, beyond whether or not you want to? Well, it may often be easier in the short run, but it might lead to a life dominated by bad decisions and discontentment. Socrates, the ancient Athenian philosopher, famously argued that 'the unexamined life is not worth living'.³ While this may or may not be true, the only way to find out is to approach the issue in a critical and rational manner. Even though you may not always be able to tell definitively whether you have been presented with a good argument, paying due attention to arguments gets you closer to the truth of a matter, thereby making the world and the people in it easier to comprehend and to deal with.

Even if a desire to discover the truth does not seem a sufficiently strong reason for being concerned about having good reasons to justify your actions and beliefs,

there are various life situations in which the ability to interpret and evaluate a person's reasons properly may be crucial to that person's well-being, or even to their remaining alive. For example, in a court trial the jury is instructed to convict an alleged murderer if the prosecution has proved their guilt beyond reasonable doubt. The jury is being asked to consider the prosecution's case (which, ideally, is an argumentative attempt to persuade them of the guilt of the accused) and the evidence they offer at each step of making that case. It has to consider whether there is good reason to accept the argument or whether some faults in it mean that there must be some doubt about whether its members should be persuaded by it. Conversely, they must also attend to the case of the defence, asking whether that argument has demonstrated that there is sufficient doubt as to whether the defendant is guilty of the alleged crime. The skills of evaluation and interpretation involved in argument analysis are what we use (or ought to use) in determining the strength of the prosecution and defence cases in such situations. In fact, in any situation in which we have to make decisions, be they about our lives or the lives of others, there is no substitute for the ability to think logically and to detect errors in our own thinking and that of others.

Now that so much of our communication, both public and private, takes place via social media, we are probably exposed to even more such messages than we were when our main sources of public communication were (terrestrial) TV, radio and print media and our main means of communicating with each other were in person or via landline and letter writing. While social media offers us so many more ways to communicate and to share ideas and influence opinions, the sheer scale and scope of content and the fact that much of its networks are only lightly regulated (if at all) means that the quality and accuracy of debate and information cannot be safely assumed. This makes the critical thinker's task harder than in the past, but it also makes critical thinking more important than ever. And it is a good reflection of the importance of the skills you are developing that those in power sometimes fear the effects of those who can think critically about moral, social, economic and political issues. The ability to think critically, about both one's own beliefs and commitments and the claims and reasons given by others, then, is essential if one is to function properly in one's role as a citizen.

While this book is mostly dedicated to introducing you to the concepts and techniques of good critical thinking and of constructing and analysing arguments, it is important, especially given the often poor standard of public debate and discussion, that you also try to cultivate some other good habits, or attitudes, as a thinker and participant in discussion. These include open-mindedness – the willingness to revise and relinquish our beliefs if they are shown to be faulty; intellectual courage – being willing to engage in argument and to open one's own beliefs and reasoning up to scrutiny; and intellectual autonomy – being willing to go against the tide of popular and widely held opinions, or to adopt unpopular ones if there are good reasons to do so. Adopting these habits as a thinker is also a crucial aspect of playing one's part as a citizen.

● BEGINNING TO THINK CRITICALLY: RECOGNISING ARGUMENTS

We do many things with language, both written and spoken – state a fact, ask a question, tell someone to do something, insult someone, praise someone, promise to do something, swear an oath, make a threat, tell a story, recite a poem, sing a song, say a character's lines in a play, cheer on a football team. You will have noticed that in this book we write about '**attempts to persuade**' – by argument and by other means. As we've mentioned, not all attempts to persuade (using language) are attempts to persuade by argument. Some are attempts to persuade by means of rhetorical devices. In Chapter 2 we discuss the most common of these devices in detail. For the time being we'll just make some remarks about rhetoric in general. For our purposes, rhetoric is defined as follows:

Rhetoric

Any verbal or written attempt to persuade someone to believe, desire or do something that does not attempt to give good reasons for the belief, desire or action, but attempts to motivate that belief, desire or action by other means.

The crucial thing to remember here is that an attempt to persuade by argument is an attempt to provide you with **reasons** for believing a claim, desiring something or doing something. Arguments appeal to your critical faculties, your reason. Rhetoric, on the other hand, tends to rely on the persuasive power of certain words and verbal techniques to influence your beliefs, desires and actions just by appealing to your desires, fears and other feelings.

Threats and bribes are special cases that may appear to count as rhetoric according to our definition. In fact they are closer to argument; for they work by announcing to the recipient that they have a good reason to act as suggested. For example, if Ben attempts to persuade Delores not to report him for harassment by threatening to inform campus authorities that she cheated on a test, then he is implicitly giving her a reason not to report him – if she does report him, her college will find out about the cheating; since she doesn't want that to happen, she has a reason not to report him. Although threats and bribes may be immoral and in part motivate us to act by appealing to our fears, they do also motivate through force of reason and for that reason do not count as rhetoric.

Rhetorical techniques can be manipulative and coercive; their use should generally be avoided by those who aspire to think critically and to persuade by reason. That is not to say that rhetoric is always undesirable. Often it is used to great effect for good causes. Consider this excerpt from Martin Luther King's famous *I Have a Dream* speech. Luther King uses remarkably effective rhetoric for a deeply important moral cause, and he might well be admired as a talented rhetorician.

But his speech does not amount to an attempt to persuade by argument (see www.youtube.com/watch?v=smEqnnklfYs).

Let us not wallow in the valley of despair, I say to you today, my friends.

And so even though we face the difficulties of today and tomorrow, I still have a dream. It is a dream deeply rooted in the American dream.

I have a dream that one day this nation will rise up and live out the true meaning of its creed: 'We hold these truths to be self-evident, that all men are created equal.'

I have a dream that one day on the red hills of Georgia, the sons of former slaves and the sons of former slave owners will be able to sit down together at the table of brotherhood.

I have a dream that one day even the state of Mississippi, a state sweltering with the heat of injustice, sweltering with the heat of oppression, will be transformed into an oasis of freedom and justice.

I have a dream that my four little children will one day live in a nation where they will not be judged by the colour of their skin but by the content of their character.

I have a *dream* today!

I have a dream that one day, down in Alabama, with its vicious racists, with its governor having his lips dripping with the words of 'interposition' and 'nullification' – one day right there in Alabama little black boys and black girls will be able to join hands with little white boys and white girls as sisters and brothers.

I have a *dream* today!

I have a dream that one day every valley shall be exalted, and every hill and mountain shall be made low, the rough places will be made plain, and the crooked places will be made straight; 'and the glory of the Lord shall be revealed and all flesh shall see it together'.

This is our hope, and this is the faith that I go back to the South with.

With this faith, we will be able to hew out of the mountain of despair a stone of hope. With this faith, we will be able to transform the jangling discords of our nation into a beautiful symphony of brotherhood. With this faith, we will be able to work together, to pray together, to struggle together, to go to jail together, to stand up for freedom together, knowing that we will be free one day.

Those who try to persuade us of less moral causes might also be effective, persuasive rhetoricians. European dictators of the last century – Hitler, Mussolini, Franco, Stalin – provide good examples of this, as do many current world leaders, particularly those who use social media to push our emotional buttons and influence our opinions and actions rather than engaging in reasoned debate and discussion.

Of attempts to persuade that are arguments, not all are good arguments. So when analysing attempts to persuade, we have to perform three tasks:

- The crucial first stage involves distinguishing whether an argument is being presented. We need to **identify** the issue being discussed, and determine whether or not the writer or speaker is attempting to persuade by means of argument, i.e. are they attempting to give reasons?
- Once we have established that the writer/speaker is presenting an argument, we can move to the task of **reconstructing** the argument so as to express it clearly, and so as to demonstrate clearly the steps and form of the argument's reasoning.
- A clear reconstruction makes our third and final stage – **evaluating** the argument, asking what's good about it and what's bad about it – much easier to perform and to justify.

In Chapter 5 we will explain in detail what we mean by reconstruction, and explain in detail what makes an argument a good one. Our aim is not to help you acquire the basic comprehension skills that you need to work out what a passage or speech is about. We assume that you already have that ability, though working through this book might help you to improve it. So we will begin with the first step, by considering how to distinguish arguments from other means of putting forward opinions and persuading people to act.

When we put forward an argument we are either advancing an opinion (a claim that we think is true) or recommending an action. In either case we give a number of claims intended to support the claim or the recommendation. However, these two types of argument can be collapsed into one. For we can think of an argument that recommends an action as advancing a claim to the effect that the hearer or reader should, or ought to, do such-and-such. For example, an argument whose aim is to get you to use less plastic can be understood as advancing the claim 'You should use less plastic'.

Thus all arguments can be understood as attempting to provide reasons for thinking that some claim is **true**. The nature of truth is an interesting and sometimes controversial philosophical issue that we do not need to contemplate here. We are working with an ordinary, non-theoretical concept of truth – one which says that to label a person's claim as true is to say that what it states is how things really are. For example, if a person makes the true claim 'Moscow is further from London than Paris is', then, according to our intuitive conception of truth, it is true *just because* Moscow is further from London than Paris is. Our working definition of truth, then, is as follows:

To say that a claim is true is to say that what is claimed is how things actually are.

A single claim, however, does not constitute an argument. An argument needs more than one claim: it needs the claim of which the arguer hopes to convince his or her audience, plus at least one claim offered *in support* of that claim. To illustrate the difference between arguments and claims, consider these **unsupported claims**:

- You should hand in your assignment on time.
- Philosophers are odd, unworldly people.
- The world is facing environmental catastrophe.
- It is important to become an effective critical thinker.

The following examples, by contrast, attempt to give some **support** for these claims. Whether they provide adequate support is something we will look at later. The important point is to see the difference between this set and the first set:

- You should hand in your assignment on time. If you don't, you'll get a penalty, or maybe even zero marks.
- I've met a few philosophers in my time and they've always been strange people, heads in the clouds, not really in touch with the real world. Philosophers are odd, unworldly people.
- Climate experts predict that the world is facing environmental catastrophe. Since their predictions are based on scientific data collected via research following sound and accepted methodologies, we should take their claims seriously.
- It is important to become an effective critical thinker; being able to recognise good arguments and avoid bad ones will prevent you from doing or believing the wrong things.

We use special terms to talk about the two parts of arguments: the primary claim, the one we are trying to get others to accept, is the **conclusion**; the supporting claims, the ones intended to give us reasons for accepting the conclusion, are the **premises**. As with the word 'argument', we are using the word 'premise' here in a restricted way, not necessarily corresponding to all the ways in which the word is ordinarily used. People might respond to an expression of opinion by saying 'That's just your premise, but no one knows that for sure'. Here they are using 'premise' to mean something like 'assumption' and their intention is to cast doubt on the truth or plausibility of the claim being made. That is not the stricter sense of the word 'premise' used in the discussion and analysis of arguments: for this purpose, a premise is simply any claim put forward as support for the conclusion of an argument, however certain or uncertain that claim may be.

We can now give a working definition of **argument**:

An argument

A set of propositions of which one is a conclusion and the remainder are premises, intended as support for the conclusion.

And what exactly do we mean by a **proposition**?

A proposition

The factual content expressed by a declarative sentence on a particular occasion. The same proposition may be expressed by different sentences. For example, 'Her name is Sheila' expresses the same proposition as 'She is called Sheila'.

The same proposition can be expressed by different sentences when we change the personal pronoun. For instance, if Henri says to Erik, 'You look like you could do with a rest' and Erik replies, 'Yes, I really do need a bit of a break', then they each utter different sentences, but they express the same proposition, namely that Erik needs a rest.

Conversely, the same sentence can express different propositions depending (among other things) on who utters it. For instance, if Muhammad Ali (boxer), John McEnroe (tennis player) and Pele (footballer) were each to utter the sentence, 'I am the greatest sportsman of all time', they would each express a different proposition, one about Ali, McEnroe and Pele respectively.

One outcome of this is that different sets of sentences could express the same argument and a particular sentence within an argument could express more than one proposition. Which proposition the sentence expresses is usually discernible by careful attention to context. The examples here involve words called **indexicals**. The meaning of an indexical changes relative to its context of use or relative to the person to whom it refers, as the term 'I' does in the example about sportspeople. We deal with indexicals in more detail in Chapter 8.

● **STANDARD FORM**

An argument may be about any subject and have any number of premises, but it will always have only one final conclusion. The following argument has just one premise:

Bart has two sisters.

Therefore, Bart is not an only child.

This has two:

Helping someone to commit suicide is the same as murder. Murder is wrong.

Therefore, helping someone to commit suicide is wrong.

And this one has three:

Car use is seriously damaging the environment.

Reducing car journeys would reduce damage to the environment.

We should do what we can to protect the environment.

Therefore, we should make fewer journeys by car.

As you can see, when we analyse arguments we set them out in a particular style, with the premises listed in the order that they occur in the reasoning process and the conclusion appearing at the bottom. We can refine this style and further clarify the argument by numbering the premises P1, P2 and so on, and drawing a line between the last premise and the conclusion, which we mark with a 'C'. The line between premises and conclusion is called an **inference bar**, and its purpose is to distinguish steps in reasoning. The bar can be read as standing for 'therefore' and for other words with the same meaning, such as 'thus' (we discuss more examples later in this chapter in the section identifying conclusions). This way of setting out arguments is called **standard form**. The purpose of setting out arguments in this manner is to maximise clarity. Using this method helps us to see the stages of reasoning clearly and to make comparisons between arguments of similar form. When dealing with arguments as they are ordinarily presented, distinguishing the exact conclusion from the premises, the premises from each other, and the premises and conclusion from other, irrelevant, material can be difficult. Writing the argument in standard form provides us with the most comprehensive and clearest possible view of it, ensuring that while discussing the argument and attempting to evaluate it we do not lose track of exactly what the argument is. There are various different ways of numbering premises and some course instructors may use slightly different conventions from that used in this book. What all of these conventions have in common is that they identify and distinguish an argument's premises and conclusion in a systematic, consistent and helpful way.

A number of the exercises included in this book require you to set out arguments in standard form. Doing this is part of **reconstructing** the argument. The end product – the argument set out in standard form – is called a **reconstruction** of the argument, or an **argument-reconstruction**. You will encounter argument-reconstruction in detail in Chapter 5. In the meantime, it is important to understand that when reconstructing arguments you should apply what you are learning from this chapter by following the example below and taking these five steps:

- Identify the conclusion.
- Identify the premises.
- Number the premises and write them out in order.
- Draw in the inference bar.
- Write out the conclusion, placing 'C' in front of it.

Thus the previous example looks like this in standard form:

- P1) Car use is seriously damaging the environment.
P2) Reducing car journeys would reduce damage to the environment.
P3) We should do what we can to protect the environment.
-

C) We should make fewer journeys by car.

● IDENTIFYING CONCLUSIONS AND PREMISES

The question of whether a text or speech contains an argument is the question of whether the writer or speaker is attempting, by means of that text or speech, to persuade their audience of some conclusion by offering premises in support of it. This is a question about the intentions of the writer or speaker – ‘What does this person intend to do with these words here?’ – that cannot always be answered unless we know something about the **context** – the circumstances in which the text or speech appeared or took place. But even when we’ve determined that an argument is being advanced, its premises and conclusion are often buried deep among the other elements of the text or speech, and there are no hard-and-fast rules for distinguishing the propositions that form an argument from those that perform some other function in a text or speech. Identifying arguments is largely a matter of determining what the author or speaker intends by interpreting their words (spoken or written), and this comes with practice. Often writers and speakers leave some of their premises unstated because they assume that readers or listeners will know what they have in mind. So in reconstructing arguments we often have to add premises to make their structure and content complete. Further, we do not always express our arguments in very clear language, so we have to clarify each proposition before we can command a clear view of the argument as a whole (we look at difficulties with linguistic meaning in Chapter 2).

Identifying conclusions

Once you have determined that a text or speech contains an attempt to persuade by argument, it is easiest to proceed by identifying its conclusion. Determining whether a passage contains an attempt to persuade by argument and identifying the conclusion of that argument do not always occur independently, however. Sometimes you will identify the conclusion in the process of working out that a passage does indeed contain an argument. On other occasions you may have already worked out that text or speech contains an argument by paying careful

attention to the writing or speaking style and the context without yet having identified the conclusion. To keep things clear and simple, we will treat these processes as independent steps in argument analysis.

The conclusions of the following examples are probably clear from the first reading:

Since Chris Hawkins is a politician and politicians are untrustworthy, I guess Chris Hawkins is untrustworthy.

Trophy hunting should be outlawed. After all, it's wrong to kill simply for pleasure and trophy hunting involves the killing of beautiful, endangered, wild animals for pleasure.

Before moving on, make sure that you can identify the conclusions in each of these examples.

Several points make the identification of conclusions an easier task

- 1 Once you have decided that a text or speech contains an attempt to persuade by argument, try to see what the main point of the text or speech is. Ask what point the speaker or author is trying to establish; that point will be the conclusion. Once you come to reconstruct an argument for analysis, paraphrasing the main point as one simple proposition will make the argument easier to handle. Bear in mind that a writer or speaker may make the same point in a number of different ways, so you may have to decide upon one particular way of expressing it, preferably the clearest way.
- 2 Any proposition on any topic can be a conclusion. As our examples demonstrate, it is possible to attempt to argue for any claim, from the highly theoretical to the most mundane. So the type of subject matter of a proposition – religion, morality, science, the weather, politics, sport – is not in itself a guide to identifying whether or not that proposition is intended as the conclusion of an argument. The premises and conclusions of arguments should ideally be expressed in declarative sentences, but in real-life arguments they may be expressed otherwise. When reconstructing arguments, we may need to rewrite premises and conclusions as declarative sentences in order to clarify the propositions expressed. For example, the apparent question 'Aren't all socialists idealists?' might be used to express a premise that all socialists are idealists. In Chapter 2 we discuss uses of language that need to be rewritten for clarity's sake in more detail.
- 3 A single text or speech may contain several arguments for several different but connected conclusions. Sometimes we argue for one point, then a second, and then use those conclusions as premises in an argument for a third and final conclusion. These chains of arguments are known as **extended arguments** and we will look at them in more detail shortly.

- 4 A helpful guide to recognising arguments is provided by those words that usually indicate that a writer or speaker is putting forward an argument. For example, if someone says, 'Given the facts that A, B and C, **it follows that** D', you can be sure that D is the conclusion of the intended argument (and that A, B and C are the premises). Other common **conclusion indicators** are:

- Therefore
- Hence
- Thus
- It can be concluded that
- So

Usually (though not always) these words or phrases follow the sentences that express an argument's premises. This has been the pattern in the majority of the examples we have provided so far. Another way of expressing an argument is to include the premises and conclusion in a single sentence with an indicator word separating them. For example, in the sentence 'The fact that Ms Musk is the CEO of a highly successful company proves that she must be highly intelligent', the conclusion that Ms Musk must be highly intelligent is separated from the premise that states that she is the CEO of a highly successful company by the indicator '**proves**'. Other words that serve the same function are:

- implies
- establishes
- shows

Commonly, writers and speakers state the conclusion of their argument before stating the premises. There are indicator words that are typically placed after the conclusion in these cases. For example, in the sentence 'Serena Williams is surely one of the greatest tennis players of all time since she has won 23 grand slam titles', the conclusion that Williams must be one of the greatest tennis players of all time is separated from the premise stating that she has won 23 grand slams by the indicator word '**since**'. Other words and phrases that serve the same function are:

- because
- for
- follows from the fact that
- is established by
- is implied by

These indicators are not fool-proof guides and cannot be treated as a substitute for careful identification and interpretation of attempts to persuade by argument. Not all arguers will help the critical thinker out by making use of indicator words. The fact that a text or speech does not include an indicator

word is not a reliable reason for thinking that it does not express an argument. If a text does not appear to have any conclusion indicators then an alternative way of identifying the conclusion is to try inserting conclusion indicators at appropriate places in sentences that appear to be good candidates for the conclusion. Then see if the text or speech still reads or is heard smoothly and if its meaning is unchanged. There are no conclusion indicators in the following speech, but it is still an attempt to argue:

Of course there should be a second referendum on the issue. The public was never shown the terms of withdrawal or given proper, honest information about what the costs would be. Surely on those grounds the government should go back to the people!

Here if we try placing the conclusion indicator ‘therefore’ at the beginning of the second sentence (‘The public was never ...’), it becomes clear that it is not the conclusion of the intended argument. Inserting ‘because’ between the first and second sentence (and thereby joining them to make one sentence), on the other hand, leaves the meaning intact and makes it clear that the conclusion – the claim that the speaker wants us to accept – appears at the beginning of the speech. Of course, when we write out the argument in standard form we change the order of the sentences and place the conclusion at the end preceded by the inference bar. Notice that the second sentence contains two premises so that in standard form the argument would be written thus:

- P1) The public was never shown the terms of withdrawal or given proper, honest information about what the costs would be.
- P2) On those grounds the government should go back to the people.

C) There should be a second referendum on the issue.

Note that we omit the rhetorical flourish of ‘Surely’ at the beginning of the conclusion. It is not properly part of the proposition that forms the conclusion. We discuss and demonstrate this point in Chapter 5.

- 5 **Indicator words** are not parts of the propositions that the argument comprises; rather they introduce or frame the conclusion and premises. So when we write arguments in standard form so as to reconstruct them, we omit the conclusion indicator words from our reconstruction.
- 6 So far we have only discussed **explicit conclusions** in which a writer or speaker expresses her conclusion directly and more or less clearly. However, conclusions sometimes remain unexpressed. These are **implicit conclusions**. They are only implied or suggested by the actual text or speech content, not explicitly expressed by it. This usually happens when the speaker or writer thinks that the context is sufficient to make the conclusion obvious so that it literally ‘goes without saying’. This is often a bad idea, as the conclusion is not always as obvious to those whom one is trying to persuade as it is to the persuader.

It can also be a way of concealing one's uncertainty as to exactly what one is arguing for. In the name of clarity and explicitness, try to avoid implicit conclusions in your own arguments. It isn't clear, for example, what (if any) conclusion is implicit in the following:

There's so much pornography online these days and young people are so easily influenced, it's bound to end in a collapse into an orgy of rape, abuse and indecency.

Identifying premises

As you go through the process of identifying an argument's conclusion, it is likely that you will also spot some or all of its premises. Thus the stages of identification are not entirely separate in practice. The identification of an argument's premises is a search for reasons given by the writer or speaker to think that their conclusion is true. Like the identification of conclusions, much of the process of identifying premises amounts to a close and charitable reading of what a writer or speaker says, but again there are some helpful guides:

- 1 Ask yourself what the writer or speaker's reasons for believing their conclusion are. What evidence does the writer or speaker give to think that the conclusion is true? The propositions that you come up with in response to these questions are likely to be the premises of the intended argument.
- 2 Like conclusions, premises can have any subject matter whatsoever. It does not matter whether a proposition is controversial or unanimously agreed, it can still be a premise.
- 3 In most real examples of writing and speech, arguments are embedded within other language that is not intended as part of the argument itself, although some of this language may be used rhetorically (we discuss such uses in Chapter 2). Again, it helps to work out the overall structure of the passage when trying to identify the premises. Consider the following:

I really think the government should reconsider its policies on the environment. Environmental issues such as climate change are some of the most challenging we face. But this government's policies are desperately outdated; the prime minister and his cronies are so focused on pleasing their friends in the corporate world. With their slick suits and so on, they invite business types to advise on policy and behave as if they too were chief executives of multi-national corporations, just out to make sure their friends can continue to make money.

In this example the speaker gets sidetracked into commenting upon government members' suits and policy advisers and fails, beyond the vague charge that the government's policies are 'desperately outdated', to offer a substantive criticism. Most of what is said is at best only obliquely relevant to the issue.

- 4 As with conclusions, there are certain words that usually (but not always) indicate the presence of premises – **premise indicators**. We have already seen some of these because they mark the speaker or writer's move from premises to conclusion or from conclusion to premises ('since', 'because', 'is implied by' and so on). There are other words and phrases that introduce sentences stating a premise or premises. A speaker or writer might state their conclusion and then begin the next proposition with such phrases as:

- My reason is ...
- My evidence for this is ...
- This is so because ...

For example:

I put it to you that Mrs White killed Colonel Mustard in the ballroom with the candlestick. The reason I make this claim is that on the night of Colonel Mustard's death Lady Scarlet saw Mrs White in the ballroom beating Colonel Mustard over the head with the very candlestick that was later found to have Mrs White's fingerprints and Colonel Mustard's blood on it.

Other premise indicators may occur at the beginning of a sentence containing both the premise and the conclusion. For example:

On the basis of the fact that in the last transfer window they bought several new international players, including two much-needed strikers and a defensive midfielder, I conclude that United will probably win the league this season.

- 5 Again, when writing out the premises of an argument in standard form, take care not to include the indicator words, as they are not part of the propositions that make up the argument. When indicator words such as 'since' and 'because' are not functioning to indicate premises or conclusions, however, but are used within an argument's propositions, then they should be included in the reconstruction. This is particularly important when 'because' is used in a proposition used to express an explanation. We explain a crucial distinction between arguments and explanations in detail later in this chapter.
- 6 Again, as with conclusions, a text or speech may not include specific premise indicators. Context is the best means of identifying premises in such cases. It may also help to try inserting premise indicators in front of or between propositions to see if they can be more clearly identified as the premises of an argument.
- 7 Ordinary language can make identifying arguments more difficult than it might otherwise be, because people do not always express all of their premises explicitly. Thus many attempts to persuade by argument rely on implicit premises: these are propositions assumed or intended by the arguer as reasons in support of the conclusion, but which are not actually expressed by any

sentence provided by the arguer. Sometimes this is because of an oversight; and other times because the arguer assumes that, in the given context, the premise may already be taken for granted. In Chapter 5 we will discuss the interpretation of hidden premises and how to reconstruct arguments to include them.

Extraneous material

As you try to identify arguments' conclusions and premises, you will notice that much of what people say or write when putting forward an argument plays no role in the argument itself. It is there as stage setting, for emphasis, for rhetorical effect, or has some purpose other than that of expressing the propositions that constitute the argument. Before identifying those propositions – the argument's conclusion, and the premises given as support for it – we often have to identify and separate out this material, as it has no role to play in the reconstruction of the argument. Here's an example. We've given each sentence a number in order to facilitate discussion.

These days we live on an overabundant supply of news and comment, and everyone seems to get involved. 1

One day the Twittersphere is full of chatter about the latest scandals and sleaze in the government, the next day about some celebrity making a fool of themselves, the next day about refugees, the next day about taxes, and the next day about who knows what else. 2

It's enough to make your head spin! 3

But one issue is so obvious and maddening that it makes me want to speak up myself. 4

It is true that the exposure of uranium to neutrons inside a nuclear reactor is not responsible for large outputs of greenhouse gases; but it does create plutonium, the material for nuclear weapons. 5

No one has any idea what to do with this dangerous waste, and the economic impact of this will be seriously significant. 6

Our generation must not bequeath a lethal legacy to our children, their children and their children's children. 7

Mr. Jeremy Dayton

Bournemouth

In sentences 1–4 Dayton is merely providing some commentary on an unrelated issue, complaining of the non-stop news media that is 'enough to make your head

spin!'; this has to do with the general circumstances in which he writes but not the issue he is concerned to write about. This is not part of the argument he is advancing and should be omitted from a reconstruction of the argument.

Sentences 5 and 6 express claims about the effects of nuclear power generation, our lack of knowledge about how to deal with them and their economic implications. These claims form the premise of Dayton's argument. This conclusion appears in sentence 7 where the writer expresses the main point, but the proposition being expressed is obscured by the rhetorical flourish provided by the phrase 'lethal legacy'. This rhetorical element should be omitted from the argument-reconstruction.

● ARGUMENTS AND EXPLANATIONS

Words that function as **indicator words** can be used for other purposes. The sentence 'Since 2018 I have been a student at the University of Anywhere' contains the word 'since'; but in this case the word merely designates the beginning of a period of time, and does not indicate a premise of an argument.

A more complex and interesting case is the use of words such as 'since' and 'because' – especially 'because' – in **explanations**. The distinction between arguments and explanations is important, but not always easy to make because arguments and explanations often have a very similar structure. In some cases we have to think hard about the context in order to determine which is intended. We need to work out whether they are telling us that such-and-such an event occurred as a result of some other event – that is, whether they intend to assert a relation of cause and effect. In that case, 'because' is being used to introduce an **explanation**, not an argument.

The distinction between arguments and explanations is best understood by way of examples. Consider this proposition:

The roof is leaking.

Someone might put forward an explanation for the roof's leak by saying something like:

The roof is leaking because the wind has shifted one of the tiles.

On the other hand, we can imagine someone putting forward an argument for that very same proposition, reasoning as follows:

There is water dripping through the bedroom ceiling.

Therefore, the roof is leaking.

What exactly is the difference? The difference is that, when giving the explanation, the speaker assumes that his or her audience *already accepts the proposition that the roof is leaking*, or at least that the speaker has no need to *persuade* the

audience of this fact. Given this fact, the speaker is asserting that the cause of that fact is a tile having moved. By contrast, when giving an argument for the conclusion that the roof is leaking, the speaker does not assume that the audience accepts or will accept that the roof is leaking; the arguer intends to persuade the audience that this is so by giving them a good reason to believe it.

This example of an explanation uses the word ‘because’ – the word here indicates a causal relationship instead of a logical connection between premise and conclusion. As demonstrated by the following examples, ‘since’, ‘therefore’, ‘thus’ and ‘so’ may also be used in explanations that are not intended to provide reasons for acting or believing something:⁴

- Since we forgot to add yeast, the bread didn’t rise.
- We forgot to add yeast; therefore the bread didn’t rise.
- We forgot to add yeast; thus the bread didn’t rise.
- We forgot to add yeast, so the bread didn’t rise.

The distinction between arguments and explanations can be confusing where the explanation of actions (that is, things that people do) is concerned. This confusion arises because, in the case of actions, reasons are causes! That is, the explanation of an action normally involves specifying the reason for it: a person does something because he or she had a certain reason. Thus, in asking about reasons for actions – ‘Why are you doing that?’ – we are sometimes looking for a **justification** – that is, we want the person to give us an argument for why the action is reasonable or acceptable – and other times we simply want an explanation, in the sense of wanting to know the cause. Nevertheless, the distinction between arguments and explanations still holds.

Suppose you are driving faster than the 70mph speed limit and your passenger asks, ‘Why are you driving so fast?’ You assume your passenger is not in any way suggesting that you shouldn’t drive so fast. You think they don’t mind in the slightest. You assume they are merely curious as to why you’re driving fast – whether it’s because you’re late, being chased by the police or perhaps testing the limits of your new car. Your reply, however, is simply ‘Because I enjoy it’. This would be an explanation: you are telling your passenger why you’re driving fast, not trying to persuade them of anything.

But suppose, when your passenger asks, ‘Why are you driving so fast?’ you think, perhaps because of their tone of voice, that maybe they do mind. You take the question as demanding a justification for your driving so fast. If you now say, ‘Because I enjoy it’, then you would be arguing, roughly, that it is all right to drive at such a speed on the grounds that you have a right to do those things that bring you pleasure. In that case, ‘Because I enjoy it’ would be a premise of an argument, which might initially be expressed thus:

It’s okay for me to drive as fast as I like, because I like driving fast.

I think we should be allowed to do anything that we enjoy.

It might be rewritten thus in standard form:

- P1) I enjoy driving fast.
 P2) I should be allowed to do anything I enjoy.
-

C) I should be allowed to drive fast.

In such a case, the fact that you enjoy it might be both a reason for driving fast and a cause of it.

● INTERMEDIATE CONCLUSIONS

The conclusion of one argument may serve as a premise of a subsequent argument. The conclusion of that argument may itself serve as a premise for another argument, and so on. A simple illustration:

Larry is a dog. All dogs are mammals, so Larry is a mammal. And since all mammals are warm-blooded, it follows that Larry is warm-blooded.

In this argument, an **intermediate** conclusion – that Larry is a mammal – is used as a premise for a further argument, whose conclusion is that Larry is warm-blooded. We represent **extended arguments** of this kind like this:

- P1) Larry is a dog.
 P2) All dogs are mammals.
-

C1) Larry is a mammal.

- P3) All mammals are warm blooded.
-

C2) Larry is warm blooded.

We give the two conclusions numbers: **C1** is the conclusion of an argument whose premises are P1 and P2; **C2** is the conclusion of an argument whose premises are **C1** and P3. So **C1** is both the conclusion of one argument and the premise of another.⁵

Normally, in such cases, the last conclusion reached (the one with the highest number) is the proposition that the arguer is most concerned to establish. It is the ultimate target. So we call this simply the conclusion of the argument, whereas any other conclusions, reached as steps along the way, are called **intermediate conclusions**.

We sometimes want to concentrate for a moment on a particular part of an extended argument. In the above case, for example, we might be particularly interested either in the first part of the argument, or in the second. We will sometimes

speak of the argument from P1 and P2 to C1, or of the argument from C1 and P3 to C2. We can also speak of the **inference** from P1 and P2 to C1, and the **inference** from C1 and P3 to C2.

The use of the word 'inference' in logic and critical thinking is another case where a word is used in a somewhat restricted sense in comparison with ordinary language. All reasoning consists of inferences. In the logician's sense of the word, each step of reasoning, each move from premise or premises to conclusion, is an inference. Contrary to the way the word is often ordinarily employed, there need be nothing doubtful about an inference. We sometimes say, 'but that's just an inference', meaning to cast doubt upon whether a given proposition should really be accepted on the basis of others. But in our sense of the word, an inference may be completely certain, not subject to doubt. For example, it is an inference, in our sense, to move from believing 'John is a classical musician' to believing 'John is a musician' – despite the fact that there can be no doubt that if the first proposition is true, then so is the second (in the terminology to be introduced in Chapter 3, it is a valid inference).

● CHAPTER SUMMARY

Successful critical thinking enables us to ensure that we have **good reasons** to believe or do that which people attempt to persuade us to do or believe, and helps to prevent us from doing and believing wrong or silly things and from putting forward poor arguments ourselves. Attempts to persuade may be **argumentative** or **non-argumentative**. Most of the latter count as **rhetoric**, which is any attempt to persuade that does not attempt to give good reasons for the belief, desire or action in question, but attempts to motivate that belief, desire or action solely through the power of the words used. The former, on the other hand, persuade us by giving reasons for us to accept a claim or take the action suggested. Not all arguments are good arguments. Good arguments are those that provide us with **good reasons** to act or to accept a claim.

Setting out arguments in **standard form** is a five-stage process that enables us to see the form of arguments better and, hence, to compare, analyse and assess them more easily. An argument consists of a set of **propositions**. The proposition expressed by a statement is its factual content, and should as far as possible be distinguished from the rhetorical content of the sentence. Propositions may be **implied** by an utterance without being explicitly stated: a proposition is implicated when it would reasonably be taken to have been intended. Among the propositions that constitute an argument, one is its conclusion – the proposition argued for – and the rest are its **premises** – the reasons given to accept the conclusion. Once we have determined that a text or a speech contains an argument, we must work out which sentence is intended to express the argument's conclusion and which are intended to express its premises. Words that serve as **conclusion indicators** and **premise indicators** offer a helpful (but not fool proof) guide to doing so successfully. We should also pay close attention to the context of the text or speech under consideration and be careful to exclude any extraneous material from our

argument-reconstruction. Arguments must be distinguished sharply from **explanations**: arguments attempt to provide reasons for believing a proposition whose truth is not assumed to be accepted yet; explanations assume a certain proposition is already accepted as fact, and attempt to specify the cause.

● EXERCISES

- 1 Decide whether each of the following cases contains an argument. If it does not, write 'N/A'. If it does, identify its premises and conclusion by underlining the appropriate propositions and writing 'C' under the conclusion and 'P' and the appropriate number under the premises. Remember that premise and conclusion indicators are not part of those propositions:

Example

I really do think he was wrong to contradict her in public like that.
C

 It was embarrassing for everyone and now she's on the defensive.
P1 P2

Notice that we have not underlined the words that connect or introduce the propositions, only the propositions themselves.

- a You should tidy up after yourself since nobody likes to use this room after you.
- b The room is messy because John Campbell was in here earlier, and he is a messy person.
- c Is the dollar overvalued?
- d Isn't it obvious that the dollar is overvalued?
- e Jimmy thinks the dollar is overvalued.
- f Jimmy thinks the Euro is overvalued, so the Euro must be overvalued.
- g Ilan is the lecturer for critical thinking. Falafel is yummy. So Ilan must like falafel.
- h Eat your greens!
- i Students should not have to pay any fees for tertiary education. A well-educated population benefits the country and the country should be prepared to pay for those benefits.
- j In order to think critically about a particular subject you need to have enough knowledge about that subject.
- k In order to think critically about a particular subject you need to have enough knowledge about that subject. So you should look for gaps in your knowledge.
- l Studying critical thinking can help you clarify your thinking, and make better choices in belief and action. Everyone should study critical thinking.