

Sentences, Punctuation and Paragraphs

- ▶ Sentences: structure, length, content
- ▶ Redundant words and phrases
- ▶ Expressions to use with care
- ▶ Negative writing
- ▶ Punctuation
- ▶ Paragraphs: definition, length, style
- ▶ Lists

Sentences

A sentence is as long as a piece of Sellotape and, for some people, more sticky. This is a useful analogy, as it avoids the cliché ('as long as a piece of string') and at the same time gives positively helpful information. Sellotape is an excellent product, provided that *the length of tape is right for its purpose*. Too short a piece, and the tape fails to fasten the parcel firmly; too long a piece, and tape, paper and fingers stick together in a nasty mess. Sentences are much the same. A very short sentence may fail to give the required information, or it may leave out essential elements such as a verb. A very long sentence often confuses itself, its writer and its reader, and ends up as a nasty mess. Sentences must be the right length for their purpose. Before looking more closely at sentence length and construction, we should say what a sentence is.

Definition of a sentence

- A sentence is a group of words which makes sense in itself.
- A sentence contains at least one main item of information to which various subsidiary ideas may be attached.
- A sentence must contain at least one complete verb.

The first aspect of this definition is most important, and many mistakes would be avoided if the writer asked, 'Does this make sense?' If it does not, it is not a sentence. Complete understanding may depend on knowledge of the context, but each sentence in itself should be intelligible to the reader. The beginnings of emails produce many mistakes of this kind:

Replying to your enquiry about maintenance. With reference to your telephone call.

These are incomplete parts of sentences ('replying to your enquiry' ... what?) and do not make sense by themselves. What is more, they do not contain verbs. They are not sentences.

A very useful guide to whether a sentence makes sense or not is to read it out loud. Your voice will attempt to make sense of the words by the way it sounds: if you say, 'With reference to your telephone call', your voice will almost certainly go up at the word 'call' as your brain assumes that there is more to follow. An English sentence tends to go down in the last few words as the brain registers complete sense, the main exception being questions, when the speaker requires the other person to complete the thought. So reading aloud is a good test of whether a group of words makes sense in itself and forms a sentence.

Sentence composition and structure

A sentence should contain one or two items of information and not twenty-three. Engineers often feel unable to stop writing, and add sentence to sentence, separating sentences by commas, until they have moved far away from the first piece of information, as in the following example:

At every stage when an error creeps in, an operator interrupts and corrects the problem, when really the system should be set up either to prevent the error occurring in the first place, or to be able to detect the error and correct the problem automatically.

There are two pieces of information here: what happens at present, and what is desirable. This immediately suggests two sentences:

At present, errors have to be corrected manually. The system should either prevent errors or, if this is not possible, detect and correct them automatically.

In this version, the number of words has been almost halved (25 instead of 46), and the meaning has been clarified, with a neat contrast between 'manually' and 'automatically'. Unnecessary words such as 'at every stage' and 'really' have been left out, and the two sentences are much better style than the clumsy version in one sentence.

There are two kinds of unit that can make up a sentence: **clauses**, which contain a verb, and **phrases**, which don't. In every sentence, the essential element is called the **main clause**: this may be just one word long, as in 'Stop!', which is acceptable as the single word is itself a verb. Usually there are several words in the main clause, as in:

The car refused to start.

This main clause makes good sense, contains one main idea and has a complete verb, 'refused'. (We may question the word 'refused' on the grounds that the car had little choice in the matter, but the expression is widely used and so acceptable.) In other words, the main clause and the sentence are one and the same thing. However, such a sentence can be extended, for instance by a phrase, a group of words which do not contain a verb:

On a cold, damp morning, the car refused to start.

We still have the main clause with its verb, but there is now additional information in the form of the **phrase** 'on a cold, damp morning'. It is worth noting that the phrase could occur in the middle of the main clause without affecting the structure of the sentence, as in:

The car, on a cold, damp morning, refused to start.

In this type of construction, the intervening phrase is usually separated from the rest of the sentence by a pair of commas, as in the example. A phrase may be placed at any point of the sentence, even at the end:

The car refused to start, on a cold, damp morning.

The reader will probably have noticed that there is a slight shift of emphasis: when the phrase comes in the middle of the sentence, it has more stress than at the end; in the earlier example, the weather is particularly worthy of comment, while the problem of the car is stressed more heavily if the description of the weather is placed later. Generally, the first information in a sentence has most emphasis.

Phrases are often, although not always, descriptive of time or place: examples are 'in the afternoon', 'after working hours', 'at the same time', 'at the company's headquarters' and so on. They add to the meaning of the rest of the sentence, but as they do not contain a verb, they can never stand alone.

A sentence, then, will have a main clause and may contain one or more phrases. It may also have other clauses, **subordinate clauses**, which include verbs but which cannot, unlike the main clause, stand alone. These clauses expand the meaning of the main clause, often explaining how or why the main action was

taken. For example, the writer may want to explain why the car refused to start, and therefore adds the subordinate clause 'because the battery was flat'.

There may be some resentment about the inconvenient timing of the incident, and the writer adds another subordinate clause, 'when I was already late for work'. The sentence now reads as follows:

On a cold, damp morning when I was already late for work, the car refused to start because the battery was flat.

This sentence is still acceptable, because all the information is linked to the original idea, but the reader may well feel that the limit for easy reading is near. Trouble arises if more ideas are added:

On a cold, damp morning when I was already late for work, the car refused to start because the battery was flat, but my neighbour, who saw the problem, came out with jump leads, and both of us together started the car and I got to work only ten minutes late.

If we analyse this sentence, we find that it contains four separate ideas:

- 1 the car refused to start
- 2 my neighbour came out with the jump leads
- 3 we started the car
- 4 I got to work late.

Each of these ideas has its subsidiary information:

- 1 on a cold, damp morning (phrase)
- 2 when I was already late for work (subsidiary clause)
- 3 my neighbour (phrase)
- 4 who saw the problem (subsidiary clause)
- 5 both of us together (phrase)
- 6 only ten minutes late (phrase).

None of these items by itself is a sentence (none makes sense by itself), but if each is added to the appropriate main idea (main clause, the one in bold italic type in each case), a sequence of good, readable sentences results.

- 1 On a cold, damp morning when I was already late for work, ***the car refused to start.***
- 2 ***My neighbour***, who saw the problem, ***came out with jump leads.***
- 3 Together, ***we started the car.***
- 4 ***I got to work*** only ten minutes late.

Each sentence now fulfils the criteria given in the definition, and we have a structured piece of writing, with all the events in the correct logical order.

Simple and compound sentences

One more aspect of sentence structure is worth mentioning at this point. As we have seen, a sentence may have one major idea, in which case it is called a **simple sentence**. It is also possible for a sentence to have two or more major ideas of equal importance (a **compound sentence**), although the writer must take care not to get carried away by this possibility. The ideas must be closely linked and none must involve many words, or the sentence will become too long.

The essential element of such a sentence is that there are words which make the connections – the ideas must not simply be placed one after the other with a comma in between, which is a common mistake in technical writing. The two words which most frequently act in this way are 'and' and 'but'; in each case they join together main clauses which could stand independently. Such joining words are known as **conjunctions**.

As an example, we might well decide, for reasons of style, to join together sentences 3 and 4 of the example given above:

Together, we started the car and I got to work only ten minutes late.

If we do so, then we have made a *decision* on the grounds of good style; we have not simply allowed the sentence to happen.

Understanding the basic structure of a sentence is an important stage in developing a good style. It gives the writer considerable power, both to show a clear logical sequence of events and to stress specific ideas. The reader perceives that the writer is in command of the information and has presented it in a structured way. The reading is as easy as the content allows, provided that the sentences so constructed have not been allowed to grow out of control.

Sentence length

A sentence, especially if it contains technical information, should not be so long that the reader is unable to assimilate the ideas. An average of 17–20 words is reasonable, with a maximum of about 40 words. Even if a sentence is correctly constructed, it will be difficult to untangle if it contains too many ideas (the 'Sellotape effect'), as we can see from the following example, taken from an internal document of a large production company:

Further to our recent meeting regarding electricity supply and utilisation, I would like very much to arrange a further meeting with you to discuss the subject, coupled with a general discussion on electrical applications and equipment capable of providing possible reductions in unit production costs, such as electric/steam generators and convection/radiant ovens coupled to load control equipment.

This amazing sentence contains 59 words and several ideas. Underneath it all is one simple unit (the main clause, which is itself a complete sentence):

I should like to arrange a further meeting.

Two subordinate ideas are added to the beginning of this:

- 1 further to our recent meeting
- 2 regarding electricity supply and utilisation

and one subordinate idea is added to the end:

- 3 to discuss this subject

This is quite enough for one sentence. However, our engineer sweeps on to the next basic idea:

We could have a general discussion.

To this, yet another subordinate idea has been added:

- 1 about the same subject [presumably]
- 2 and about electrical applications and equipment

and, to make matters worse, further details follow:

- 3 capable of providing possible reductions in unit production costs

Refusing to give up, the writer moves into examples:

- 4 such as electric/steam generators and convection/radiant ovens coupled to load control equipment.

The sentence is now a long way from the meeting which was to be arranged, and the reader is thoroughly confused. There are three main ideas in this monstrous sentence:

- 1 I should like to arrange a further meeting about this subject.
- 2 At the same time, we could discuss equipment.
- 3 I can give you examples of the kind of equipment I have in mind.

Subordinate ideas can now be grouped round each of these main ideas to form three sentences. In organising the information in this way, the writer might well decide that the second and third sentences belong in a new paragraph (see p. 104), and leave out redundant material such as 'to discuss the subject'; the pompous word 'utilisation' may be replaced by the simpler 'use'. The details could then be reorganised to produce a more logical and readable version:

I should like to arrange a further meeting with you to continue our discussions of [date] on electricity supply and use.

We could also have a general look at electrical applications and equipment [which are] capable of providing reductions in unit production costs. I have in mind electric/steam generators and convection/radiant ovens coupled to load control equipment.

Sometimes, as we have seen, a sentence contains only one basic idea; other sentences contain more than one basic idea, but the guidelines for sentence length always apply.

Sentences contain one idea, or two or three closely related ideas which must be correctly joined together.

In passing, it is worth noting that 'however' is not a conjunction, and cannot join sentences, although it is often wrongly used in this way. It either comments on the information:

The initial cost of the machine is high. Maintenance, however, is relatively inexpensive.

or it is the equivalent of 'in whatever way':

However we look at the problem, there is no easy solution.

We read these two sentences in different ways because of the punctuation (the two commas) in the former, and the absence of punctuation in the latter (see also p. 97).

Good style includes variety of sentence length. A few short sentences are direct and sometimes dramatic in their impact, as, for instance, the seven-word sentence which begins this paragraph. Too many short sentences, however, give a rather childish effect, as if the writer thinks that the reader will have difficulty with more complex sentences. It is better to look for logical connections between some of the sentences and join them in an appropriate way.

Perhaps the most important rule for good technical writing is to avoid overlong and overcomplicated sentences. Many other problems, especially those connected with punctuation and grammar, will disappear if sentence length is controlled. A sentence of more than about 40 words causes two areas of difficulty:

- for the writer, who finds it hard to organise the construction of the sentence if there are too many ideas to communicate at once;
- for the reader, who finds it hard to assimilate the information in a long sentence, however well it is written.

The following sentence is not easy to read; it makes no concession to the reader:

Due to the large inefficiency of resistor ballast drives, chopper drives have to be used for higher power applications in spite of the problems of being more complex, generating audible noise at the chopping frequency and possible radio interference, also iron losses in the motor.

We can analyse the problems as follows:

- 1 The sentence is too long, and contains too much information. It must be divided up.
- 2 The beginning 'due to' is poor style: it is ugly in itself and suggests that the information has been badly structured.
- 3 Then, 'large inefficiency' is a strange expression, 'large' being generally associated with physical size rather than the scale of an abstract idea.
- 4 The most important information, 'chopper drives have to be used for higher power applications', receives little emphasis, especially as it follows a long and cumbersome introductory expression.
- 5 To write 'in spite of the problems of being' is both wordy and unnecessary, as what follows clearly are problems.
- 6 The four problems given are in two categories, inevitable and possible.
- 7 'Complexity' and 'noise' appear to be inevitable, while 'interference' is given as possible. There is then the apparent afterthought, 'iron losses in the motor', tacked on to the rest by a comma and 'also' – a clumsy and ungrammatical extension to the sentence. As this follows the 'possible' interference, the reader can assume that the iron losses are also possible rather than inevitable, although this is not made clear.

The passage can now be rewritten in a more acceptable form:

For higher power applications, chopper drives must be used because resistor ballast drives are highly inefficient. Chopper drives, however, are complex, generate audible noise at the chopping frequency, and possibly cause iron losses in the motor and radio interference.

The need for chopper drives is now stated clearly in the first sentence. In the second, the problems of their use are signalled by the link word 'however' and then given in the two categories, inevitable and possible, with no ambiguity.

Variety of sentence length within the document can be used by the writer to control the reader's approach. Straightforward facts can be written in comparatively short sentences, perhaps up to 20 words, which can be read quickly. Passages which require more consideration, such as the conclusions of a

report, often call for longer sentences, perhaps up to 35 or even 40 words, to slow the reader down and command concentration. Readers are unlikely to notice such manipulation, but they will be aware of the text being comfortable to read and assimilate.

Activity 5.1 Overlong sentence

Divide the very long sentence below into shorter, better-constructed sentences without changing the meaning.

Engineers who work very long hours may suffer long-term effects on their health especially if their work is very intensive and involves responsibility for other people, perhaps younger staff who are less experienced and who need a great deal of supervision and the senior engineers may also be using delicate machinery which requires intense concentration and this state of affairs is also unwise from an employer's point of view because of the risk of accidents.

Sentences must not be too long: 40 words is a sensible maximum.
Variety in sentence length helps the reader.

Sentence construction

We have already looked at two kinds of sentences: those which express one basic idea (simple sentences) and those which express two or more closely related ideas (compound sentences). Some compound sentences can be made up of equal basic units (main clauses) joined by 'and' or 'but' (*never* by a comma alone), while others consist of a main unit and further units which are of lesser importance (subordinate clauses or phrases).

Knowing the various possible ways of constructing a sentence allows the writer to make decisions. What aspect of the information is to form the main clause of the sentence? The emphasis of the message will depend on the writer's choice. Generally speaking, the first few words of a sentence carry more weight than what follows. In the sentence:

The machine was overhauled, after which it worked at full capacity.

the main clause is clearly 'The machine was overhauled' and this will be recognised as the most important aspect of the information, especially as it starts the sentence. If the information is changed round, so that we read:

The machine worked at full capacity after it was overhauled.

the emphasis is now firmly on the fact that the machine worked at full capacity, since this is the main clause and starts the sentence.

This ability to move the emphasis within the sentence is a useful one. We can see the difference between the 'neutral' sentence:

The machine was badly damaged but it could be repaired.

and two versions which carry different weight:

The machine could be repaired, although it was badly damaged.

in which the stress is on the repair, and

The machine was badly damaged, although it could be repaired.

in which the stress is on the damage.

The main clause does not always come at the beginning of the sentence; sometimes we need to emphasise subordinate information, as in:

Although the repair took six weeks, it was successful.

The stress is on the length of time taken for the repair, as this comes first.

Readers must always be able to identify the main unit of the sentence and recognise where the emphasis has been placed. It is possible for a writer to be so involved with subordinate units that the main unit of the sentence is accidentally left out, as in the following:

In order to prevent damage to integrated circuits as a result of static discharge which may be caused by a variety of factors such as incorrect handling procedures, poorly grounded instruments or even on occasion by electrostatic buildup on clothes, shoes or floor coverings.

If we try to pick out the main unit of this sentence, we shall soon find that it hasn't got one. 'In order to prevent damage ...' what must be done? We are not told. Again, we have a sentence more than 40 words long, which is completely out of control. As soon as we identify the main idea in the information and give it a separate sentence:

Damage to integrated circuits may be the result of static discharge.

the rest falls into place:

This may result from incorrect handling procedures, poorly grounded instruments or electrostatic buildup on clothes, shoes or floor coverings.

Now that the two sentences have been planned, the redundant details are recognised as such, and removed. 'A variety of factors such as' and 'even on occasion by' add nothing to the meaning; when they have been taken out, we are left with two grammatically correct sentences of 11 and 19 words, an acceptable length.

The main unit (clause) of a sentence conveys the main idea, and must be readily identified by the reader.

When the main unit is identified and the subordinate units are planned, there are still two possible ways in which the sentence as a whole can be organised.

The subordinate ideas can be put first, so that they lead up to the main idea. This is a useful technique in writing thrillers, as the tension mounts until the climax is reached:

As night fell, and with it the hard, driving rain, his determination increased and, breathless, exhausted, running onwards although he no longer knew in what direction, stumbling and nearly falling so that he grazed his hands and twisted his ankle, he now knew more certainly than ever that he would, if need be, die rather than surrender.

Everything in the sentence leads up to that final, dramatic statement that 'he would die rather than surrender', and the impact is made stronger by the buildup of detail: the night, the rain, his exhaustion, loss of sense of direction, pain – *despite all this*, the writer is saying, death was preferable to surrender.

Such is the art of the novelist; the engineer writing technical information must approach the material very differently. The reader must know *at once* what the writer is talking about, so that all the subsidiary ideas can be weighed and considered. Tension is irrelevant. A back-to-front sentence, with the main point at the end, is merely irritating, as in the following two real-life examples:

Upon removing the packaging materials damage in the form of scratches and abrasions was noted.

The damage is presumably what matters in this sentence, but it need not be spelt out – scratches and abrasions *are* damage, and the reader doesn't need to be told:

Scratches and abrasions were noted when the packaging was removed.

Fifteen words are reduced to ten and the main point is immediately obvious.

To present detailed waste water proposals in the absence of community structure plans is not possible.

Only at the end of the sentence does the reader get the message: it is not possible. If the sentence is turned round, the main point becomes clear at once:

It is impossible to present detailed waste water proposals in the absence of community structure plans.

There is an additional advantage in this ordering of the sentence. 'Present' can in writing, although not in speech, be either a verb ('to present') or an adjective ('présent'), and we do not know how to interpret it until we understand the context. In the original form of the sentence, we cannot be sure that 'présent' is intended until at least halfway through; in the inverted form of the sentence, we know almost at once.

There is another reason for organising sentences the 'right way round'. The writer wants to attract the reader's attention, and it is unhelpful to leave the most appealing information until the end:

Further to our discussions and my brief survey, I have pleasure in giving details below of my findings together with approximate indications of the likely savings that might accrue by raising hot water directly in each office at approximately 100% efficiency and saving distribution costs.

The engineer who wrote this real-life sentence had an important message: 'I can increase efficiency and save money.' Who could resist the appeal of such a sentence? This exciting offer is totally hidden in words, buried at the end of a long sentence of 45 words instead of being highlighted:

In the light of our discussions and my brief survey, I have pleasure in giving my findings. Savings can be made and efficiency increased by raising hot water directly in each office. Details are as follows:

Three ideas are presented: the findings result from discussions and a survey; savings can be made; detailed information follows. The interesting word 'savings' now appears at the start of a sentence, where it is likely to catch the reader's attention.

Start the sentence with the most important idea.

Activity 5.2 Organising a sentence

This first sentence has the ugly start 'due to', which suggests that it is not well organised, and the reader has to read more than half of it in order to know what it is about. Rewrite it in two ways, giving emphasis first to the weight of the rigs and then to the need for a tow truck.

Due to their weight, it is necessary to use a tow truck to move the rigs.

In the second example, decide what part of the Building Regulations is most important to the writer/reader and rewrite the sentence to give the appropriate emphasis.

Building Regulations remind us that a boundary wall may be affected by a number of factors such as an increase in wind load or driving rain if a nearby wall is taken down, or, as in our case, if part of the wall is removed for a new gateway and we will need to take this factor into account in our planning application.

Of course, starting with the main idea is just a guideline rather than an absolute rule. Occasionally, for the 'political' reasons which may at times affect an engineer's writing, it might be better to write a back-to-front sentence:

Your proposal is interesting ... in many ways attractive ... and if the economic climate were different ... but we must regretfully decline ...

The approach is gentle to make the refusal more palatable!

Different types of verb

So far, we have looked at sentences which have a main clause or main clauses and subsidiary units, either phrases which have no verbs, or subordinate clauses introduced by words like 'when', 'although' or 'because'. It has been assumed that the verb can be easily identified, and that it consists of a single word. This is not always so. Verbs can be made up of more than one word:

Today I am working on site, where they were working yesterday.

Both words, 'am working' or 'were working', are needed if the main clause of the sentence is to make sense. Both are therefore parts of the main verb.

The verb 'am working' is made up of two parts, an auxiliary verb (am) and a participle (working). The auxiliary verb does the work of letting us know the person and the tense of the verb, for example whether I 'am' or they 'are', and whether I 'was' or they 'have been'. The participle, which often ends in 'ing', tells us what action is being taken ('working' rather than 'sitting' or 'writing'). As soon as one part of the verb is missing, the sense is lost. So, for example, we cannot give a message that 'I working on the night shift' (Am I? Was I?) any more than we can convey the meaning by saying 'I am on the night shift' (the reader doesn't know what I'm doing; I could be sleeping!). If the verb consists of more than one word, every word has its part to play in giving the message.

However, if a sentence already contains a complete main verb, in practice we often use just a participle, understanding the missing auxiliary verb. For example, 'working with the lathe' is clearly neither a main clause nor a full sentence, as it does not make sense. We could make it complete by adding to it: 'I was working with the lathe.' But the main point of the message might be different: 'I produced a smooth finish.' This is also a main clause/complete sentence. We now have two good sentences which have the same subject, I, and for this reason we might choose to bring the two ideas together by omitting 'I was' from the first sentence. Thus, 'I was working with the lathe and I produced a smooth finish' becomes:

Working with the lathe, I produced a smooth finish.

This is a correct sentence, with the main unit 'I produced a smooth finish', and a subordinate unit, 'working with the lathe', which does not by itself make sense. We can understand it because the word 'I' is the subject of both the participle and the main verb: *I am working* and *I produced a smooth finish*.

Sentences that go wrong, 1: Unrelated participles

However, if the subjects of the participle and of the main verb are different, the result is nonsense:

Working with the lathe, the table had a smooth finish.

The table may have had a smooth finish, but it was not, presumably, working with the lathe! This phenomenon, known as the **unrelated participle**, can produce not only nonsense but also ambiguous humour:

Rusting badly though it was, Zak's brain told him that he would buy the car.

Grammatically, we must assume that Zak's brain, the subject of the main clause, was rusting badly, but nevertheless told him ... We might guess that it was the car which was rusting (but who can be sure?). It is all too easy to produce such sentences:

Used for long periods without ventilation, overheating can cause damage to the instrument.

Is overheating used for long periods, as the sentence says? The intended meaning was probably:

Overheating can cause damage to an instrument which is used for long periods without adequate ventilation.

The auxiliary verb 'is' has now joined its participle 'used', and the sentence makes sense.

Every sentence must have a complete main verb.

Sentences that go wrong, 2: Split infinitives

A similar problem can arise with the infinitive of the verb (the 'name' of the verb, such as 'to be', 'to work', 'to eat'). The sentence:

To drive well, your eyesight must be good.

suggests that your eyesight can drive, well or otherwise. This is clearly nonsense, and so the sentence must be changed:

Your eyesight must be good if you are to drive well.

The verb 'are to drive', a compound verb, is three words long, but all are needed if the sentence is to make sense.

Infinitives are best known for being split. Good style frowns at a word straying between 'to' and the verb: 'to effectively control' is bad, while 'to control effectively' is good. Generally this is true, although, as with many English rules, this one can be broken *if the writer knows why it is being broken*. Emphasis can be thrown on an apparently misplaced word, and such stress may be justified:

To safely remove the radioactive material, it was necessary to call in an expert.

This **split infinitive** stresses the important word 'safely', and so may be acceptable. Such a device will lose its effectiveness if it is used too often; occasionally and for a clear purpose, it makes its point.

Sentences that go wrong, 3: Confused constructions

Some of the problems we have been looking at result from the writer's unwillingness to look at a sentence as a whole, so that a **confused construction** follows:

The run time checks indicate at what point of the process the computer is currently at.

This writer has changed constructions in the middle of the sentence, so that it falls apart. It could be written either as:

The run time checks indicate at what point of the process the computer currently is.

which is awkward, or as:

The run time checks indicate what point of the process the computer is currently at.

This is acceptable, although purists might quibble because the sentence ends with 'at', which sounds clumsy. The difficult word is perhaps 'is', which conveys very little in this sentence. If the writer thinks about the intended message, it could simply be:

The run time checks indicate what point of the process the computer has reached.

which is easier to read and removes the need for 'currently'.

It is always useful for the writer to think of the message in terms of what can sensibly be said, that is, if I had the reader in front of me now, what would I say? Written language is more formal than spoken language (see Chapter 3 on good

style), but once the message has been identified, it can be 'tidied up' for the written form:

I hope to be able to confirm the appointment of Hannah Jones within the next few days and can assure you that subject to your response to my questions being positive, immediate liaison will be set up between you so that she may be instrumental in arriving at the appropriate conclusions which will benefit us both.

What was the author of this amazing (but real-life) sentence trying to say?

As soon as we've confirmed Hannah Jones's appointment, which shouldn't take more than a few days, and as long as you're happy with our suggestions, we'll put you in touch with each other. With luck, you'll get on and we'll all do well out of it.

That is too chatty for a written message, but it can be made a little more formal without becoming pompous:

We hope to confirm Hannah Jones's appointment within a few days. As soon as you have agreed to our suggestions, she will contact you to establish a good working relationship.

The two essential units of information are HJ's appointment and HJ's making contact. It is obvious that a good working relationship is of benefit to both parties, and there is no point in saying so. A 56-word sentence is replaced by one sentence of 11 words and another of 19 words – only 30 words in all.

Sentences that go wrong, 4: Misleading sentences

Sentences which ramble, like the one above, can accidentally give misleading information. Again, the essential message must be identified and made clear to the reader:

The lower temperature of 30 degrees Celsius is taken to be the typical external ambient temperature for the equipment in normal use whilst the upper one, 80 degrees Celsius, represents the maximum operational external ambient temperature.

The catch in this sentence is that it mentions lower and upper temperatures, and 'upper' is followed by the word 'maximum'. A careless reader might easily assume that 30 degrees is therefore the minimum, rather than the typical, temperature. The message has to be re-formed without ambiguity (and with 'represents' replaced by 'is'):

Typically, the equipment will be used at an ambient 30°C. The maximum operational ambient temperature is 80°C.

The key words which are contrasted, 'typically' and 'maximum', are now highlighted at the beginning of the sentences so that no confusion is likely. Each temperature appears at the end of its sentence, so that again the contrast is clear. The unnecessary information 'lower' and 'upper' has been removed, as has the word 'temperature' in the first sentence (what else would 30°C be?). In the second sentence it is retained for ease of reading.

Activity 5.3 Redundant words

The following information includes words and phrases that add nothing to the meaning. Rewrite it as briefly and clearly as possible.

The road was originally designed with the needs of residential users predominantly in mind, although over a number of years an element of commercial use, much of which consists of retail properties, has come into existence. If an additional amount of traffic is generated, as it might well be if the current proposal is implemented, problems of increased congestion and even more pollution would inevitably result, to the detriment of residents.

Redundant words and phrases

These are common in technical writing. Expressions such as 'Initially, we began by ...', 'a new innovation', 'future consequences' (or, more subtly, 'the consequences which lie ahead ...'), 'clearly obvious' or 'both the two rivets' all contain unnecessary words. Perhaps the writer is lacking in confidence and feels the need to say the same thing twice. If so, such a message should not be conveyed to the reader. Not only does it suggest hesitation, but it also makes the document longer than it need be, which is a waste of time and money.

Write as concisely as possible; omit unnecessary words.

Sentences that go wrong, 5: Singular/plural confusion

There are other difficulties with sentence structure which also arise from a lack of planning, and **confusion of singular and plural** is among the most commonly found. A sentence may move from the singular to the plural or vice versa because the subject is not clearly identified:

The failure of the systems that we have installed recently have led to the current financial crisis.

The main point of this sentence is that failure is connected to financial crisis. The subject is the singular word 'failure' and so the form of the verb should also

be singular, 'has led'. In the first sentence in this paragraph, the mistake was automatically corrected ('is connected'). We can see how the mistake arose. Between the singular word 'failure' and the plural verb 'have led', there is the plural word 'systems' followed correctly by the plural 'we have installed'. Two instances of the plural have led the writer to assume that the verb needed must also be plural, forgetting that the original subject word 'failure' was in fact singular. As a check, the writer should ask, 'what led to the current financial crisis?' to which the answer is 'the failure'. The sentence should read:

The failure of the systems that we have installed recently has led to the current financial crisis.

The word 'each', which is singular, can produce similar difficulties:

Each of the systems which we have installed recently have given us initial problems.

The subject of 'have given' is 'each', meaning 'each one', and the sentence should thus read:

Each of the systems which we have installed recently has given us initial problems.

The subject and the verb must agree, both singular or both plural.

Expressions to use with care

It, which, which/that, such that/so that, may/might.

Two dangerous subject words are 'it' and 'which'. Both are easily attached to the wrong word or phrase. Sometimes the reader finds great difficulty in relating them to anything:

The question of how this work should be carried out is one which it is difficult to answer. During our discussions, I said it might be possible to work from a cradle but due to the instability of this type of apparatus, it could prove extremely difficult. Also, due to the large scale of work involved, it would increase the length of the contract.

There are four uses of 'it' in this passage, and none is easily linked to a meaning. Much of the first sentence is redundant in any case; it means no more than 'we are not sure'. In the next sentence, the second 'it' means little more than 'this', and the sentence could be reorganised into a more concise form. The third

sentence suffers from the same problem as the second. The passage could be rewritten as:

We are not yet sure how to carry out this work. Using a cradle, as I suggested previously, would be difficult because of its instability. Given the scale of the work, this method would also be time-consuming.

'Which' is similarly tricky:

Manuals are mainly held in the print room, but some by individuals which are often unique.

Grammatically, 'which' refers to 'individuals', but there are two problems here:

- Individuals are *always* unique.
- Individuals are people, and therefore referred to as 'who' rather than 'which'.

Common sense, but not grammar, tells us that 'which' refers to 'manuals', and that the sentence should be rearranged to read:

While most manuals are held in the print room, some which are unique [presumably, 'of which there are no copies'] are held by individuals.

Many writers hover between '**which**' and '**that**', unsure which to use in a particular context. The answer depends on the type of clause in which one of these words is needed: restrictive or non-restrictive.

A restrictive clause gives essential information about the noun that comes before it, as in:

This was the lorry that caused the accident.

A good way to identify a restrictive clause is to take away the clause and see if what is left makes good sense. 'This was the lorry' is incomplete – what do we need to know about the lorry? Generally in British English (American English is slightly different) a restrictive clause is introduced by 'that', although nowadays it is fair to say that:

This was the lorry which caused the accident.

is widely accepted.

A non-restrictive clause contains extra information that could be left out of the sentence without affecting its meaning, as in:

This was the lorry that caused the accident, which was not the first at that road junction.

If this sentence had finished with the word 'accident', it would still have made sense, but the writer has now added an extra piece of information about the junction at which the accident happened. This additional non-restrictive clause is

preceded by a comma and introduced by 'which' rather than 'that'. Incidentally, 'that' is now frequently left out of sentences, as in:

The manual [that] we were using is still in the workshop.

Generally, this is acceptable, unless it makes the meaning less clear, as in:

The manual you mentioned was out of date.

Does this mean 'the manual that you mentioned', so identifying the manual, or 'you mentioned that the manual was out of date'? If there is any chance of the reader being unsure of the meaning, use 'that' accurately.

A similar pair of words that causes hesitation is '**may**' and '**might**', although the distinction is much less widely observed today than in the past. 'May' is used for a current situation, as in:

I may finish this particular job before I go home.

'Might', on the other hand, refers to the past, as in:

I might have spent too long on the previous work before starting this.

However, there is a particular use of 'might have' which gives its own message. It can show that an event was possible at one time but is no longer, as in:

I might have gone home early, but instead stayed at work until nearly midnight.

Here, the possibility of going home early was available earlier, but now it isn't – it didn't happen. In such a case, use 'might have' to make the situation clear to the reader.

However, there are occasions when the writer has no idea whether the situation is possible or not, and, in these cases, 'may have' is appropriate:

I may have underestimated the time needed for this job, but I shan't know for a couple of days or so.

An expression much favoured by engineers is '**such that**':

Data have been collected from field surveys such that future projects can be planned.

(For a discussion of the word 'data', see p. 66.) In this sentence, 'such' is ambiguous. It may mean 'in such a way that':

Data have been collected from field surveys in such a way that future projects can be planned.

In this case, it is the *method* of collection which has enabled the planning of future projects. However, 'such' may mean 'so that':

Data have been collected from field surveys so that [= in order that] future projects can be planned.

Here, data were collected and *as a result* it is possible to plan future projects. 'Such that' can, of course, be used correctly:

The method of collection was such that it enabled future projects to be planned.

In this case, 'such that' means 'of such a type' or 'of such a quality'. This use is comparatively rare, and it is worth checking that 'such that' has not been used when a different meaning was intended.

Negative writing

Perhaps it is a natural diffidence among engineers which encourages them to write in a negative way. Expressions such as 'it is difficult to deny', 'it is not unlikely that' and 'it is not possible to disprove that' suggest that the writer is hesitant (or diffident). Carried to excess, such writing ends up by undermining the reader's confidence:

If the trend shown continues, then there should be no reason why an improvement in productivity of approaching 40% is not achievable.

This is good news, but the reader might be forgiven for feeling that the outlook is gloomy. 'No reason' followed by 'not achievable' leaves a confused impression. The writer was trying to say:

If we keep up the good work, we'll just about make a 40% rise in production.

or, more formally:

If the present trend continues, we should approach a 40% rise in production.

or, to give emphasis to the good news:

A 40% rise in production is forecast if the present trend continues.

which sounds much more cheerful than the original sentence! Perhaps negatives are most frequent when the news is bad:

It is impossible to deny that if the present trend is not reversed, production figures will fail to show the expected rise of 40%.

The writer crowds negatives together ('impossible', 'deny', 'not reversed', 'fail to show') presumably so that the reader is led gently to the dismal tidings. Such writing can produce difficult statements:

It is impossible to deny that production figures have not risen.

Presumably this means that we have to admit the truth, but we would much rather not do so.

Activity 5.4 Overcomplicated writing

Rewrite the following real-life passages, clarifying the meaning and improving the grammar and punctuation.

1. Particular care should be taken to ensure that where an activity has overrun, then that resource requirement for the remainder of that activity is reflected in the current report in addition to the resource needed to maintain the programme during the reporting period.
2. It should be noted that the project group's decision to resume work on the existing prototype in no way indicates any belief in non-feasibility of the other possible methods. The reason for carrying on with the original design being mainly a practical one in that it would seem to be more worthwhile attempting to successfully terminate one approach to the topic rather than start again from scratch using another method and possibly only, with luck, reaching prototype stage.

Plan the sentence so that it says what it means in a positive way.

Punctuation

This chapter has considered sentence structure and some of the problems that can arise if the writer is not in full control. Inevitably, we have from time to time referred to punctuation, as in the comma before a non-restrictive clause (see p. 91). Now the most important types of punctuation are listed, with brief examples of their use and short activities, which allow you to practise punctuating accurately. It is probably realistic to say that the most common problems of poor technical writing are caused by inadequate or inaccurate punctuation, so this is really important!

Full stops, exclamation marks, question marks

Full stops are found at the ends of sentences and, although less frequently nowadays, in abbreviations. The sentence you have just read shows the

conventions: a capital letter at the start and a full stop at the end. Engineering writers tend to overlook full stops and use commas instead. This is always wrong, as the following example shows:

Sentences cannot simply be put together, they need a word or phrase that joins them, they should otherwise be separate, the commas should be changed to full stops.

This is a simple example of a common problem. The writer is saying:

Sentences cannot simply be put together.
They need a word or phrase which joins them.
They should otherwise be separate.
Such commas should be changed to full stops.

The four sentences above are correct, but dull. Bearing in mind what was said earlier about variety of sentence length (see p. 78), it seems appropriate to use a joining word (conjunction) in one case:

Sentences cannot simply be put together. Either they need a word or phrase which joins them or they should be kept separate. Such commas should be changed to full stops.

The first sentence and the third sentence make important points, and have been kept separate to give them emphasis. 'Either ... or' is a good way of joining the two sentences which obviously show alternative ways of tackling the sentence problem.

The alternatives to full stops are exclamation marks, question marks and semicolons (which are dealt with on p. 95). Exclamation marks, as their name suggests, show sudden reactions: 'Stop!' 'Look out!' 'That's amazing!' Their use in engineering writing is, to put it mildly, rare.

Question marks, again as one would expect, show the exact words spoken in a question:

How should we tackle this problem?
What results might we expect?

Such questions are usually unhelpful in writing (although often useful in speech) as the writer is about to give the answer. Writers are sometimes tempted to use questions as headings:

What conclusions can be drawn from this evidence?

Again, this is not helpful to the reader, and is usually considered to be poor style (in any case, the one heading 'Conclusions' is generally sufficient – see p. 18). The only person who is going to answer the question is the writer who asked it, and so why

bother? Occasionally, a series of questions can be used to draw attention to what the reader would want to ask, each question being followed by an appropriate answer:

How does the machine work?
It works by ...
How much does it cost?
The basic cost is ...
What about maintenance?
A thorough overhaul has to be carried out ...

As the above example suggests, this technique is usually applied in sales literature, or, sometimes effectively, in basic instruction manuals; it is rarely appropriate in, for example, a technical report.

Full stops used to appear in abbreviations, of either the 'name' variety (such as U.N.O.) or the Latin original variety (such as e.g. or i.e.). This is now rare, the modern convention allowing the initials to run together (UNO, eg, ie). If there is any chance of misunderstanding, it is better to write the term in full (as in the case of litres, when an abbreviation to the single 'l' can be misread). If a company or organisation maintains full stops in its title, then of course they should be used. It is worth adding that the use of Latin-based expressions such as eg or ie is not encouraged nowadays, and it is considered better style to write 'for example' or 'that is' in full.

One further warning is necessary here. Texting reduces much punctuation, and indeed style, to a minimum, and final full stops at the end of sentences are generally omitted. If this becomes a habit, full stops can disappear also at the end of sentences in formally written technical documents. Alas.

Semicolons

Semicolons may take the place of full stops. If two sentences are closely related in subject matter, perhaps by contrast or a common factor, the relationship can be stressed by joining the sentences with a semicolon:

The design of the bridge was superb at the time; today it has to carry too much heavy traffic.

Activity 5.5 Full stops and question marks

Add the correct punctuation to this passage.

Listening is a difficult task speakers must keep this in mind and decide exactly how much information to give their audience how can the details of, for example, a report be given in a presentation generally it is better to speak about the overall message and give the audience essential details in writing, perhaps in a handout a document can have figures accurate to several decimal places if necessary but it is not sensible to give that in speech.

Each 'sentence' remains an accurate, grammatical whole, making sense by itself. However, the link of information (then ... now) is strong, and is emphasised by the use of a semicolon instead of a full stop at the end of the first sentence (followed by a small, not a capital, letter). This use of the semicolon can produce an elegant style; if it is not overused, it can be most effective.

Semicolons can also be used to separate sections of information in a list:

The following hazards must be considered:

- 1 insulation and protection from electric shock;
- 2 possible fire risks and the location of fire extinguishers;
- 3 testing of pressurised or other highly stressed components.

Nowadays, these semicolons are often omitted, which is acceptable as long as the individual items in the list are short; if they are more than a line in length, then for clarity the punctuation should be retained.

Colons

Colons are not interchangeable with semicolons. The most common use of a colon is to introduce an example, as in the introduction to the list below, or to introduce a quotation from a published source.

A colon may also introduce a list, as in the following example:

The equipment needed for this test is as follows:

- oscilloscope
- digital voltmeter
- signal generator
- logic analyser
- power supplies
- soldering iron.

Note that as the items in this list are all very short, they are not followed by punctuation apart from the final full stop.

Activity 5.6 Semicolons and colons

Use the correct forms in this passage.

There are two forms of the English language written and spoken. Writing has three main features its readers may be assumed but cannot be known with certainty it tends to be more formal than speech it is a lasting form of communication and it may be used in a way that the writer did not intend.

Spoken language tends to use more words they will usually be less formal and may be abbreviations such as 'hasn't'. Unless it is recorded, a speech belongs only to its immediate occasion and purpose, which may be beneficial to the audience or not. As the philosopher Voltaire said 'Men use speech only to conceal their thoughts.'

A list may sometimes simply be an amplification of the preceding information, and written as a continuous sentence:

There are three levels of checking in place for company documentation: highly complex for safety manuals, comprehensive for material going out to clients, and a simpler, but still rigorous, system for internal documents.

Commas

In some ways, commas are a difficult form of punctuation, because, while they often follow rules, to a certain extent they are also the result of individual choice, of a feeling for the language.

The most common use of a comma is to separate the main part of a sentence from a subordinate part (see p. 78), either to make the meaning clear or to allow the reader to 'take breath' naturally. This is an important aspect of the use of commas, as the 'natural pause' in a long sentence helps the reader to assimilate the information given so far and prepare for what is to come. The division within a sentence can be clearly seen in the following:

When the bridge was first built, it was adequate for traffic requirements.

If we read this sentence aloud, we shall pause naturally at the end of the subordinate unit (after the word 'built') before moving on to the main part of the sentence. The sequence can, of course, be reversed:

The bridge was adequate for traffic requirements, when it was first built.

We may not feel the need for a comma after 'requirements' (the 'feeling' for language), but as soon as the subordinate unit becomes longer, we need the comma to allow us a brief pause:

The bridge was originally adequate for traffic requirements, but today there are frequent holdups and sometimes long queues stretching back towards the motorway.

The subordinate unit, as we have seen, may appear neither at the beginning nor at the end of the sentence, but in the middle:

The bridge, originally adequate for traffic requirements, is today the scene of frequent holdups and the cause of long queues.

The phrase 'originally adequate for traffic requirements' is now enclosed by two commas, so that it is separated from the main sentence, which would, indeed, make sense without it. Both commas are necessary; if one is left out, the sentence will not read correctly.

We have just seen a different but related use of the comma:

The main sentence would, indeed, make sense without it.

In this case, one word, 'indeed', is between commas. It is a comment on the rest of the sentence and could be left out without a change of meaning. Many expressions such as 'on the other hand', 'nevertheless', 'in spite of ...' can be used in this way:

There is, however, a plan to build a second bridge over the river. Nevertheless, for the time being the problem will remain.

It is possible to avoid the long queues, however.

The detour needed, it must be remembered, is lengthy.

From these examples, we can see that the 'comment' words and phrases are separated from the rest of the sentence by a comma or commas, depending on where the comment is placed in the sentence. There is a modern tendency to leave out one or both commas, with ambiguous results:

The bridges, which cross the river, are in urgent need of repair.

The bridges which cross the river are in urgent need of repair.

The first sentence means that *all* the bridges cross the river and are in need of repair, while the second sentence means that *only* the bridges which cross the river are in need of repair (those over the railway line are in good order). The test for the writer is to read the two sentences out loud, and the natural pauses of the speaking voice will make the difference of meaning clear. In writing, we have to depend on the presence or absence of the commas to show us which is meant.

One more case of 'comment' words or phrases is worth noting. Sometimes in introducing a person or a book, article and so on, we add an explanatory comment:

Emily Hudson, an engineer who works locally, came to the meeting.

Emily Hudson, chairperson of the local branch of the institution, came to the meeting.

Emily Hudson's book, which has been so well reviewed, will be on sale after the meeting.

Modern Bridge Design, by Emily Hudson, is on sale now.

The same rules apply as for the other comment words and phrases: a comma before and after separates the comment from the rest of the sentence.

Commas can also be used to separate short items in a list, when they are written within the text rather than listed down the page:

In digital electronic hardware testing, the engineer makes use of an oscilloscope, a dvm, a signal or pulse generator and a logic analyser.

There is not usually a comma before the 'and' at the end of the list, but this is not an absolute rule. Some commas are in place to help the reader, and these may include the commas before 'and' (usually forbidden in school!). If the sense is made clearer by the comma, then it should be used:

I crossed the bridge and the mountains lay all before me.

The reader might well understand, 'I crossed the bridge and the mountains', and then have to readjust the reading as it becomes clear that the sentence continues. A comma makes all plain:

I crossed the bridge, and the mountains lay all before me.

Sometimes, two or more uses of 'and' in a sentence have different values:

I crossed the flat marshland and then the bridge and at last the vast and beautiful mountains came into sight.

This sentence contains three versions of 'and'. The first and the third are comparatively unimportant, linking related ideas. Indeed, 'vast and beautiful' is almost to be understood as one expression. The voice's natural pause comes after 'bridge' and that is where the comma should be:

I crossed the flat marshland and then the bridge, and at last the vast and beautiful mountains came into sight.

The effect of leaving out such commas can be ambiguous:

I went to the meeting with Stefan and Sarah and Peter came later.

When this sentence is spoken, the natural inflection of the voice makes the meaning clear, but when we read it we have no idea whether I went with Stefan and Sarah (Peter was late) or whether I went with Stefan only (Sarah and Peter were both late). A comma reinforcing the important 'and' (that is, after either 'Stefan' or 'Sarah') makes the sentence unambiguous. It is in fact reflecting the pattern of the spoken sentence, which is often the job of a comma.

The voice has been used as a guide several times in this section, and it is a good one. If in doubt, read the passage aloud and notice where the voice pauses naturally. Mark the place with a comma.

Quotation marks

Quotation marks are used less than they used to be. For quotations which are longer than one line of text, convention indicates that the writer should start a new line, indenting the words quoted and going back to the left-hand margin at the end of the quotation. However, shorter quotations must still be acknowledged

Activity 5.7 Commas

Add appropriate commas to the following passage.

The need for punctuation to be well taught was never greater. The widespread use of social media at work at home in leisure activities has affected the way in which a younger generation writes. In the past schools emphasised the need to write and punctuate accurately and no doubt many still do but this is constantly undermined by media in which punctuation even full stops and initial capital letters is ignored. The implications for engineering writing with its emphasis on accuracy and logical presentation are profound. If for example a contract is written inaccurately the effects could be catastrophic; if to take an even more serious instance procedures which have complex health and safety implications are inaccurately presented lives might be put at risk.

as such, and for that purpose quotation marks are needed. The normal practice is to use the single form round the words quoted:

Earlier in this book, (p. 3), it was stated that, in writing, 'shock tactics apparently work, but are not recommended'. We want the reader to concentrate on the message rather than to be distracted by a gimmick of the writer.

All quotations must be acknowledged in the text (see p. 48).

In the past, quotation marks have been used to give emphasis to particular words and phrases. If the writing style of the passage is good, this is unnecessary and should be avoided.

Dashes and brackets

Asides, comments or examples may be placed between dashes – as in this sentence – as an alternative to commas. Dashes tend to be informal in style and should be avoided in technical writing, especially when there is mathematical information included. It is too easy for a dash to be read as a minus sign.

Brackets, on the other hand, are 'heavy' punctuation. They break up the flow of the reading, and should be used mainly when the information which they enclose is not an integral part of the sentence. Notes like (see Figure 6.1) perhaps show one of the two most common uses of brackets, the other being to enclose an abbreviation immediately after the first use of the full term (see pp. 43–4 for more information about abbreviations). However, irony or personal comment may be shown in this way, as in a previous sentence about commas:

There are also commas which are placed to help the reader, for instance the comma before 'and' (usually forbidden in school!).

Such a use is obviously rare in technical material. In any case, too many brackets on the page look unwieldy and dull.

Brackets used as part of an equation are, of course, a different issue (see p. 45).

Hyphens

Hyphens are sometimes confused with dashes, but they are shorter (- rather than –) and do not have a space before and after them. They may be used to bring together two words which gain a new meaning from being joined: 're-cover' is different from 'recover', 'cross-section' is different from 'cross section'. The hyphen may give emphasis to the idea of repetition ('make and re-make' stresses the 're' aspect), or, most importantly, it may be used to help the reader ('re-emerge' is easier to recognise than 'reemerge'). This last usage has a major impact on the flow of the writing; if the reader has to readjust to the reading on a regular basis, the action of reading is slowed down and made uncomfortable. The modern tendency is to omit hyphens wherever possible, and this is often carried too far. While the disappearance of the hyphen from a word like cooperate or subcontract is unlikely to cause problems, other words such as realife (real-life) simply look peculiar and are sometimes unrecognisable. Whenever the reader will read a word more readily because it has a hyphen, the careful writer will provide one.

Many new words start by including hyphens, and then by convention become one word, such as online, bandwidth and (oddly nowadays) email. Such words rarely cause a problem once their form has been established. Word-breaks (an example of a useful hyphen) occur when a word is divided between two lines of text, although this is of course rare unless the material is produced in narrow columns. However, if such a word-break does occur, a hyphen can be used to bring the join to the reader's attention, especially if the word which is divided can be read as two separate words ('rearrange' being seen as 'rear range', or 'legend', entertainingly, becoming 'leg end').

Scientific and technical terms often contain hyphens which reflect two aspects of the meaning. Such words include vacuum-sealed, three-dimensional and single-track. There are many others. The meaning depends on the hyphen, and it should never be omitted. The following sentence is not easy to read, largely because it is not immediately obvious which words belong together:

The insulation is made of glass reinforced foil faced mineral wool.

As soon as hyphens are added, the meaning is clearer:

The insulation is made of glass-reinforced foil-faced mineral wool.

Apostrophes

Apostrophes produce more headaches than any other form of punctuation. They are either overused, in words which happen to be plurals ending in 's', or

ignored altogether, even when this creates ambiguity. There are two uses of an apostrophe:

- to show where a letter or letters have been omitted;
- to show possession.

The former use is rare in technical writing, as it is informal in style. It might appear in a note to a colleague or an email message:

Please let Sanjeev know that I can't be at the meeting tomorrow. I've got to be on the plane for New York by lunchtime.

As a note for a colleague, this is acceptable, and the abbreviations 'can't' and 'I've' are appropriate. 'Can't' is a shortened form of 'cannot', and the apostrophe shows where 'no' is omitted. Similarly, 'ha' is omitted from 'I have', leaving 'I've'. This is spoken language and also informal written language. In most professional writing, such words must be spelt out in full: 'it is', not 'it's'. ('It's', the abbreviation for 'it is' or 'it has', takes the apostrophe because of the omitted letters.)

The second use of the apostrophe is more difficult. It identifies the owner of an object, as in 'the engineer's logbook'. It will also show if there is more than one owner, as in 'the engineers' logbook', which indicates that the logbook in question is shared by more than one engineer. Generally, in English, the apostrophe is before the 's' in the singular and after the 's' in the plural, as in these examples.

There are exceptions, however. Some words do not add 's' to make the plural but use what we might think of as a different form of the word, the most common group of such words being 'men, women, children, people'. These words are already plural, and so they have the apostrophe before the 's': 'men's overcoats', 'women's shoes', 'children's bicycles', 'people's opinions'. There are other eccentric forms of plural, such as changing 'y' into 'ies', as in 'secretary, secretaries'. It would be difficult to write 'secretaries's', and so the final 's' is dropped, as in 'secretaries' desks'.

There is one group of words which suggests possession but which *never* has an apostrophe. These words follow the pattern of a verb (I have, you have, and so on):

mine, thine, his, hers, its, ours, yours, theirs

'Its', meaning 'belonging to it', does *not* have an apostrophe. This is the word that causes most confusion, because of its two forms, as shown in the sentence:

It's my car that has its lights on.

The first 'it's' means 'it is' and so takes the apostrophe, while the second indicates possession ('the lights belonging to it') and so does not have an apostrophe.

The best way to remember this distinction is to ask: does 'it's' mean 'it has' or 'it is'? If the answer is no, there is no apostrophe. It's as simple as that!

Many writers are so uncomfortable with the apostrophe that they leave it out altogether. Usually this is not important, and it is perhaps better than having a sprinkling of unnecessary apostrophes on the page. However, occasionally the position of the apostrophe changes the meaning:

Our client's money has disappeared from the bank.

Our clients' money has disappeared from the bank.

In the first case, only one client is going to be angry; in the second, we are going to be faced with more than one client, perhaps hordes of angry clients. Only the position of the apostrophe will show which. Fortunately, there is a rule of thumb for deciding whether an apostrophe has been correctly placed. Write the word out, including the apostrophe. Then cover the apostrophe and everything that follows it. Ask two questions: is what is left a sensible English word, and is it what you intend to say? If the answer to both questions is yes, then the apostrophe is in the right place. For instance, if we want to write:

There is a problem with the secretary's computer.

and we apply the rule, we are left with the word 'secretary', a perfectly good singular word. If that is meant, the apostrophe is correct. If, however, the problem extended to the computers of several secretaries, we might be tempted to write 'secretarie's computers'. Applying the rule would produce the nonsense word 'secretarie', which is clearly wrong. The position of the apostrophe can then be corrected to:

There is a problem with the secretaries' computers.

For reasons of style, it is sometimes better to turn an expression round to avoid the apostrophe. 'The book's pages' is ugly, while 'the pages of the book' sounds more attractive. This inversion is often a useful device, although it is a good idea to say the expression aloud first and listen to how it sounds. Choose whichever form sounds more natural. It may be the 'of the' form, which has the added bonus of allowing the hesitant writer to dispense with the dreaded apostrophe.

In describing the main types of punctuation, we have given our readers a convenient checklist. Refer to it whenever you are unsure about how to punctuate technical (and non-technical) writing. A final activity sums up this section of the book.

Accurate punctuation is essential if the message is to be conveyed correctly and helpfully.

Activity 5.8 Apostrophes

Add correct apostrophes to this passage.

Keeping information up to date is a problem thats constantly in the mind of engineering writers. If youre giving a talk, you can check that what you say is accurate just a few minutes before you start, but when youre writing, especially for publication, you dont have that luxury. Youll have to make sure, of course, that its all accurate at the last possible moment but its not possible to change whats been published except by a new edition and its a long job to produce one. Information must be accurate: its value depends on that.

Activity 5.9 Punctuation

Add the correct punctuation to the following passage.

Businesspeople are more likely to take the train it seems if the total journey time is three hours or less however if its longer they will consider flying its a pity that train journeys are so often plagued by mobile phones an everpresent menace especially to those who would like a quiet journey on which to read their kindles use their laptops or in extreme cases go to sleep at least nowadays there is the occasional quiet coach where its possible to escape from the mobile and its noisy users

Paragraphs

As we have seen, sentences contain at least one major idea (main clause, which makes sense by itself), often with subordinate aspects (clauses or phrases) added to it (see p. 74). Paragraphs are developed from a collection of ideas, all of which are linked by a central theme.

Definition of a paragraph

A paragraph may be formed from a single extended idea or a series of ideas, united by theme and creating an organised and logical passage of text. This is obviously not as rigid a definition as that of a sentence earlier in the chapter: there are fewer rules about paragraph writing. Nevertheless, a text without paragraphs is difficult to read. Pages of closely printed information, with no breaks or spaces, are overwhelming, and the reader will find it almost impossible to follow a logical flow of ideas, even if it exists. The end of a paragraph allows a breathing space in which readers can make sure that a set of ideas has been understood and assimilated before they move on to the next theme. Paragraphs also serve to break up the page and so encourage readers to read on.

Paragraph length

Paragraphs are varied in length, according to the subject matter and the format chosen. Generally speaking, three or four paragraphs to a page looks satisfactory in terms of both assimilating a reasonable amount of information, and space. However, emails, letters and reports tend to have shorter paragraphs than articles or books: emails often consist of just one or two paragraphs, letters may have five or six to the page, and reports about the same, although the structure of a report (see p. 18) may dictate a different number.

There is an apparent conflict: paragraph length is dictated by both unity of theme and appearance on the page. In practice, this dual criterion is not a serious problem. Writers who are aware of the importance of presentation can usually plan a paragraph so that it achieves unity. The long paragraphs sometimes found in engineering reports can often be subdivided into two or three separate themes with a common thread running through them. Links between paragraphs will clarify the organisation for the reader, and are themselves a feature of good style (see p. 52).

The theme of a paragraph must be clear, and can often be expressed in a short sentence at the beginning, and perhaps also, in different words, as a summing up at the end. This theme is then developed, explained and clarified by means of technical details, examples or analogies, or even undermined by the ideas expressed in the other sentences. As the writer completes the examination of one theme and moves on to the next, a new paragraph marks the transition for the reader.

Numbering systems

In some writing, it is appropriate to number paragraphs. A technical note, for instance, may deal with several topics, each discussed in a paragraph. Numbering will make the material easier to use, as the engineer who is dealing with the information can not only tick each paragraph as it is dealt with, but can also use the same numbers in any correspondence arising from the note. Some reports have a system of paragraph numbering, but this is helpful mostly in short reports which are discussed at meetings or over the telephone. Some organisations demand a paragraph numbering system, in which case staff have no option but to comply. A more helpful system is suggested on p. 19.

Unity of theme

It is already clear that paragraphs have to be planned. If we take the preceding paragraph as an example, we can see that the short opening sentence contains the theme: paragraphs are sometimes numbered. The following sentence gives an example of a case in which numbering is appropriate, and the sentence after that

suggests two ways in which such numbering will help the engineer. Another instance of numbered paragraphs is then introduced, and the paragraph ends with a reservation about this particular use. A new theme, the planning of paragraphs, is then introduced in a new paragraph, with the linking statement that 'It is already clear ...'.

There are many different ways of organising information, but the basic guideline is: identify the theme and keep related information in the same paragraph, with the proviso that the length of that paragraph should not become unwieldy. Make the theme clear to the reader, preferably at the start, and show the transition to a new theme with a new paragraph.

Paragraphs have unity of theme.

Good paragraphing produces space on the page and encourages the reader.

Activity 5.10 Paragraphs

The following notes for an article about the Humber Bridge are simply listed in no particular order. Each represents more detailed information. Organise the notes into different themes, each of which could be written as a paragraph.

1. Work began on the Humber Bridge in 1973, and the Queen opened it on 17 July 1981.
2. The bridge joined two previously remote areas, improving the potential for commercial and industrial development.
3. It is a 2220 m single-span suspension bridge, the longest of its type in the world when opened, now the eighth longest.
4. The Humber Bridge half marathon is held each June in aid of charity. Runners have to cross the bridge twice.
5. The bridge has a dual carriageway road with lower foot and cycle paths. The speed limit is 50 mph. Drivers pay a toll to use the bridge.
6. A suspension bridge was chosen because the River Humber has a shifting bed and the navigable channel is constantly changing; the estuary was not to be obstructed.
7. In the past, East Yorkshire and North Lincolnshire were connected by a slow and rather cumbersome ferry, which mainly provided a pleasant family day out.
8. Each tower consists of a pair of hollow vertical concrete columns, 155.5 m high.
9. The bridge spans the River Humber, formed by the estuaries of the Rivers Trent and Ouse.
10. The bridge is designed to tolerate constant motion, and bends more than 3 m in 80 mph gales.
11. The travelling distance between Hull (Yorkshire) and Grimsby (Lincolnshire) is reduced by 80 km by using the bridge.
12. The towers of the bridge are both vertical, but they are 36 mm further apart at the top than the bottom owing to the curvature of the earth.

In passing, we should notice that some paragraphs contain only one sentence, which is all that can be said about the subject. Letters often conclude with sentence-paragraphs, such as 'I look forward to hearing from you.' There is no more to be said, and so these seven words form a complete, correct paragraph (see p. 12).

Lists

A list may break up a paragraph, giving more space on the page and helping the reader to assimilate the ideas one at a time. This device is particularly useful when information has to be remembered for future use (perhaps in an examination!). It would not be particularly easy to learn the following:

Preventive maintenance should be considered when the time interval between breakdowns of the equipment can be predicted reasonably accurately, or when it costs less than the cost of repair when both costs include that of any lost production. It may also be appropriate when the failure of equipment would disrupt subsequent production or cause customer dissatisfaction. Obviously, it should also be considered when injury could result from equipment breakdown.

This is clearly a case for a list:

Preventive maintenance should be considered when the following conditions apply:

- 1 The time interval between breakdowns of the equipment can be predicted with reasonable accuracy.
- 2 The cost of preventive maintenance is less than the repair cost when both include the cost of any lost production.
- 3 Equipment failure is likely to disrupt subsequent production.
- 4 Customer dissatisfaction would result from a break in production.
- 5 Injury could result from equipment breakdown.

The list is easier to read and remember than the same information written in a long paragraph.

Organisation and layout of lists

There are two basic forms of list:

- those in which individual items are simply 'bulleted' for identification;
- those which are either numbered or lettered.

On the whole, the former style is used when the order in which the points are read or dealt with is immaterial (a list of items of equipment might fall into this

category), while the latter emphasises the order in which the information is given (for instance, stages in a process, which should always be numbered). Lists are also numbered in order to allow cross-reference to specific items, or, as in the example above, to help the reader who needs to memorise the information. Numbered points in a list could, however, be in order of perceived importance, and if this is not required, there may be a case for using bullets instead of numbers.

List information whenever it is possible to do so.

Always number a list of actions, such as a procedure.

If a paragraph contains figures, measurements or dates, the planning stage includes checking exactly what information should be highlighted. Numbers might be better in tabulated form, or a comparison may be drawn by using 'parallel' sentences. In the following paragraph, there is an implicit comparison, but it is difficult to identify the details:

It is interesting to note that between January and March 2014, 1350 pcb were produced with nine operators, while between January and March 2015, seven operators produced 2869 pcb.

This can be rewritten more clearly as a mini-table:

January–March 2014:	9 operators produced 1350 pcb (150 per operator)
January–March 2015:	7 operators produced 2869 pcb (409.8 per operator)

The dates, numbers of operators and production figures are now easily identified and compared.

Set out numbers in a way which is easy to use.

Graphs, tables and so on are generally much more helpful than the figures written out in words. As with all aspects of technical writing, writers need to consider most of all the needs and the convenience of their readers.

Summary

- Sentences contain one idea, or two or three closely related ideas which must be correctly joined together.
- Sentences must not be too long: 40 words is a sensible maximum.
- Variety in sentence length helps the reader.
- The main unit (clause) of a sentence conveys the main idea, and must be readily identified by the reader.
- Start the sentence with the most important idea.
- Every sentence must have a complete main verb.
- Write as concisely as possible; omit unnecessary words.
- The subject and the verb must agree, both singular or both plural.
- Plan the sentence so that it says what it means in a positive way.
- Accurate punctuation is essential if the message is to be conveyed correctly and helpfully.
- Paragraphs have unity of theme.
- Good paragraphing produces space on the page and encourages readers.
- List information whenever it is possible to do so.
- Always number a list of actions, such as a procedure.
- Set out numbers in a way that is easy to use.