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Tutorial 1

Functions of language and functional styles: what do we use our language for?

Functions of language: what do we use language for?

- ✓ The communicative function (функция общения).
- ✓ The intellective function (функция сообщения).
- ✓ The function of impact (функция воздействия).

Functional styles

A ***functional style*** is a socially recognized subsystem of linguistic means (phonetic, lexical, morphologic, syntactic) within the system of a language that serve to describe a particular sphere of human life or activity and fulfill a certain communicative goal by realizing certain functions of language[1].

According to the outstanding Russian philologist V.V. Vinogradov, scholars differentiate between the following functional styles:

- ✓ The conversational style (разговорная речь).
- ✓ The scientific style (научный стиль).
- ✓ The official style (официально-деловой стиль).
- ✓ The journalistic style (публицистический стиль).
- ✓ Imaginative writing (язык художественной литературы).

Whether a text or a speech act belongs to a particular style depends on the functions language realizes in it. Thus, ***the conversational style*** is more often than not associated with the function of communication, as the main goal of any speech event in informal settings (be it in a café or on a bus) is to convey some information. For example,

Example 1.1

(On a bus)

- *Does this bus go to the station?*
- *No, you'll have to get off at the bank, and take a 192.*
- *Can you tell me where to get off?*
- *It's the next stop but one.*

(Asking the way)

- *Excuse me. Can you tell me where South Street is, please?*
- *Take the second on the left and then ask again.*
- *Is it far?*

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[1] «Стиль – это общественно осознанная и функционально обусловленная, внутренне объединенная совокупность приемов употребления, отбора и сочетания средств речевого общения в сфере того или иного общенародного, общенационального языка, соотносительная с другими такими же способами выражения, которые служат для иных целей, выполняют иные функции в речевой общественной практике данного народа». Виноградов В.В. Итоги обсуждения вопросов стилистики / Вопросы языкознания. – 1955. – № 1.

- *No, it's only about five minutes' walk.*
- *Many thanks.*
- *Not at all.*

(Taking a taxi)

- *Paddington, please. I want to catch the 11.15.*
- *We'll be all right if there are no hold-ups.*
- *This is it, sir. £6.50, please.*
- *Thank you. Here's the fare, and this is for you.*

(Situational Dialogues by Michael Ockenden, Longman, 2005)

As you might have noticed, the language used in all the above examples is fairly simple. The speakers use plain English (Anglo-Saxon vocabulary, one- or two-syllable words, sometimes informal, e.g. hold-ups) to ask for and give information. The sentence structure is simple, too. The only complex sentences are polite questions beginning with *Can you tell me where/ how…* and *We'll be all right if there are no hold-ups*. Another typical feature of the conversational style is omission of words like in *I want to catch the 11.15*, where *the 11.15* stands for the train that leaves at 11.15 according to the timetable, or *No, you'll have to get off at the bank, and take a 192*, where take *a 192* obviously means take a bus number 192.

The communicative function is the primary function of our language because communication is one of the basic needs of people, and it will not be an exaggeration to say that it underlies every speech event. It is, however, possible to imagine that the conversational functional style could be associated with the function of impact but this would be a matter of individual style rather than a tendency.

See the following video (from 2:35 to the end) and listen to an example of play upon words where language is used not to convey information but for its joke value (https://www.youtube.com/watch?t=274&v=SqkIv79KBTw).

Example 1.2

- *So, last night there was a catfrontation.*
- *Oh…*
- *But it wasn't a catastrophe!*
- *Oh, no…*
- *Yes. But it was a catalyst for further meetings.*
- *Oh, no…*
- *Ah… But one of the cats wasn't very well. It was suffering from catarrh.*
- *Oh, no…*

Needless to explain all the uses of the words containing *cat*, as it was perfectly done by an outstanding English linguist David Crystal. Suffice it to say that when language realizes its function of impact it is always done for entertainment

purposes and thus is not an indispensible part of the conversational functional style. So much for it now.

The scientific functional style will primarily be characterized by linguistic units used in *the intellective function* since the main aim of scientific writing or a scientific report is to impart some specific information to the reader or listener. Thus, the extract below (see ***Example 1.3***) from the book *Mathematical Language* that can be found at the website of the Open University (http://openlearn.open.ac.uk/mod/oucontent/view.php?id=398432) contains a number of terms describing mathematical concepts of a set, set membership and types of sets, namely: *a set, an element, number, braces, curly brackets, natural numbers, membership, vertices, a square, a singleton*. Yet, it is no surprise that a piece of mathematical writing will include numerous specific words denoting mathematical categories and relations between them, as its main purpose is to share some mathematical knowledge with the reader. It should be noted that even a word of general language *element* takes on a mathematical meaning in the context and thus becomes part of mathematical vocabulary.

***Example 1.3:* Set notation**

We now examine some formal ways of specifying a set. We can specify a set with a small number of elements by listing these elements between a pair of braces (curly brackets). For example, we can specify the set A consisting of the first five natural numbers by A = {1, 2, 3, 4, 5}. The membership of a set is not affected by the order in which its elements are listed, so we can specify this set A equally well by A = {5, 2, 1, 4, 3}. Similarly, we can specify the set B of vertices of the square shown in the margin by B = {(0, 0), (1, 0), (1, 1), (0, 1)}. We can even specify a set C whose elements are the three sets {1, 3, 5}, {9, 4} and {2} by C = {{1, 3, 5}, {9, 4}, {2}}. A set with only one element, such as the set {2}, is called a singleton. (Do not confuse the set {2} with the number 2.)

Stylistically speaking, the above text mostly contains neutral or rather formal words, namely: *examine, specify, consist, affect, confuse* – unlike ***Example 1.1*** where quite informal words are used. Syntactically and morphologically the sentences are more complex in (1.3) than in (1.1) due to the use of gerunds, present and past participles as well as passive forms: *formal ways of specifying a set, specify a set … by listing these elements, the set A consisting of…, vertices… shown, is called, is not affected, are listed* – and subordinate clauses: *The membership of a set is not affected by the order in which its elements are listed, so we can specify this set A equally well by A = {5, 2, 1, 4, 3}*. In addition, the scientific text contains cohesive linking words – *for example, similarly* – making logical links between ideas within the text.

As regards ***the official functional style***, the name speaks for itself. It is evident that legal documents and formal writing and speeches are abundant in

formal expressions, complex structures and sophisticated wording. The following extracts may serve as prime examples of the functional style under consideration.

Example 1.4. *"Codifying – or not codifying – the United Kingdom Constitution: the existing constitution":*

The UK constitution is often defined using negatives. For instance, A. V. Dicey referred to 'the non-existence in England of any written or enacted constitutional statute or charter'. A section in the first chapter of The Law and the Constitution by Sir Ivor Jennings is entitled 'NO WRITTEN CONSTITUTION'; and the Cabinet Manual states: 'The UK does not have a codified constitution'. These definitions have various implications but their direct meaning is that there is no single or interlinked set of official documents specifically labelled the 'constitution' of the UK. In lacking a codified constitution the UK exists among a small group of democracies internationally, alongside Israel and New Zealand. Attempts to explain this peculiarity often focus on the idea that codified constitutions emerge from national crises such as revolution, or independence from foreign occupation. It is sometimes noted that circumstances in the history of the UK and its different national components that might have turned out to be 'constitutional moments' of this sort, such as the turmoil of the seventeenth century, predated the theoretical developments necessary for the establishment of a codified constitution as now understood.

It is nonetheless possible to identify in the history of the UK and its nations instruments which share some characteristics with a codified constitution, even if they preceded this concept. They include Magna Carta (1215); the Declaration of Arbroath (1320); the Bill of Rights and Scottish Claim of Right (both 1689), and the Treaty of Union (1706, enacted by both the English and Scottish parliaments), as well as the acts affecting union with Ireland. The Instrument of Government, introduced by Oliver Cromwell in 1653, is accepted by some as being a 'written constitution', albeit one in force for only a short period of time. On this evidence, codification might not be regarded as entirely alien to the UK constitutional tradition. The UK has, moreover, been involved in the creation of various codified constitutions worldwide, in former colonies and following UK participation in military action ending in changes of regime.

However, in some accounts of UK constitutional history another narrative predominates. It is held that a powerful tradition of the supremacy of Parliament – or the doctrine of parliamentary sovereignty (as it came to be labelled, particularly from the late nineteenth century, prompted by the writing of the constitutional lawyer A. V. Dicey) prevailed in place of a written statement of fundamental values. Finally a further version of UK constitutional development, that of 'common law constitutionalism' exists, in which judicial decisions, involving the application of unwritten fundamental principles, formed the basis for the UK constitution, including even the authority of Parliament.

(Borrowed from http://www.parliament.uk/documents/commons-committees/political-and-constitutional-reform/KCLexistingconstitutionMay2012.pdf)

Needless to say that the above example is fairly formal, especially if we compare it with the previously considered texts. It is markedly different. First, it is a written text whose main goal is to provide the definition and analyze the causes of the uncodified constitution. Hence its potential audience is rather small – lawyers, attorneys, barristers, law-makers, and other people interested in or dealing with jurisprudence. Therefore no wonder the vocabulary of the extract is either legal and, consequently, formal or fairly neutral. Terms related to legal profession (*a codified constitution, statute, charter, official documents, democracy, instrument, colony, in force, doctrine, parliamentary sovereignty, authority, etc.*) and titles of historic documents (*Magna Carta, the Declaration of Arbroath, the Bill of Rights, Scottish Claim of Right, the Treaty of Union, the Instrument of Government*) convey specific information about a constitution, while neutral or

formal words not related to jurisprudence serve as either building blocks (*albeit, on this evidence, it is held that, in place of, alongside, it is noted that…, etc.*) in a sentence or units expressing 'extrajuridical' information (*refer, emerge, precede, concept, affect, regarded, alien, military action, application of principles, predominate, prevail, fundamental values, form the basis for, regime, foreign occupation, etc.*). A further brief study of the text will also show us that here we come across complex sentences, present (*action ending in…, etc.*) and past participles (*enacted, written, interlinked, understood, introduced by*), gerunds (*using negatives, etc.)*, modals (*might not be regarded*), and passive forms *(is defined, is entitled, is accepted, etc.*). They all allow us to say that this is a text belonging to the official functional style, and the language used in it realizes its intellective and communicative functions.

Now if we turn to ***the journalistic style***, we will have to deal with absolutely different texts. And it is not surprising since the primary aim of journalism is not so much to inform the reader but to impress them. (It goes without saying that there is a world of difference between the tabloids and the quality papers, the former being targeted at sensational news, whereas the latter being addressed to a more conservative audience. Yet, *tertium comparationis* here is that in journalism one has to convey news to the public, while the way for doing it may be different.)

In order to find out what linguistic features are inherent to the journalistic text we have considered an article about the opening ceremony of the Winter Olympic Games hosted by Russia in Sochi in 2014. It was and still is one of the truly noticeable and memorable events of the sports world, and we thought it might be a good idea to see how it was presented in the world press.

For reasons of space we will adduce here only part of the article that tells the reader about some of the key moments of the ceremony.

Olympics Opening Ceremony Offers Fanfare for a Reinvented Russia

By DAVID M. HERSZENHORNFEB. 7, 2014

http://www.nytimes.com/2014/02/08/sports/olympics/russia-opens-sochi-games-with-pageantry-and-pride.html?_r=0

SOCHI, Russia — With an outsize extravaganza that reached deep into the repertory of classical music and ballet, traversed the sights and sounds of the world's largest geopolitical expanse, soared into outer space and swept across millenniums of history in a celebration of everything from czarist military might to Soviet monumentalism, a swaggering, resurgent Russia turned its Winter Olympic aspirations into reality on Friday night.

After seven years of building to this moment — the opening of what is believed to be the most expensive Olympic Games in history — the message of the over-the-top ceremony was simply this: In a big way, Russia is back.

As if there were any doubt…

The 18-chapter, nearly three-hour opening ceremony began at the symbolic moment of 8:14 p.m. — 20:14, as time is counted here — and provided a majestic spectacle that included a glowing troika of horses made of light streaking through a snowbound sky, the multicolor onion domes of St. Basil's Cathedral bobbing in the air; literary references to Gogol, Tolstoy and

Nabokov; images of Stalinist skyscrapers; and performances by Russia's storied ballerinas, musicians and singers.

What unfolded in the Fisht Olympic Stadium — the centerpiece of the newly built Olympic complex stretching from the Black Sea coast up into the Caucasus Mountains — was sheer pageantry and national pride, with all of the homespun promotionalism, mythmaking and self-aggrandizement that are the modern trademark of such ceremonies.

The music included pieces by Alexander Borodin, Georgy Sviridov, Stravinsky and Tchaikovsky, with selections from "Swan Lake" and "The Nutcracker." There were roles for the opera soprano Anna Netrebko; the prima ballerina Diana Vishneva; and Russia's best-known conductor, Valery Gergiev of the Mariinsky Theater. There were Cossack dancers and singers from the more than 600-year-old Sretensky Monastery Choir.

There were salutes to Russian science and innovation, including nods to Mendeleev, who codified the periodic table of elements, and Igor Sikorsky, the inventor and aviator.

The Russian flag was raised by the cosmonaut Sergei Krikalev. The former first lady Naina Yeltsin was in the audience. And the Olympic torch was carried on its final steps by a cadre of Russia's most famous athletes, including the gold-medal-winning rhythmic gymnast Alina Kabaeva, the champion pole-vaulter Yelena Isinbayeva and the tennis star Maria Sharapova, who won a silver medal at the Summer Games in 2012.

If the re-narration of history in the opening ceremony occasionally involved some breezing past inconvenient episodes — the Stalinist purges that killed millions, for instance, and the gulags that imprisoned and killed millions more — the ceremony was, in many respects, the introduction to the world of a re-created Russia, one far different from the Union of Soviet Socialist Republics that hosted the Summer Games in Moscow in 1980.

The national anthem played to the crowd of 40,000 in the stadium and heard by billions more watching on television around the world was the same music played nearly 35 years ago. But the lyrics have been rewritten, with lines about "the united, mighty Soviet Union" and "the great Lenin" replaced by references to "Russia — our sacred homeland" and "wide spaces, for dreams and for living."

It will not be an exaggeration to say that the language of the article is very expressive, especially at the beginning. Its author not only states the chronological order of the events at the ceremony but artfully uses the language to verbalize his emotions and the dynamics of the ceremony and share them with the reader. What strikes the eye is the sentence length: sentences can be a paragraph long, complicated by inversion and numerous homogeneous parts as if recreating the festive atmosphere of the gala. Extended parenthetical constructions provide informational comments to the reader on Russia's history, geography and way of life. Another thing that makes the text remarkably different from those considered above is the abundant use of stylistically non-neutral nouns, adjectives, verbs and adverbs expressing the author's attitude and at times giving a subtle description of the spectacle. All this is done to impress the reader and hold their interest from the very first line to the last, which is not at all surprising because unemotional presentation of the event would hardly keep the reader's interest for more than two paragraphs. In other words, the aim of journalistic writing is not so much to inform the reader but rather do it in a way that would impress them and make them contemplate or even speculate about an event. Thus, the primary function that

language realizes in newspaper articles is the function of impact, the communicative function still being there.

And finally, let us consider imaginative writing. It is not by chance that we have chosen so different pieces of writing. One is an extract from *The Moon and Sixpence* by W.S. Maugham, the other is the description of a hero by Charles Dickens in *A Christmas Carol*.

1) I confess that when first I made acquaintance with Charles Strickland I never for a moment discerned that there was in him anything out of the ordinary. Yet now few will be found to deny his greatness. I do not speak of that greatness which is achieved by the fortunate politician or the successful soldier; that is a quality which belongs to the place he occupies rather than to the man; and a change of circumstances reduces it to very discreet proportions. The Prime Minister out of office is seen, too often, to have been but a pompous rhetorician, and the General without an army is but the tame hero of a market town. The greatness of Charles Strickland was authentic. It may be that you do not like his art, but at all events you can hardly refuse it the tribute of your interest. He disturbs and arrests. The time has passed when he was an object of ridicule, and it is no longer a mark of eccentricity to defend or of perversity to extol him. His faults are accepted as the necessary complement to his merits. It is still possible to discuss his place in art, and the adulation of his admirers is perhaps no less capricious than the disparagement of his detractors; but one thing can never be doubtful, and that is that he had genius. To my mind the most interesting thing in art is the personality of the artist; and if that is singular, I am willing to excuse a thousand faults.

The Moon and Sixpence, Chapter 1, by W.S. Maugham

2) Scrooge never painted out Old Marley's name. There it stood, years afterwards, above the warehouse door: Scrooge and Marley. The firm was known as Scrooge and Marley. Sometimes people new to the business called Scrooge Scrooge, and sometimes Marley, but he answered to both names. It was all the same to him.

Oh! But he was a tight-fisted hand at the grind-stone, Scrooge! a squeezing, wrenching, grasping, scraping, clutching, covetous, old sinner! Hard and sharp as flint, from which no steel had ever struck out generous fire; secret, and self-contained, and solitary as an oyster. The cold within him froze his old features, nipped his pointed nose, shrivelled his cheek, stiffened his gait; made his eyes red, his thin lips blue; and spoke out shrewdly in his grating voice. A frosty rime was on his head, and on his eyebrows, and his wiry chin. He carried his own low temperature always about with him; he iced his office in the dogdays; and didn't thaw it one degree at Christmas.

External heat and cold had little influence on Scrooge. No warmth could warm, no wintry weather chill him. No wind that blew was bitterer than he, no falling snow was more intent upon its purpose, no pelting rain less open to entreaty. Foul weather didn't know where to have him. The heaviest rain, and snow, and hail, and sleet, could boast of the advantage over him in only one respect. They often `came down' handsomely, and Scrooge never did.

Nobody ever stopped him in the street to say, with gladsome looks, `My dear Scrooge, how are you? When will you come to see me?' No beggars implored him to bestow a trifle, no children asked him what it was o'clock, no man or woman ever once in all his life inquired the way to such and such a place, of Scrooge. Even the blind men's dogs appeared to know him; and when they saw him coming on, would tug their owners into doorways and up courts; and then would wag their tails as though they said, `No eye at all is better than an evil eye, dark master!'

But what did Scrooge care! It was the very thing he liked. To edge his way along the crowded paths of life, warning all human sympathy to keep its distance, was what the knowing ones call 'nuts' to Scrooge.

A Christmas Carol, Stave 1, by Charles Dickens

It is common knowledge that the language of verbal art is rich in imagery but it will be an exaggeration to say that it contains imagery only. The first extract is a case in point. Besides metaphors, epithets and other figures of speech, there are other ways to hold the readers interest and convey artistic conception. In his consideration of Charles Strickland's greatness, the author avoids creating images. Instead he dwells upon the phenomenon of Strickland's greatness by adducing logical arguments and comparisons. Yet, the description is far from being neutral, which is artfully achieved by syntactic means (parallel constructions, the use of two words with similar meaning, the latter having a stronger connotation than the former, opposition) and is in fact an indispensable feature of Maugham's individual style of writing. The second extract by Charles Dickens is a description of the hero, too. But unlike the previous case it is abundant in descriptive adjectives. It contains imagery comparisons and allegories that make the narration expressive and even create a certain imaginative plane (образный план повествования).

A natural question arises here: how can so different types of writing belong to one and the same functional style, and if they both do belong to imaginative writing, then how does language realize its function of impact? In fact, in both cases language fulfills the communicative function and the function of impact, the difference being that the former extract is less expressive stylistically and more informative, hence the communicative function is quite obvious here, while the aesthetic impact is created by the author's ponderings about the nature of greatness. The latter extract, on the contrary, impresses the reader by stylistically marked vocabulary and images created by stylistic means.

The above classification of functional styles reflects the different spheres of language usage and may serve as a guide for speech writing. It does not, however, mean that one is expected to encounter six types of writing or speech only. Our language, the main tool of communication, is a living system and it allows numerous variations and combinations of style. It may be used differently in various situations in order to achieve certain goals and its use is regulated by the writer's or speaker's intentions and needs.

Homework

1. ***What functional styles do you think the following extracts belong to? Why do you think so?***
   1) https://www.youtube.com/watch?v=ZW4NKONRyU0
   2) https://www.youtube.com/watch?v=5Kvs8SxN8mc
   3) http://www.youtube.com/watch?v=2_q9b9YqGRY
   4) http://www.youtube.com/watch?v=UTh82AwLn_o
   5) http://www.youtube.com/watch?v=LcvoJGZeFiY

2. ***Find your own examples of the conversational, the scientific and the official functional styles and say why you think they belong to a particular style.***

3. ***Study Units 31–32 in Academic Vocabulary in Use by Michael McCarthy and Felicity O'Dell (CUP, 2008).***

4. ***Grammar Point 1: The Passive Voice***

The Passive Voice is the category of the verb that allows the speaker or writer to present their ideas in a formal and objective way. No wonder one often comes across passive forms in scientific texts.

e.g. The reader is invited to investigate to what extent these informal statements are true for sets such as progressions and cubes, and false for sets such as random sets[2].

We now describe some other topics covered in this text. In Chapter 1 we recall the simple yet powerful probabilistic method…[3]

Study *Units 72–76* in your *Grammar Practice for Upper-Intermediate Students (with key)* by *Debra Powell*, etc. (Longman Pearson, 2011) and do the exercises. Remember to check your answers. Should you have any questions, do not hesitate to address them to your tutor.

Grammar Point 2: Modals with Passive Infinitive

As is known, modal verbs are followed by bare infinitives (i.e. without *to*). When the meaning is passive, the infinitive is in the passive form.

Forms of the Infinitive

	Active	***Passive***
Indefinite	He must do the job straight away.	The job must **be done** straight away.
Continuous	He must be doing the job now.	
Perfect	He must have done the job by now.	The job must **have been done** by now.
Perfect Continuous	He must have been doing the job for several days.	

For more practice do *Unit 8* (see pages 104–111) in *Longman Advanced Learner's Grammar* by *Mark Foley* and *Diane Hall* (2006).

[2] Tao, T., Vu, V., *Additive combinatorics*. CUP, 2006. P. 9.
[3] Ibid. P. 10.

Tutorial 2

The Scientific Report

What do you think the main purpose of a scientific report is? What can you say about its language?

The main purpose of any scientific report, be it on mathematics or biology, is to convey some special information to people of a certain profession. No matter how important this information might be, a scientific report always focuses on issues related to a specific field of human knowledge. Obviously, the language of scientific communication has to be rather precise so as to avoid misunderstanding. This precision is mainly due to the use of terminology that actually conveys special information. In addition, the speaker has to be comprehensible and intelligible enough not only in terms of pronunciation and intonation, which goes without saying, but also in terms of speech patterns and syntactic structures. It is always harder to follow a speaker than read a piece of writing because while reading you have as much time as you need, you can go back and read something again if you did not quite get it. So you have to work very carefully at the language of your report in order to make yourself understood.

1. Turn to Lesson 3 (Unit 1, Module 1, Book 2) in English for Academics and study the information about presentation formats.

2. Read the article "How to Talk Mathematics" by the famous mathematician P.R.Halmos, who contributed enormously to various branches of mathematics, and discuss the advice he gives with your groupmates.

How to Talk Mathematics

by P.R. Halmos

http://people.kth.se/~tilmanb/Halmos%20-%20How%20to%20talk%20Mathematics.html

Apology

The purpose of what follows is to suggest to a young mathematician what he might do (and what he had better not do) the first few times that he gives a public lecture on his subject. By a "public lecture" I mean something like a colloquium talk (to more or less the entire mathematics department at a large university), or an invited address (to more or less the entire membership on attendance at a meeting of the American Mathematical Society); I do not mean a classroom lecture (to reluctant beginners) or a seminar talk (to dedicated experts).That an article on how to talk mathematics might serve a good purpose was suggested by the officers of the American Mathematical Society. It seems that there have been more and more

complaints about invited addresses ("they are incomprehensible, and therefore useless"), and that, therefore, it might do some good to let a speaker know about such complaints before he adds to the reasons for them.

A genius makes his own rules, but a "how to" article is written by one ordinary mortal for the benefit of another. Harpo Marx, one of the greatest harpist of all times, was never taught how to play; everything he did was "wrong" accordingly to standard teaching. Most things that an article such as this one can say have at least a counterexample in the practice of some natural born genius. Authors of articles such as this one know that, but in the first approximation they must ignore it, or nothing would ever get done.

Why lecture?

What is the purpose of a public lecture? Answer: to attract and to inform. We like what we do, and we would like for others to like it too; and we believe that the subject's intrinsic qualities are good enough so that anyone what they are cannot help being attracted to them. Hence, better answer: the purpose of a public lecture is to inform, but to do so in a manner that makes it possible for the audience to absorb the information. An attractive presentation with no contents is worthless, to be sure, but a lump of indigestible information is worth no more.

The question then becomes this: what is the best way to describe a subject (or that small part of a subject that has recently been the center of the lecturer's attention) to an audience of mathematicians most of whom are interested in something else? The problem is different from describing a subject to students who must learn it in usable detail, and it is different from sharing a new discovery with fellow experts who have been thinking about the same sort of things and are wondering what you know what they don't.

Simplicity

Less is more, said the great architect Mies van der Rone, and if all lecturers remembered that adage, all audiences would be both wiser and happier.

Have you ever disliked a lecture because it was too elementary? I am sure that there are people who would answer yes to that question, but not many. Every time I have asked the question the person who answered said no, and then looked a little surprised at hearing the answer. A public lecture should be simple and elementary; it should not be complicated and technical. If you believe and can act on this injunction ("be simple") you can stop reading here; the rest of what I have to say is, in comparison, just a matter of mirror detail.

To begin with a public lecture to 500 people with "Consider a sheaf of germs of holomorphic functions ..." (I have heard it happen) loses people and antagonizes them. If you mention the Kimneth formula, it does no harm to say that, at least as far as Betti numbers go, it is just like what happens when you multiply polynomials. If you mention functors, say that a typical example is the formation of the duals of vector spaces and the adjoints of linear transforms. Be simple by being concrete. Listeners are prepared to accept unstated (but hinted) generalizations much more than they are able, on the spur of the moment, to

decode a precisely stated abstraction and to re-invent the special cases that motivated it in the first place. Caution: being concrete should not lead you to concentrate on seeing the trees and not seeing the woods. In many parts of mathematics a generalization is simpler and more incisive than its special parent. (Examples: Artin's solution of Hilbert's 17th problem about definite forms via formally real fields; Gelfand's proof of Wiener's theorem about absolutely convergent Fourier series via Banach algebras). In such cases there is always a concrete special case that is simpler than the seminal one and that illustrates the generalization with less fuss; the lecturer who knows his subject will explain the complicated special case, and the generalization, by discussing the simple cousin.

Some lecturers defend complications and technicalities by saying that that's what their subject is like, and there is nothing they can do about it. I am skeptical, and I am willing to go so far as to say that such statements indicate incomplete understanding of the subject and of its place in mathematics. Every subject and even every small part of a subject, if it is identifiable, if it is big enough to give an hour talk on, has its simple aspects, and they, the simple aspects, the roots of the subject, the connections with more widely known and older parts of mathematics are what a non-specialized audience needs to be told.

Many lecturers, especially those near the foot of the academic ladder, anxious to climb rapidly, feel under pressure to say something brand-new - to impress their elders with their brilliance and profundity. Two comments: (1) the best way to do that is to talk simple, and (2) it doesn't really have to be done. It may be entirely appropriate to make the lecturer's recent research the focal point of the lecture, but it may also be entirely appropriate not to do so. An audience's evaluation of the merits of a talk is not proportional to the amount of original material included; the explanation of the speaker's latest theorem may fail to improve his chances of creating a good impression.

An often quoted compromise between trying to be intelligible and trying to seem deep is this advice: address the first quarter of your talk to your high-school chemistry teacher, the second to a graduate student, the third to an educated mathematician whose interests are different from yours, and the last to the specialists. I have done my duty by reporting the formula, but I'd fail in my duty if I didn't warn that there are many who do not agree with it. A good public lecture should be a work of art. It should be an architectural unit whose parts reinforce each other in conveying the maximum possible amount of information -not a campaign speech that offers something to everybody and, more like than not, ends by pleasing nobody.

Make it simple, and you won't go wrong.

Details

Some lecturers, with the best of intentions, striving for simplicity, try to achieve it by being overly explicit and overly detailed; that's a mistake.

"Explicit" refers to computations. If a proof can be carried by multiplying two horrendous expressions, say it so and let it go at that; the logical simplicity of the steps doesn't necessarily make the computations attractive or informative to

carry out. Landau, legend has it, never omitted a single epsilon of his lectures, and his lectures were inspiring anyway - but that's the exception, not the rule. If, on an exceptional occasion, you decide that a brief computation will be decisive and illuminating, put it in, but the rule for ordinary mortals still stands: do not compute in public. It may be an explicit and honest thing to do, but that's not what makes a lecture simple.

"Detailed" refers to definitions. Some lecturers think that the way to reach an audience of non-experts is to tell them everything. ("To get to the theorem I proved last week, I need to start from the beginning, 14 definitions and 11 theorems that my predecessors have proved. If I talk and write fast, I can present those 25 nuggets in 25 minutes, and in the rest of the time I can state and present my own thing.") This, too, is honest, and it makes the lecture self-contained, in some sense – but it is impossible to digest, and the effect is dreadful. If someone told you, in half an hour, the meaning of each ideogram on a page of Chinese, could you then read and enjoy the poem on that page in the next half hour?

Proofs

Some lecturers understand the injunction "be simple" to mean "don't prove anything". That isn't quite right. It is true, I think, that it is not the main purpose of a public lecture to prove things, but to prove nothing robs the exposition of an essential part of what mathematicians regard as attractive and informative. I would advise to any lecturer to be sure to prove something – one little theorem, one usable and elegant lemma, something that is typical of the words and the methods used in the subject. If the proof is short enough, it almost doesn't matter that it may, perhaps, not be understood. It is of value to the listener to hear the lecturer say that Bernoulli numbers enter the theory of stable homotopy groups, even if the listener has only an approximate idea of what Bernoulli numbers or homotopy groups are.

Something that's even better than a sample proof is the idea of the proof, the intuition that suggests it in the first place, the reason why the theorem is true. To find the right words to describe the central idea of a proof is something hard, but it is worth the trouble; when it can be done, it provides the perfect way to communicate mathematics.

Problems

In the same vein, it is a false concept of simplicity that makes a lecturer concentrate only on what is safe and known; I strongly recommend that every public lecture reach the frontiers of knowledge, and at least mention something that is challenging and unknown. It doesn't have to be, it shouldn't be, the most delicate and newest technicality. Don't be afraid of repeating an old one; remember that many of your audience haven't heard of your subject since they took a course in it in graduate school, a long time ago. They will learn something just by hearing today that the unsolved problem they learned about years is still unsolved. The discussion of unsolved problems is a valuable part of the process of attracting and informing – it is, I think, an indispensable part. A field is not well described if its

boundaries are missing from the description; some knowledge of the boundaries is essential for the understanding of where the field is today as well as for enlarging the area of our knowledge tomorrow. A public lecture must be simple, yes, but not at the cost of being empty, or, not quite that bad but bad enough; it must not be incomplete to the point of being dishonest.

Organization

The organization of a talk is like the skeleton of a man: things would fall apart without it, but it's bad if it shows. Organize your public lecture, plan it, prepare it carefully, and then deliver it impromptu, extemporaneously.

To prepare a talk, the first thing to know is the subject, and very close second is the audience. It's much more important to adjust the level to fit the audience in a public lecture that it is in a book. ("Adjust the level" is not a euphemism for "talk down". Don't insult the audience, but be realistic. Slightly over the mark, very slightly, doesn't do much harm, but too much over is much worse than something under). A reader can put down a book, and can come back to it when he has learned more; an antagonized listener will, in spirit, leave you, and, as far as this talk is concerned, he'll never come back. The right level for a talk is a part of what organization is meant to achieve, but, of course, the first and more important thing to organize is the content. Here I have two recommendations (in addition to "prove something" and "ask something", already mentioned): (1) discuss three or four related topics, and the connections between them, rather than relentlessly pursue one central topic, and (2) break each topic in four or five sub-topics, portable, freely addable or subtractable modules, the omission of any of which would not wreck the continuity. As for extemporaneous delivery, there are two reasons for that: it sounds good, and it makes an interaction between the speaker and the listeners possible. The faces in the audience can be revealing and helpful: they can indicate the need to slow down, to speed up, to explain something, to omit something.

Preparation

To prepare a lecture means to prepare the subjects it will cover, the order in which those subjects are to come, and the connections between them that you deem worthy to mention; it does not mean to write down all the words with the intention of memorizing them (or, much worse, reading them aloud). Still: to write it all out is not necessarily a bad idea. "All" means all, including, especially, exactly what is to be put on the blackboard (with a clear idea of when it will be put on and whether it will remain for a long or be rubbed out right away). To have it all written out will make it easier to run through it once, out loud, by a blackboard, and thus to get an idea of the timing. (Warning: if the dry run takes an hour, then the actual delivery will take an hour and a half.)

Brevity

Most talks are described as "one-hour lectures", but, by a generally shared tradition, most are meant to last for 50 minutes only. Nobody will reproach you for

sitting down after 45 minutes, but the majority of the audience will become nervous after 55, and most of them will glare at you, displeased and uncomfortable, after 65.To take long, to run over time, is rude. Your theorems, or your proofs, are not all that important in other people's lives; that hurried, breathless, last five minutes is expendable. If you didn't finish, say so, express your regret if you must, but stop; it's better thus than to give the audience cause for regret.

Techniques

A public lecture usually begins with an introduction by the chairman of the session. Rule of etiquette: give him a chance. Before the lecture begins, sit somewhere by the side of the room, or with the audience, near the front; do not stand by or near the blackboard, or hover near the chairman worrying him.

One good trick to overcome initial stage-fright is to memorize one sentence, the opener. After that, the preparation and your knowledge of the subject will take over. Try very hard to avoid annoying mannerisms. Definition: an annoying mannerism is anything that's repeated more than twice. A mannerism can be verbal ("in other words" pronounced "'n 'zer w'rs", meaning nothing); it can be visual (surrounding a part of the material on the blackboard by elaborate fences); or it can be dynamic (teeter-tottering at the edge of the platform).

If you are in mechanical trouble, catch the chairman's eye and say, to him only, "I am out of chalk", or "May I have an eraser?". Do not bumble about your awkwardness and do not keep on apologizing. ("Oh, dear, where can I put this - sorry, I seem to have run out of the room - well, let's see perhaps we don't need this anymore ¼".) Make the appropriate decision and take the appropriate action, but do so silently. Keep your own counsel, and do not distract the audience with irrelevancies.

Silence is a powerful tool at other times, too; the best speakers are also the best non-speakers. A long period of silence (five seconds, say, or ten at most) after an important and crisply stated definition or theorem puts the audience on notice ("this is important") and gives them a chance to absorb what was just said. Don't overdo it, but three or four times during the hour, at the three or four high points, you might very well find that the best way to explain something is to say nothing.

Speak slowly and speak loudly; write large and speak as you write; write slowly and do not write much. Intelligently chosen abbreviations, arrows for implications, and just remainder words, not deathless prose, are what a board is for; their purpose is to aid the audience in following you by giving them something to look at as well as something to listen to. (Example: do not write "semisimple is defined as follows"; write "semisimple:".) Do not, ever, greet an audience with a carefully prepared blackboard (or overhead projector sheets) crammed with formulas, definitions, and theorems. (An occasionally advisable exception to this rule have to do with pictures – if a picture, or two pictures, would help your exposition but would take too long to draw as you talk, at least with the care it deserves, the audience will forgive you for drawing it before the talk begins.) The

audience can take pleasure in seeing the visual presentation grow before their eyes – the growth is part of your lecture, or should be.

Flexibility

Because of the unpredictability of the precise timing (you didn't rehearse enough, the audience asks questions during the talk, the lecture's room is reserved for another lecture at 5:00 sharp, or you just plain get mixed and waste time trying to get unscrambled), flexibility is an important quality to build into a lecture. You must be prepared to omit (or to add) material, and you must be prepared to do so under pressure, in public, on the spur of the moment, without saying so, and without seeming to do so. There are probably many ways to make a lecture flexible. I'll mention two that I have found useful. The first is exercises. Prepare two or three statements whose detailed discussion might well be a part of the lecture, and whose omission would not destroy continuity, and, at the proper place during your lecture, "assign" them to the audience as exercises. You run the risk of losing the attention of some of the more competitive members of the group for the rest of the hour. What you gain is something else that you can gracefully fill out your time with it (unlikely as that may be, you finish everything else too soon, and, at the same time, something that'll never be missed if you do not discuss the solution. Exercises in this sense may yield another fringe benefit: they'll give the audience something to ask their courtesy questions about).

A second way to make a lecture flexible is, and I mentioned before and I believe is worth emphasizing again: portable modules. My notes of a lecture usually consists of about 20 telegraphically written paragraphs. The detailed presentation of each paragraph may take between 2 and 4 minutes, and at least half the paragraphs (the last 10) are omitable. These omitable modules often contain material dear to my heart: that clever proof, that ingenious generalization, that challenging question – but no one (except me) will miss them if I keep them. Knowing that those modules are there, I sail through the first half of the period with no worries: I am sure that I won't run out of things to say, and I am sure that everything that I must say will get said. In the second half of the period I have an eye on the time, and, without saying anything about it, make instantaneous decisions about what to throw overboard. One disadvantage of this method is that at the end of your time you may sound too abrupt, as if you have stopped in the middle of a sentence. To avoid the abrupt ending, prepare your peroration, and do not omit it. The peroration can be a three-sentence summary of the whole lecture, or it can be the statement of the most important unsolved problems of the subject. Make whatever you think proper for an ending, and then end with it. Rule of etiquette: when you stop, sit down. Literally sit down. Do not just stop talking and look helpless, and do not ask for questions: that's the chairman's job.

Short talks

Short talks are harder to prepare and to deliver than long ones. The lecturer has less time to lay the groundwork, and the audience is under pressure to understand quickly.

In my experience a 20-minute talk can still be enjoyable and enlightening; all you need is prepare a 10-minute talk and present it leisurely. A 10-minute talk is the hardest to do right; the precepts presented above (simple, organized and short) must be applied again, but this time there is no room for error. Focus on one idea only, and on its simplest non-trivial special case at that, practice the talk and time it carefully, and under no circumstances allow a 10-minute contributed paper to become a 45-minute uninvited address. It has been done, but the results were neither informative nor attractive. Some experts are willing to relax the rules for a 10-minute talk: it is all right, they say, to dive into the middle of things immediately, and it is all right, they say, to use prepared projection sheets. Others, having in mind the limited velocity and capacity of the human mind to absorb technicalities, disagree.

Summary

My recommendations amount to this: make it simple, organized and short. Make your lecture simple (special and concrete); be sure to prove something and ask something; prepare, in detail; organize the content and adjust to the level of the audience; keep it short, and, to be sure of doing so, prepare it so as to make it flexible. Remember that you are talking in order to attract the listeners to your subject and to inform them about it; and remember that less is more.

3. Now listen to the recording and note the main sections of the speaker's report (http://www.fields.utoronto.ca/video-archive/2015/10/402-5095). Say what each section deals with and what is specific about the language. Write down useful expressions that might be helpful while presenting your own report. Say if the lecturer in the above presentation follows Halmos's guidelines. Discuss your notes with your group mates in class.

Homework

1. Go to the website of the Fields Institute For Research in Mathematical Sciences, the FieldsLive Video Archive (http://www.fields.utoronto.ca/video-archive) page, and listen to a report related to your specialization. Briefly tell your group mates what the report is about. Say if the speaker succeeds in putting across his ideas and holding the audience's attention. Bearing in mind the advice given by Halmos, analyze the structure of the report you have seen.

2. Focus on one of the key points of your last year's term paper and present it to your group. Remember to follow the advice given by Paul Halmos in your presentation.

NB! *Before preparing your report it is a good idea to write its two-minute summary first. It will help you to think carefully over what you do need to say and avoid speaking about unimportant things. Also, at a conference you might be given*

less time than expected, and in this case a two-minute summary will be of great asset to you in your presentation.

3. Study Unit 1 (Module 1) in the coursebook English for Academics (Book 1).

4. Study Units 33–34 in Academic Vocabulary in Use by Michael McCarthy and Felicity O'Dell (CUP, 2008).

5. Grammar Point: Reported Speech

While stating other people's ideas, you have to follow the Sequence of Tenses. Study the explanation (Units 46 – 49) in Grammar Practice for Upper Intermediate Students by D. Powell, et al. (Pearson Longman, 3rd edition) and do the exercises. For more practice on reported speech go to Units 32 – 38 in Advanced Grammar in Use by M. Hewings (Cambridge, 2nd edition).

Tutorial 3
Ten Stages in Preparing Your Slides[4]

Before you embark on creating your slides it is vitally important to focus on what you want to say, and then use that as a basis for creating your slides. Note that there are seven stages before you create your slides.

1. Find out about the potential audience

It is very useful to find out how much the audience already know about your topic. If you are too technical, you may alienate those who are potentially interested in the topic but are not experts. However, if you are too general, you will bore the experts. You are likely to have a mixed audience, so don't make too many assumptions about what they may and may not know. You thus need to find the right balance and prepare extra slides that you can use to tailor your presentation to the specific audience.

2. Identify your key points

Write down what you think are the most important/interesting aspects of your research that you want to communicate to your audience.

Try to limit the number of your important points (key points) to about three or four, as this is the number that experts have proved is what most audiences can realistically remember. By not trying to cover everything but limiting yourself just to certain aspects, your presentation will have a clear focus. This does not mean that you only mention these key points and nothing else. Instead, it means that you mention them in your introduction and in your conclusions, and you give them the most space while describing your methodology and/or your results.

This process is a little similar to writing an abstract for a paper, which acts as both a summary and an advertisement of your work. It may help you to think that there might be journal editors and reviewers in the audience and that your objective is to give them the highlights of your research so that they will be interested in publishing your work in a video version of their journal.

Your key points should generally indicate what makes your research stand out (i.e., why your community should be interested) and how it contributes to knowledge in your field. The key points could be, for example:

- what problem you wanted to resolve/investigate and why this was important for the scientific community;
- how you did it (your methodology);
- what success you had (your results).

Alternatively, perhaps the problem you wanted to solve is well-known (and thus doesn't merit much description), but your methodology is highly innovative. In this case your three main points may be connected with how your method works, or how you selected your data. Or maybe your methodology is not important, but your results are. Thus, your three important points could simply be

[4] Wallwork, A., *English for Presentations at International Conferences*. Springer, 2010. PP. 3-9.

your three most important findings, or your one important finding has three important implications.

3. Prepare a two-minute talk

Try and shorten your presentation to a two-minute talk. It will help you to carefully think over what you *do* need to say and avoid speaking about unimportant things. Also, at a conference you might be given less time than expected, and in this case a two-minute summary will be of great asset to you in your presentation.

Write some notes for your two-minute presentation. Use short sentences. Imagine you are going to speak to a group of friends rather than researchers. Using simple constructions and sentences will help you to focus on what you want to say. It will also enable you to express the concepts in the clearest way, which will be the easiest way for the audience to understand.

A presentation is not an oral version of your paper. It is an oral version of the most interesting and significant highlights of the research that led to your paper. This means you do not need to include everything that you covered in your paper. In fact, it is a good idea not to use your paper as a starting point.

4. Record and transcribe your two minutes

Record yourself speaking (in English) about your three main points and make sure you don't go over two minutes. Imagine that you are chatting to a friend.

5. Expand into a longer presentation

Transcribe your recording, and then think how and where you need to expand what you have said – but always focus on explaining not more than three key points. Either write down exactly what you want to say or simply write some notes. Creating a written speech is the best option, but it obviously takes longer.

A good and easy structure to follow is to imagine that you are telling a story.

The title of your presentation is the title (summary) of your story. You then structure your presentation around your three most important points. It might help you to organize what you want to say if you include short answers to the following questions:

a) Why did I choose this topic in general? Why am I enthusiastic about it? What can I tell the audience that they probably don't know but that they will find interesting? How can I make it interesting to those attendees who are not experts in this field?

b) What motivated me to decide to test a particular hypothesis or investigate a particular aspect? Was I stimulated by someone else's research?

c) What did I do to test the hypothesis/ aspect (i.e. the description of your methodology)? What problems did I have during the design and testing phases (these problems may be even more interesting to the audience than the successes, so think about the strengths and weaknesses of your approach)?

d) What did I find out? And what did I not find out? Did my findings confirm my initial hypothesis? Were there any inconsistencies or surprises?

e) What is the significance of my work in the big picture of my field of interest? How and where can my findings be applied?

f) What questions do I still have? What am I planning to do next? (Plus a reminder to the audience of most important results so far).

Think of your presentation as the headlines in a newspaper. Let the audience read the details in your manuscript or on your website. The true test of whether something in your presentation should really be there is to think about what would happen if you removed it. Would the audience even notice? Or would the presentation fail as a result?

6. Practice with colleagues

Using your script or notes that you created at the previous stage, ask colleagues, friends or family members to listen to you. When you have finished, get them to write down questions to ask you. Do this with a variety of people. If you think the answers to their questions are fundamental, then incorporate answers to them into your speech. If they are not fundamental, keep a note of them and think how you might answer them in a Q&A session at the end of your presentation.

7. Give your presentation a structure

The next step is to divide your speech/notes into sections. The sections might be Introduction (questions *a* and *b* from *Section 5* above), *Methodology* (*c*), *Results* (*d*), *Discussion* (*e*), and *Conclusions* (*f*). Think about what your specific intention is for each part of the presentation and think about where and how you can focus on your key points. If you have no particular intention, this will be immediately transparent to the audience.

The way we receive and absorb information in an oral presentation is very different from how we get it by reading a paper. When we read, we control how fast and in what order we want to absorb information. We can scan the whole paper quickly if we wish, and we can skip certain parts. If a written paper is well organized, we are guided by the section headings and paragraphs and we can see how the points fit together.

While watching a presentation, we have no control over what or how or in what order the presenter will give us this information. We cannot go backwards to "reread" if we didn't understand the first time.

So, in your preparation, everything you do should be oriented to making what you say easily and immediately understandable to the audience—they only have one chance to hear you. This is achieved through a clear structure, clear slides, and easy-to-follow explanations.

8. Create the slides

At this stage you will be reasonably familiar with the content of your presentation, so now you can decide what slides are really needed. Every slide should have a purpose and its purpose must be clear not just to you but also to the audience. A slide is needed when it does one or more of the following:

• makes an explanation less complicated and quicker;
• helps people to visualize and recall something better;
• makes something abstract become more concrete;
• attracts attention or entertains the audience (but only in a way that is relevant to your topic).

If a potential slide does not do any of the above, then you probably do not need to create it. You do not need a slide for every point you make. You can simply tell the audience some points or alternatively write them on the whiteboard.

9. Modify your script

You have now created your slides. The next stage is to modify your script so that it takes into account exactly what you will say about each slide. Try to keep the colloquial style in your speech. It will be much easier for you to talk during your presentation if you talk as you normally do in everyday life. It will be natural for you and will sound natural to the audience. You do not need to adopt a specific "presentation voice." So ask yourself "*Is this something that a normal person would say in a normal conversation?*" If it isn't, change it.

10. Cut redundant slides, simplify complicated slides

Practise your presentation with colleagues. Ask them what slides you could cut and which slides they found complicated to understand. You could ask them to classify each point in your presentation as follows:

A: absolutely essential
B: important
C: include only if time permits.

Your aim is to focus only on what the audience want/ need to hear, so you don't need to include things simply because you think you *should* include them; for example, because you think it is more professional to cover everything or because you think, by putting them in, you will make a good impression on your boss. By this stage you should be very familiar with the content of your presentation. Now you need to focus on the language and pronunciation.

Homework

1. Study Unit 1 (Module 2) in the coursebook English for Academics (Book 1).

2. Study Units 35–36 in Academic Vocabulary in Use by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Now that you have listened to some reports and learned several pieces of invaluable advice from the renowned predecessor, thinking about a report on this year's research project, paying special attention to its structure and ideas to be included. First prepare a two-minute speech of your report and think of the information you need to write on your slides. Speak about the subject of your

research and present the key points on the slides. Discuss them with your colleagues.

4. Listen to the report (http://www.fields.utoronto.ca/video-archive/2016/01/428-14633) and pay attention to how the speaker uses the slides to talk on the subject. Do you find the slides helpful in understanding the key points of the report?

5. Grammar Point: Linking Words and Structures

Study Units 56 – 64 in Grammar Practice for Upper Intermediate Students by D.Powell, et al. (Pearson Longman, 3rd edition) and do the exercises. For more practice on cohesion, discourse devices and ordering information in a text turn to Units 32, 33, 35, 36 in Longman Advanced Learner's Grammar by Mark Foley and Diane Hall (2006).

Tutorial 4
What to Write on the Slides[5]

The audience does not need to see, or hear about, all the data you have collected. The data needs editing so that you only present concise and relevant evidence to justify any point you make.
Trevor Hassall and John Joyce

The title of your presentation is like an advertisement—you want as many people as possible to be interested in it, so it should not be too technical or too generic.

Decide what to include in the title slide

There is no standard way to construct a title slide, but most presenters prioritize information by using different font sizes. The two most important elements, which should be given most space, are as follows:

1. the title;
2. your name

Other things that some presenters sometimes include are:

3. the name and date of the conference
4. co-authors
5. the name and/or logo of your institute/research unit
6. your supervisor
7. acknowledgments
8. sponsors
9. a photo
10. a background image

Some of the best presenters use their title slide to attract the audience's attention. They do this either by completely ignoring points 3–7 above, or by putting such details in a very small font. Points 3–7 generally contain no information that 99.9% of the audience need to know or that they can't find out from the conference programme. The more information you have on your title slide, the more it will detract from the most important things: your title and your name.

Remove all redundancy

When you have decided on your title, rewrite it removing redundant words (in square brackets in the examples below) and leaving only key words.

e.g. The ligno-cellulose biomass fuel chain [: a review]

[5] Wallwork, A., *English for Presentations at International Conferences*. Springer, 2010. PP. 55-63.

[A study on] producing bread [in Andalucia] with [the] acid moisture [technique]

[Development of] a Portable Device for Work Analysis to Reduce Human Errors in Industrial Plants

[Issues of] language rights and use in Canada

Make sure your title is not too technical for your audience

The title of your presentation is like an advertisement for a product, so consider not using the title of your thesis or paper as the title of your presentation. An interesting title is more likely to attract people to your presentation, and titles of papers and theses are rarely designed to attract the attention of an audience.

Attendees sometimes watch presentations in fields that are not strictly their own, but perhaps where they feel they might be able to apply their findings or because they are looking for new areas of research. It may thus be useful to think of titles to your presentations that are likely to engage a wider audience, which is not all made up of experts in your precise field of research.

Here are some examples of alternative titles:

TECHNICAL	NONTECHNICAL
A Pervasive Solution for Risk Awareness in the context of Fall Prevention in the Elderly	Stop your grandmother from falling
Preparation, characterization, and degradability of low environmental impact polymer composites containing natural fibers	Can natural fibers save the planet? Can natural fibers save Italy? Italy is slowly disappearing under polyethylene bags Bags, bags and more bags Will we all be suffocated by plastic bags?

Use a two-part title to attract both general and technical audience

If you are worried about being too informal, you can use a two-part title, in which one is technical and the other is more appealing to a generic audience.

ONE-PART TITLE	TWO-PART TITLE
Preparation, characterization, and degradability of low environmental impact polymer composites containing natural fibers	How can we stop Italy disappearing under polyethylene bags? Using low environmental impact polymer composites containing natural fibers
Anti-tumor activity of bacterial proteins: study of the p53-azzurine interaction	Azzurrine binds to p53. Towards a nontoxic alternative to chemotherapy?
The discoursal construction of audience identity in undergraduate assignments	Who or what is the students' audience? The discoursal construction of audience identity in undergraduate assignments

Don't be too concise in titles—use verbs and prepositions not just nouns and adjectives

What is the problem with this title?

When you start reading it, it seems to have one meaning. But when you finish, it seems to have another meaning. The problem is that this title is a string of adjectives + nouns + nouns that act as adjectives.

A much easier title to understand would be:

An innovative methodology for teaching scientific English to first-year PhD students

Good titles put:

• the adjective next to the noun it refers to (*innovative* refers to *methodology* not to *students*);

• have a verb (*teaching*);

• use prepositions (*for, to*).

Some more examples showing the use of verbs are given below:

NO VERBS	WITH VERBS
The implementation of sustainable strategies in multinational companies	Implementing sustainable strategies in multinational companies
TOF-SIMS: an innovative technique for the study of ancient ceramics	TOF-SIMS: an innovative technique for studying ancient ceramics
Fault detection of a Five-Phase Permanent-Magnet Motor – a four-part solution	Four ways to detect faults in a Five-Phase Permanent-Magnet Motor
Effect of crop rotation diversity and nitrogen fertilization on weed management in a maize-based cropping system	How does crop rotation diversity and nitrogen fertilization affect the way weeds are managed in a maize-based cropping system?

Check your grammar and spelling

The rules of grammar, particularly the use of articles (*a, an, th*e) also apply in titles. Can you find the grammatical mistakes in the ungrammatical titles below?

UNGRAMMATICAL	GRAMMATICAL
Multimodality in the context of Brain-Computer Interface	Multimodality in the context of a Brain-Computer Interface/ of Brain Computer Interfaces
Importance of role of planning and control systems in supporting interorganizational relationships in health care sector	The importance of the role of planning and control systems in supporting interorganizational relationships in the health care sector
Iran Foreign Policy	Iran's Foreign Policy

ADVANCED TIPS

Use slide titles to help explain a process

When the main purpose of your presentation is to explain a process or how a piece of equipment works, it is a good idea to use your slide titles to explain each step in the process. Here are titles of the first six slides from an engineering presentation. Each slide simply has a title and then a diagram or picture, which the presenter then explains.

Slide 1: Title slide: 3D Laser milling modeling: the effect of the plasma plume
Slide 2: Laser Milling: a process well suited for mold manufacturing
Slide 3: Laser Milling Centers consist of various sub-systems
Slide 4: The laser beam is controlled by a Laser Beam Deflection Unit
Slide 5: A valid estimation of the Material Removal Rate is required
Slide 6: Many parameters affect the Material Removal Rate

Notice that there is no "Outline" slide. The presenter used slide 1 to introduce himself and his research area. Then slides 2 and 3 provided some background information. And then the later slides described how the laser worked. The audience was guided step by step and even a nonengineer like myself was able to follow.

Think of alternative titles for your slides

When thinking of titles for your slides, bear in mind the quantity of slides that an audience will see over a typical two-day congress. Ask yourself how much the audience's attention you are likely to attract by a series of titles such as: *Introduction – Methodology – Discussion – Conclusion* and *Future Work – Thank you for your attention – Any questions?*

If your slot is near the end of the morning or afternoon (particularly on the last day of the conference), you need to think of alternative titles. Avoid words that give no real information and which the audience has probably seen a hundred times since the beginning of the conference such as: *activity, investigation, overview.*

Here are some possible alternative titles to the typical sections of a presentation:

Outline: Why? Why should you be excited?
Methodology: How? Don't try this at home
Results: What did we find? Not what we were expecting
Discussion: So what? Why should you care?
Future work: What next? Men at work
Thank you: That's all folks See you in *name of location of next conference.*

For more information on writing and editing slides, using bullets, visual elements and font turn to Part II of the book English at International Conferences by Adrian Wallwork.

Homework

1. Study Unit 2 (Module 2) in the coursebook English for Academics (Book 1).

2. Study Units 37–38 in Academic Vocabulary in Use by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Add additional information to one or two points you have decided to cover in your report. Check if the slides still describe the points.

4. Listening to the recording of the working lunch seminar (http://www.fields.utoronto.ca/video-archive/2015/12/367-5415) and single out the main points of the report. Focus on the slides and summarize the key points of the presentation.

5. Grammar Point: Emphatic Structures and Inversion

Study Unit 34 in Longman Advanced Learner's Grammar by Mark Foley and Diane Hall (2006) and Unit 78 in Grammar Practice for Upper Intermediate Students by D. Powell, et al. (Pearson Longman, 3rd edition) and do the exercises.

Tutorial 5
Getting and Keeping the Audience's Attention[6]

According to the presentations expert Shay McConnon, *Juries typically remember only 60% of what they are told. Why? The case is not about them. No matter how hard they try, people have difficulty paying attention to presentations that aren't about them.*

In order to keep your audience's attention you should:

1. have a clear idea who your audience are, don't assume that they are naturally going to be interested in your topic;
2. have an agenda and a clear structure with clear transitions so that the audience know where you are going;
3. make it easy for the audience to follow you and your slides;
4. help the audience to understand why you are showing them a particular slide;
5. involve your audience and give them lots of examples;
6. make frequent eye contact;
7. avoid too much text on your slides;
8. use simple graphs and tables;
9. make your text and visuals big enough for everyone in the audience to see clearly;
10. avoid going into too much detail (i.e. just select those things that the audience really need to know about the topic);
11. avoid spending more than a couple of minutes on one specific detail;
12. have a variety of types of slides (not just all bullets, or all text, or all photos);
13. speak reasonably slowly and move from slide to slide at a speed that the audience will feel comfortable with;
14. sound interested and enthusiastic about your topic;
15. vary your tone of voice;
16. inject some humor;
17. move around occasionally rather than being static.

Exploit moments of high audience attention

Audiences tend to remember things that are said at the beginning and the end of a presentation, because their attention is generally high at these points. They also remember things that they hear more than once. And finally, they remember curious facts, things that stand out.

Ideally you need to state your key points both at the beginning and the ending. In the middle go through each key point more in detail. If possible, include

[6] Wallwork, A., *English for Presentations at International Conferences*. Springer, 2010. PP. 95-101.

an unexpected/ counterintuitive/interesting fact for each key point. Try juxtaposing data with quotations, and serious issues with a humorous anecdote.

The point of your presentation is to disseminate information and engage interest for your project. If your audience do not listen, then there is no point in your doing the presentation. So, most ways of getting and maintaining their attention are legitimate provided that they:

- ✓ are relevant, or in any case interesting and memorable;
- ✓ do not offend anyone.

Don't spend too long on one slide

Our attention span is affected by how long we look at something that does not change. Research has shown that we can only look at something static for 30 seconds and then we start thinking about something else. So, if possible, reduce the amount of time you spend showing the same slide. For example, you could show the slide, explain what you need to explain with the aid of the slide, and then blank it and carry on talking.

Be aware of the implications of the time when your presentation is scheduled

There are clearly good times and bad times in the conference schedule for presenters to give their talks. What are known as the "graveyard slots" (i.e., the worst/dead times) take place:

- ✓ when attendees would probably rather be having lunch (attendees may focus more on their stomach than on you);
- ✓ at the end of the day (the audience have probably assimilated all the information they are capable of assimilating in one day);
- ✓ at the end of the last day (the worst possible slot, when attendance is always low).

If you have been allocated one of the above slots, you will need to make a special effort to gain and keep the audience's attention. You can do this by:

- ✓ being a little more informal;
- ✓ understanding that the audience will be unable to assimilate much new information—therefore consider reducing the number of points you intend to cover and the amount of detail you give;
- ✓ finishing early and on a high note—the audience will thus go away with a positive impression of you.

ADVANCED TIPS

Quickly establish your credibility

How the audience judge your credibility will determine the success of your presentation. Even if your slides are fantastic, and your results seem good, the audience will not give you their full attention if they do not feel you are credible, i.e. if they cannot fully believe or agree with what you are saying.

How do you establish your credibility? It is helpful if you tell the audience something about your knowledge and experience with the topic, and also why you are interested in it.

Learn ways to regain the audience's attention after you have lost it

When you are doing your presentation, you may be competing for the audience's attention with one or more of the following:

- ✓ their mobile phone or laptop—they may be text messaging or emailing;
- ✓ the person sitting next to them may want to chat;
- ✓ things happening outside the window;
- ✓ their hunger (particularly at the end of the morning session);
- ✓ their boredom—yours may be the sixth, seventh, or even eighth presentation that they have seen that day.

These kinds of distractions do not always depend on the level of interest of your presentation. In any case, you have to try and regain their attention. You can do this by:

- ✓ blanking the screen (on PowerPoint you can do this using the B key);
- ✓ using the whiteboard—inevitably the audience will want to know what you are going to write. Make sure you write large enough for all the audience to see – this generally means writing very little or only drawing simple diagrams. Make sure you move to the side of the whiteboard so that the audience can see what you are writing/have written;
- ✓ asking the audience a rhetorical question. Try and predict what kind of questions the audience might be asking themselves at this point of your presentation. Pause. Ask the question. Pause again. Then answer it;
- ✓ giving the audience a statistic. People are fascinated by numbers and they help the audience see the dimension of the situation;
- ✓ saying, "*Here's something you might be interested to see*" or "*I've brought along something to show you...*" and producing an object from your pocket, bag, etc. Your audience will be immediately curious to see what the object is. Again, it has to be big enough for everyone to see, or you have to have lots of them to distribute among the audience—but be careful as they may turn into an even bigger distraction! Objects can also be a good substitute for explanations;

- ✓ showing an unusual slide—this could simply be a slide that breaks with the normal pattern of your other slides. It could be an interesting photo, a clear and effective diagram, or contain a number, a short quotation, or a question.

Present statistics in a way that the audience can relate to them

Compare these ways of stating the same statistics.

ORIGINAL	REVISED
A bird's eye and a human's eye take up about 50% and 5% of their heads, respectively. In our study of the importance of vision in birds of prey, we found that this factor was...	A bird's eye is huge. It takes up about 50% of its head. Half its head. That's 10 times more space than a human's eye takes up. In fact, to be comparable to the eyes of a bird of prey, such as an eagle, our eyes would have to be the size of a tennis ball. When we studied eagles, vultures, and buzzards, we realized that...

Note how in the revised version, the speaker gives the same information twice – 50% and *half*. This is useful because it is very difficult to distinguish between the sound of *fifteen* and *fifty* (likewise between 13 and 30, 14 and 40, etc). By using the analogy of a tennis ball, the audience gets a much clearer idea of the proportions. Clearly, to be effective it would be helpful to have slides of an eagle's head and a tennis ball, and maybe a cartoon of a person with tennis ball eyes. Also, you would be guaranteed attention if you pulled two tennis balls out of your pockets!

Be aware of cultural differences

In his book *Outliers*, Malcolm Gladwell, a writer at *The New Yorker* magazine named as one of *Time* magazine's 100 Most Influential People, talks about cultural differences in the way we communicate and receive information. In Chapter 8 he makes three very interesting points.

1. Many Asian countries are "receiver oriented," this means it is the listener's task to interpret what the speaker is saying.
2. The Japanese have much higher levels of "persistence" than Americans. This means that the Japanese can stick to a task much longer than their American counterparts—they have higher levels of concentration.
3. Our memory span is correlated with the time it takes in our language to pronounce numbers. Because the words for numbers in Asian languages are quicker to pronounce and are more logical (*ten-one* rather than *eleven*), Asians tend to be able to absorb numbers and make calculations generally far more quickly than those in the West.

What he writes has huge implications for presentations. It means that if you are talking to an audience that includes a good number of people from the West (particularly the United States and Great Britain), you should try to:

1. Work very hard yourself to make it absolutely clear what you are saying, so that it is effortless for the audience to understand.
2. Be aware that your audience may not be used to concentrating for long periods and may thus have a short attention span.
3. Give the audience time to absorb and understand any numbers and statistics that you give them.

Be serious and have fun

Attendees at my courses are often skeptical when I say that audiences are more receptive if they enjoy themselves – my students don't doubt the truth of this, but they think that it is not professional and their professors would not approve. However, many of the world's top professors *do* approve. Professor Chandler Davis, the mathematician and well-seasoned conference attendee, told me:

> "Some of us can't help expressing our joy in knowing the facts, particularly those WE discovered; presenters who don't naturally impart the joy should be roused to doing so."

And Nobel Prize Winner in Chemistry in 2008, Professor Martin Chalfie, confirmed that:

> "A professional presentation can be both serious *and* fun."

Another professor, psychologist Thomas Gilovich from Cornell University, states that:

> "Our appetite for entertainment is enormous... If the listener comes away from the communication either informed or entertained, the interaction has been worthy of his or her time and attention, and the speaker has met one of his or her most basic requirements."

Being entertaining doesn't necessarily mean making people laugh. It means:

- ✓ occasionally providing standard information in a novel or unusual way;
- ✓ using examples that your audience can easily relate to;
- ✓ finding interesting and surprising statistics;
- ✓ using very simple but unusual graphs and pictures that underline important points in a new way.

In any case you may decide to provide a few humorous slides or anecdotes. You can then try one and see what reaction you get from your audience. If it works well, you can use the others. If not, skip them.

Be careful about telling jokes. They may be dangerous, as the joke may:

- ✓ not be understood.
- ✓ be offensive or inappropriate for the culture of your audience.
- ✓ be completely irrelevant to the topic of the presentation.

Homework

1. Study Unit 3 (Module 2) in the coursebook "English for Academics" (Book 1).

2. Study Units 39–40 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Grammar Point: -ing forms and Infinitives

Study Units 41 – 45 in Grammar Practice for Upper Intermediate Students by D.Powell, et al. (Pearson Longman, 3rd edition) and do the exercises. For more practice on reported speech go to Units 30 – 31 in Advanced Grammar in Use by M. Hewings (Cambridge, 2nd edition).

4. Listen to the video http://www.fields.utoronto.ca/video-archive/2016/02/2053-14675 and analyze its structure. Note down the key points of the talk. Summarize them in several sentences. How does the author succeed in keeping the audience's attention?

Tutorial 6
What to Say and Do at Each Stage of the Presentation

from *English for Presentations at International Conferences* by *Adrian Wallwork (pp. 103-149)*

Scientific reports tend to follow the same structure:

1. Introduction.
2. Method.
3. Results.
4. Discussion.

1. A good standard introduction (while showing your title slide) is to say some or all of the following:

- ✓ what hypotheses you wanted to test;
- ✓ why you chose this particular method for testing them;
- ✓ what you achieved;
- ✓ what impact this might have on your field.

Compare and analyze the examples below:

ORIGINAL

Hello, everyone! And thank you for coming. First of all, I'd like to introduce myself, my name is Ksenija Bartoli´c. As you can see, the title of my presentation is *Innovative Methods of Candidate Selection in Industry*. I work in a small research group at the University of Zagreb in Croatia. We are trying to investigate the best way to select candidates for a job and we hope our research will be useful not just in the field of psychology but also for human resources managers in general.

REVISED

Hello, I am here to talk about a new way to select candidates for a position in a company. I'd like to tell you three things. First, why I think the current methods for selecting candidates are not effective. Second, my radical alternative, which is to let the receptionist of the company make the decision. And third, how trials proved that even against my own expectations this solution reduced recruitment costs by 500%. Moreover, it was as effective as traditional interviews in more than 90% of cases. I believe that human resources managers...

Both versions are perfectly acceptable. Both are clear and reasonably succinct and you can obviously choose the one you feel most natural/ confident with. The revised version has the following advantages:

- ✓ it avoids giving information that can be easily deduced from the title slide (i.e., the name of the presenter and the title of the presentation);
- ✓ it immediately tells the audience what they can expect to hear, without having to show an outline slide;
- ✓ it covers the main messages of the presentation;
- ✓ it includes the main result of the research at a point in the presentation where the audience's attention is likely to be high—the audience doesn't have to

wait to the end of the presentation to hear what the outcome of the research was.

However, the original version also has an advantage. By delaying important information (i.e., the overview of what the presenter is planning to say) it gives the audience a few moments to settle into their seats and tune in to your voice. Even if the audience are not listening or concentrating, and even if they have an initial problem with the presenter's accent or voice level, they will still be in a position to follow the rest of the presentation. So the revised version is good provided that the audience are already focused on you, which is generally the case if you are not the first presenter of a particular session.

Note: The "original" version is perfectly acceptable but is generally less effective in attracting the audience's attention than the "revised" version.

For more information on how to begin a presentation turn to Chapter 11 "Ten Ways to Begin a Presentation" in the book "English for Presentations at International Conferences" (pp. 105-116) by Adrian Wallwork. Discuss them with your groupmates.

2. Outlines and Transitions

The logic of your presentation should be clear to the audience, that's why it is important to guide your listeners through your talk by using transition phrases.

However, it might not be a good idea to use a standard outline slide as a transition into the main part of your presentations, as all scientific presentations tend to follow the same structure – introduction, method, results, discussion. And outline slides of the following type:

OUTLINE	or	AGENDA
➢ Introduction		➢ Overview
➢ Methodology		➢ Aims and purposes
➢ Results		➢ Theoretical framework
➢ Conclusions		➢ Research methods
		➢ Empirical analysis

can hardly add anything to the listener's knowledge of the subject and can encourage the presenter to say unnecessary words. Instead, you do need to tell your audience verbally what you plan to do, i.e., your main messages. But you need to do this in a way that really gives them useful information that will help them to understand the context and structure of your presentation (as in the revised version).

ORIGINAL	REVISED
First, I will give you a brief introduction to my work. Then I will outline the reasons that led me to conduct this research. Next I will explain my methodology before discussing my results.	First, I'd like to tell you about why I am interested in incompetence in the workplace. Then, I'll be showing you how we managed to investigate this potentially embarrassing area in 10 different multinational companies. And finally, I'll show you our results that indicate that around 80% of middle managers have been promoted into a position for which they simply don't have the skills.

Use an "Outline" slide for longer presentations

An outline may be more useful when you are giving a longer presentation (20 minutes, 45 minutes) or for topics outside physical and life sciences. In this case the audience may need a slide showing the conceptual framework to help them understand the rest of your presentation. Keep it down to a maximum of four points.

An outline is also useful when you are not describing some research project, but are talking more generally about a certain issue. In this case, the sequence of your presentation may not be immediately obvious and an outline might help to orient the audience.

In some disciplines, presenters begin with a slide containing a question. This question encapsulates the reason for their research, it is the question that they hope their research will answer. For example,

How has the Internet affected parent/child relationships?

The presenter then needs to have another slide in which he/she indicates the approach or context used to answer this question. This helps to give a structure to the presentation and alert the audience to what they can expect to hear. The outline slide could thus be:

The Internet has:

- ➢ replaced time previously dedicated to family interactions
- ➢ replaced educational role of parents
- ➢ given parents a mass of info on good parenting
- ➢ provided opportunities for shared entertainment

The presenter's commentary on the above slide could be:

When I posed the question "How has the Internet affected parent/child relationships?", I began by focusing on the negative factors, such as how families spend less time together given

that most kids today have their PC in their bedroom. And, as a mother myself, I also thought about how parents are being used less and less as a source of information to help kids with school work. But then I realised that parents today can use the Internet to learn about the behaviour of their children and how they can improve their relationships with them—there is so much useful information out there. So that was one positive factor. Another positive factor is that there is a lot of fun stuff on the Internet, particularly videos on YouTube that families can actually share together, in the same way as they might watch a TV show together. So these are the four factors that I have been studying, and today I would like to focus on the first and fourth points.

Note how the presenter:

• does not read the four bullets but comments on them using different words;

• involves the audience in the story of her decision-making process;

• uses an informal but nevertheless professional style;

• tells the audience that she is only going to talk about two of the points – she wouldn't have time to talk about all four, and this enables her to talk about two in more detail.

Use transitions to guide your audience

You know two very important things that the audience does not know:

- what you did and found in your research;
- the sequence of your slides and why they follow a particular structure.

You need to help the audience follow your presentation. You cannot jump from one slide to the next at great speed. If the audience misses one particular point, they may lose the thread (i.e., the links, logical flow) of the rest of the presentation. The way of moving from one slide to another, and from topic to topic, is crucial. For the audience it should be like following a map, and you need to make it very clear to them whenever you make a turn. Also, at each turn it is helpful if you summarize for them what you have told them so far. Those in the audience who missed a previous turn now have an opportunity to get back on the right road. This is different from a paper, where readers can, if necessary, just retrace their steps. In a presentation, these moves or turns are called transitions.

Before you move to the next section or group of slides:

1. Pause for two seconds. This signals to the audience that you are going to say something important.
2. Look at the audience and give a quick summary of the most important things you have said so far. Repetition may seem boring to you because you know the subject so well, but it gives the audience a chance to check their understanding.
3. Move on to the next section explaining how it relates to the previous one.

Exploit your transitions

A transition is a good opportunity for:

• you to slow down or change the pace of the presentation;

• the audience (and you) to relax a little—remember that the audience cannot assimilate vast quantities of information in quick succession;

• you to regain the audience's attention by making them curious about what is coming next.

Signal a move from one section to the next

Imagine at the beginning of your presentation you say something like, *"I am going to give you the three most important findings of our research."* Then the most obvious transition from the introduction to the main part of your presentation would be to say, *"Okay, let's look at the first result."* Then later, when you introduce the other two results, you can introduce them numerically *the second, the third.*

If your structure is methodology, results, and discussion, then between methodology and results you could say, *"Okay, so that covers the methodology, now I am going to outline our results, one of which was really quite unexpected."* This reassures the audience that there is a plan to your presentation, and that they are being guided from step to step. The second part of the above transition — *One of which was really quite unexpected* — highlights another benefit of transitions. You can use transitions to regain audience attention by getting them interested in hearing what you are going to say next.

Only move to the next slide when you've finished talking about the current slide

It is a good idea not to spend more than two minutes on one slide. The audience will soon get bored looking at the same slide and start thinking about something else. Don't move on to the next slide before you have finished talking about the current one. Otherwise, the audience will stop listening to you and start absorbing the information on the next slide.

Only use an introductory phrase to a slide when strictly necessary

When the sequence of slides within a section is logical, you often don't need any expression to introduce the next slide. The transition shouldn't need any introductory explanation.

Instead of saying, *"In this next slide we have a diagram of X which shows how to do Y",* you can simply say, *"Here is a diagram of X which shows how to do Y,"* or even more succinct, *"Here is how to do Y."* By avoiding unnecessarily long introductory phrases the impact of your slides will be more dramatic.

Be concise

If you don't practice what to say when making transitions, you will probably improvise and say something like:

> OK, that's all I wanted to say at this particular point about the infrastructure. What I would like to do next in this presentation is to take a brief look at the gizmo. This picture in this slide shows a gizmo. As you can see a gizmo is a . . .

Instead of attracting the audience's attention, the above phrases are full of redundancy, add no information, and are likely to send the audience back to sleep. Try to make your transitions memorable.

> OK, here's something that you may not know about a gizmo: blah blah blah. In fact, you can see here that a gizmo is . . .

Add variety to your transitions

Try to vary your technique for making transitions, so do not always use the same phrase. Here are some alternatives:

Turn the screen off: this immediately regains the audience's attention. You can then write something on the whiteboard or say something orally.

Ask a rhetorical question: For example, you can say, *"Have you ever wondered why it is impossible to predict when your PC is going to crash? Well, after I have summarized what we have just looked at, I am going to tell why experts think it is impossible but how we think we have actually managed to solve the problem."*

Give the audience something to look forward to: The example above shows how you get the audience to concentrate now by telling them you will be giving them interesting information later. Another example: *In the next slide I will be showing you some fascinating data on xxx, but first . . .* or *Later on, we'll see how this works in practice . . .*

Signpost: Tell the audience where you are in the structure of your presentation. For example, if you say, *"And now to sum up briefly before the Q&A session"*, you are alerting the audience that you presentation is nearly over.

3. Methodology

Give simple explanations and be careful when giving numbers

Explain things in a way that the audience does not have to make a big mental effort. Your audience will probably only be able to absorb about 40% of what you are saying. So it helps if you repeat anything complex for them—do not expect them to understand everything the first time.

If you use numerical examples, make sure the numbers appear on the slide as it is very difficult for audiences to mentally translate numbers at great speed into their own languages and then be able to follow the example.

Give examples first, technical explanations second

The methodology part should be one of the highlights of your presentation and you should have fun explaining it. It helps the audience to follow a technical explanation if you give examples and intuitions first and then explain the process. If you begin with theoretical aspects, you will probably lose the audience and maybe get lost yourself. If you begin with a simple example, you gain the attention of the audience and gain confidence yourself.

Reduce redundancy

Be brief and only talk about what is strictly necessary. Only spend more time if how you did something is more important than what you achieved, i.e., if your methodology is more important than your results or if at this stage in your research you have no results. In this case, explain the steps clearly and why your chosen methodology was suitable (or not) for what you wanted to do. But again only mention what the audience really needs to know in order to make sense of what you did. Reduce any introductory phrases when describing diagrams and examples:

e.g. Here I present a panoramic view of the architecture. = This is the architecture.
Now you can see here an example of an interface. = Here is an interface.
We shall see two examples in the following slide. = So here are two examples
In conclusion we can say... = Basically, ...

Just show the key steps in a process or procedure

If you are showing your audience a process, it is tempting to show them all the steps of the process. The typical way to do this is to cut and paste a complex diagram from a book or paper, or to begin with a skeleton diagram and then gradually add new parts to it either via animation or a series of overlapping slides. This has three major problems:

- audiences can recognize a cut and paste—it gives the idea that you couldn't find the time to create something specifically for them;
- the animation may not work (due to the transfer from your PC to the conference PC);
- gradually building up a diagram may take too long and can be very tedious for the audience. Also, if you realize that it is taking too long, you will probably speed up your explanation and your audience may not grasp what you are saying.

The solution is to ignore any pre-existing graphics and start from scratch. This does not have to be a laborious process, because you only need to highlight the essential. Your aim is to guide the reader through the highlights of the process. If something is quite complex, then break it up into manageable steps over two or three slides—but occasionally go back one slide or two, to highlight the various

connections to the audience. If it takes more than three slides, then consider that you are probably entering into too much detail.

Explain why you are not describing the whole process

If you think people will criticize you for not explaining the whole process, you can say, "*We don't have time to look at the complete process, so I just wanted to show you this part. If you are interested in the whole process, then I can explain it in the cafë or you can look it up on my web page*."

If you are worried that someone in your audience will want to see absolutely every detail in your diagram, chart, table, or graph, then as you show your slide say, *"This is a very simplified version of . . . This is what the prototype looks like in very general terms . . . The full diagram is on my web page. I will give you the address at the end of the presentation."*

You can also use phrases that indicate that you are only talking in general terms, such as: *"For the most part, . . . Broadly/ Generally speaking, . . . With one or two exceptions, . . . As a general rule, . . ."*

Then you can:

- show a diagram of the complete process but magnify one or two parts of the process that you would like to focus on. Magnify means making those particular parts bigger so that the audience's attention is only drawn to those points. The other parts will in any case be deliberately too small for the audience to see;
- just show three consecutive parts of the process and focus on the one in the middle, showing how it is connected with the previous part and the next part;
- highlight the aspect using a circle or a particular colour (e.g., a row or column of a detailed table) that you want the audience to focus on so that they will ignore the other information;
- use a different font and a bigger font size.

Use active and passive forms effectively

You can use active and passive verbs even when describing a process in which you were/are not directly involved. Look at this extract explaining how ink is removed from magazines so that they can be recycled.

When the magazines first arrive at the de-inking plant, they go through the wire cutter, which is this thing here *[indicates the wire cutter on the diagram in the slide]*. The blade of the wire cutter slips under the baling wire, cuts it and releases loose magazines onto the conveyor. Now here you can see how the magazines then move up the conveyor to a pulping machine, which stirs the paper until a thin pulp is formed. After the magazine pulp has been thoroughly cleaned, it is piped to the final step - the paper machine, which you can see here.

Where she can, the presenter has used the active form (in the first part of the description: arrive, move, cuts, releases, etc.). In the last sentence she decides to

use the passive (is formed, has been cleaned, is piped, etc.). This is because the recipient of the action, i.e., the pulp derived from the magazines, is a more relevant subject than the machinery used to move it around, since it is this pulp that is the subject of the whole process and also the subject of this part of the presentation. Moving from active to passive also creates variety in the description, and not using the passive all the time gives energy and dynamism to the description.

Note also how the presenter guides the audience by indicating on the diagram where they are in the process and by explaining technical vocabulary by pointing at the relevant item (the wire cutter, which is this thing here).

Indicate where you are in a process

Clearly when you are describing a process, such as the above example about recycling paper, you cannot always maintain full eye contact with the audience. You may occasionally need to point at the diagram. You can do this in various ways:

- Use a telescopic pointer pen – they range in length from about 500–1000 mm and are relatively inexpensive. You can then stand to the left or right of the screen and use the pointer to indicate the item you are talking about.
- Use the pointer on PowerPoint (to turn it off, press the *A* key).
- Draw on the screen. To show the pen, press *ctrl* or *cmd* + *P* (to turn it off, press the *A* key).

It is best to avoid using the laser pointer on the remote as it can be difficult to manipulate.

Tell a story rather than sound like a technical manual

You can make a very technical explanation more interesting if you tell it like a story.

ORIGINAL	REVISED
The method was carried out as follows. Initially, X was done, which led to a failure as a consequence of ... The next attempt involved ...	First, I tried this, but it didn't work because ... So I tried that ... Unfortunately, that failed, too, probably because ... Finally, one of the members of the research group had a brainwave and ...

If you insist on giving a very technical explanation, keep it as short as possible. Also, give frequent summaries so that the audience can understand how each step is related. You can then say, *"In other words . . ."* and give a simpler summary.

In other types of presentations you may need to explain, for example, how you selected specific data from a databank. You can involve your audience much more if you:

• talk about the selection process like a story;
• use active verbs rather than passive verbs;
• exclude nonessential details.

Below are two examples. The first example is a medical study involving laser vision correction:

ORIGINAL

The protocol, approved by the University Internal Ethics Committee, was carried out in accordance with what was outlined in the Declaration of Helsinki, and eligible patients were enrolled in the study during a screening visit after providing informed consent. The study comprised 100 patients that is to say 200 eyes, with various levels of impaired vision who had been referred to the Department of Ophthalmology and Neurosurgery. The inclusion criteria covered ages between 20 and 50 years, ... Patients were not included if any of the following conditions were found to be present: corneal astigmatism =1D, surgical complications ...

REVISED

Basically, we selected 100 patients that the members of our department had seen over the last year. We decided to study patients with an age range between 20 and 50, as those are the types of people who tend to opt for laser treatment. They had various levels of impaired vision. For obvious reasons we excluded any patients who had had any of these conditions [shows list on slide].

Note how the revised version leaves out some of the details of the original (Declaration of Helsinki, ethics committee, informed consent, university department name). Although getting the approval of an ethics review committee (ERC) and informed consent from patients are cornerstones in medical research, the audience knows this already and does not need to hear it. It would only be interesting if an ERC had not given approval or if the patients had no idea what the research was about. The name of the university department was probably on the title slide and/or in the conference proceedings and is not relevant here.

This second example is from a survey on Vietnamese students' ability to write scientific English:

ORIGINAL

The research was conducted at two departments at Hanoi University of Technology, hereafter referred to as departments A and B. Ninety-four postgraduate male and female students took part in the experiment and survey. All had studied English for at least 7 years ...

REVISED

For my survey I needed Vietnamese students with a sufficient knowledge of English to be able to write technical English. Initially I started with some undergraduate students, as they were the easiest to find and had the most time available. But it soon became clear that postgraduates would be a better option, as the undergraduates did not have many assignments in English. Then another problem was that many Vietnamese PhD students actually study abroad, so it was

quite difficult to find a sufficient number all studying in the same place, and all with a good knowledge of English. In the end, I discovered two departments at the Hanoi University of Technology ...

Both of the original versions would be possible in a presentation, but audiences might find the revised versions more interesting because:

- the original versions sound like they were lifted directly from a paper. People do not usually talk in such a way. The use of the passive form (in the example describing the recycling process) is generally a sign of formality and is more often found in writing.
- the revised versions make the presenter the protagonist (the main actor), the presenter talks the audience through the decision-making process in a way that makes the presenter seem like a real human being rather than an anonymous provider of information.

Bring your figures, graphs, etc. alive

Constantly think to yourself: "Why should the audience be interested in what I am saying?" If you show a figure, bring it alive to the audience. Try and transmit some of that energy you had when you were doing your research and you got your great/unexpected results.

Compare these two versions of a presenter's commentary of a slide showing a diagram of how a software application (jscope) works.

ORIGINAL

As you can see, this picture shows the framework of our software and illustrates that the storage of the information can be arbitrarily distributed, that the registration of the resources is guaranteed by a library, and that the discovery of the information is simplified by another library.

REVISED

So, here's the framework. jscope has loads of features. *[pause for two seconds while the audience looks at the diagram]*. I particularly like three things about it. First, you can get anyone to store info completely randomly. Second, this library here took us months to compile. But what it does is to guarantee that resources are registered. Third, this other library helps you to find the info you want.

Note how the revised version:

- numbers the three features, thus making it easier for the presenter to list them and easier for the audience to assimilate them;
- avoids excessive use of nouns (storage, registration, discovery);
- uses the active rather than the passive voice;
- uses personal pronouns (I, us, we, you);
- cuts words that may be difficult to pronounce (e.g., arbitrarily);
- uses more words than the original, but this is compensated for by its high digestibility factor (seven short sentences versus one long sentence).

For more information on describing figures, graphs etc. see Sections 9.11, 9.12, 9.13, and 9.14 of Chapter 9 "Visual Elements and Fonts" in the book "English for Presentations at International Conferences" by Adrian Wallwork. Discuss them with your groupmates.

Equations, formulas, and calculations

Equations, formulas, and calculations are difficult and time-consuming to explain. If you need to mention an equation or formula and not to explain math in detail, just talk about its importance and how it relates to your study. You can then give details in a handout. For example, describing the formula below you could say:

$$\mathrm{kV(s)} = \frac{\mathrm{q1S(s)} + \sigma\mathrm{2T(s)}}{\beta\mathrm{3U(s)}}$$

I am not going to explain the details of this formula—you can find them on my website, which I will give you at the end of the presentation. Basically, the formula says that if you want to analyze how easy it is to understand a written sentence, then you shouldn't just concentrate on how many words are used, but also the stress (S) and the time (T) involved in trying to understand it. So, U stands for the level of understanding. Using this verbosity index, we found that scientific papers are 37 times more difficult to read than advertisements for products.

4. Results and Discussion

This is the part of the presentation that may be of most interest to the audience but it comes at a point when the audience's concentration is likely to be at its lowest. An audience will forget more than 75% of what they hear within 24 hours, so informing them of all the details of your results is a waste of time.

Tell the audience what they need to know—not everything that you know

Your findings and results should generally be the highlight of your presentation. The audience just need brief answers to the following questions:

- What did you find?
- Was it what you expected?
- What does it mean?
- Why should we be interested?

In a 10-minute presentation, this part should be just a couple of slides. It is not advisable to introduce interesting side issues, as they might confuse the audience. Try to avoid the temptation to give the audience a full Wikipedia explanation. If you present a slide full of information, you yourself know what is important and where to focus your eyes, but the audience doesn't.

Explain statistics, graphs, and charts in a meaningful way

The statistics that you give the audience (whether your own statistics or those of others) will be very familiar to you, so there is a natural tendency to explain them too quickly and in too much detail. The secret is just to select a few and explain them in a way that the audience can understand.

Communicate the value of what you have done—put your results in the big picture

For you it may be clear how your results fit in within the current state of the art, but for your audience it may not. Tell the audience how your findings contribute to knowledge in your specific field. Show and tell them the benefits. Use expressions such as:

What this means is that ... The key benefit of this is ... What I would like you to notice here is ... What I like about this is ... Possible applications of this are ... I would imagine that these results would also be useful for ...

Avoid phrases that might make you sound overconfident or arrogant

When you talk about your results, it is generally a good idea to leave your discussion open to other interpretations. Compare the two versions below:

ORIGINAL	REVISED
These results definitely prove that plain ethylene-vinyl acetate and cellulose are incompatible. Our results also demonstrate that cellulose fibers are more effective fillers for . . . No other researchers have previously managed to find evidence of this effectiveness. Cellulose should therefore be used in preference to ...	These results would seem to indicate that plain ethylene-vinyl acetate and cellulose are incompatible. We believe that our results also highlight that cellulose fibers may be more effective fillers for . . . To the best of my knowledge, no other researchers have previously managed to find evidence of this effectiveness. I would thus recommend using cellulose in preference to ...

Note how in the revised version you are not removing the strength of what you are saying. In fact, you gain more credibility if you stress that you are open-minded. You show the audience that you are aware that new discoveries are being made all the time and that there may be different ways to achieve the same result.

This means of communication is called "hedging," and in presentations it should prevent the audience from seeing you as too arrogant or presumptuous.

You can protect yourself from such criticism by not stating things too categorically:

- Put *would seem to/would appear to* before verbs such as *prove, demonstrate, give concrete evidence, support* (as in the revised example above).
- Consider replacing verbs such as: *prove* and *demonstrate* with less strong verbs such as *suggest*, *imply*, and *indicate*.

• Hedge strong affirmations using modal verbs (*would, might, may, could*) for example: *this could possibly be the reason for ... this may mean that ....*
• Replace adverbs that appear to leave no room for doubt, such as *definitely, certainly, surely, undoubtedly, indisputably*, with more tentative forms such as: *probably, possibly, likely* or *it is probable/possible/likely that ....*
• Avoid preceding categorical statements such as *"No data exist in the literature on this topic"* or *"This is the first time that such a result has been achieved."* You can replace such expressions with *to the best of our knowledge, as far as I know, I believe, I think.*
• Be careful not to sound like you want to impose your ideas—the phrase *Cellulose should therefore be used* is very strong, as in this case there is little difference between *should* and *must* (they are both often found in sentences describing obligations).

Tell the audience about any problems in interpreting your results

Don't worry if there is not necessarily one unique or clear way to interpret your results. Again you can use a "hedging" technique, and admit such difficulties:

Interpreting these results is not straightforward primarily because the precise function of XYZ has not yet been clarified.
Although the physiological meaning *cannot be confirmed* by any direct observation, I believe that ...
Despite the fact that *there appears to be* no clear correlation, I think/imagine that ...
One way of explaining these contrasting results could be ...
One of the possible interpretations for such discrepancies might be ... but our future work should be able to clarify this aspect.
The results did not confirm our hypothesis, nevertheless, I think that ...

Note how many of the phrases above include modal verbs (*might, could, should*), adverbs and conjunctions of concession (*although, even though, despite the fact, nonetheless, nevertheless*), and verbs that express a hypothesis rather than 100% certainty (*think, believe, imagine*). Such phrases are all useful for making what you are saying sound more tentative.

Also, look at the words in italics in the first three sentences: the subject of the verbs (*interpret, confirm, appear*) is impersonal, the speaker does not say, for instance, *"when I tried to interpret these results."* This allows speakers to distance themselves from their results, to give the impression that the results do not depend strictly on them personally.

Be positive about others in your field

If you were Jim Smith and heard the original version below, imagine how you would feel.

ORIGINAL	REVISED
I completely disagree with Jim Smith's interpretation of his own findings. He clearly misunderstood the significance of the outliers and failed to take into account the results of the third study.	I found Smith's interpretation of his findings very interesting, though I do think there could be another reason for the outliers. Also, it might be worth analyzing the results of the third study in a different light.

Even if what the presenter said was true, you wouldn't be very happy to hear it expressed in such a negative way. As highlighted in the revised version, the secret is again to "hedge" what you are saying using the same techniques as suggested above and always be polite and constructive.

Explain whether your results were expected or not

If your results were not what you were expecting the audience will be curious to know why. Try and present the reasons in an interesting way, rather than as cold facts:

ORIGINAL	REVISED
The research failed to find agreement with our initial hypotheses. The results indicated X and not Y. Further analysis of the data revealed the necessity to effect a modification of a fundamental nature in our perspective.	I was surprised at the results, to say the least. It was actually the middle of the night, and I remember phoning the others in the team to tell them the news ... The results were not what we were expecting at all. In fact, they indicated X rather than Y. And now that we have examined the data in more detail, what we found is now beginning to cause a fundamental change of view.

When, as in the revised version, you comment on your feelings and you use a narrative style, you inevitably use more words. This is not a problem, as in this case if you were concise (like I have suggested you should always try to be), you would lose the drama and thus the interest of the audience.

Be upfront about your poor/uninteresting/negative results

A problem for researchers in some fields is that they agree to give a presentation at a conference that is scheduled 6–9 months later, hoping they will be able to present the results of some ongoing research. But they end up with unexpected, uninteresting, or seemingly inexplicable results. But as stated in the popular journal *New Scientist*, "*Science rarely delivers what scientists set out to find*." Scientists who have been in research for many years will tell you that over the course of their careers, quite a large percentage of their results were not what they were predicting. But if you ask them what they do with these "negative" results, the good scientists will tell you that they learn from them. And, they tell their colleagues about their failures so that these colleagues can learn from them, too. To do this they use papers in journals, but also presentations where they know

there are often people in the audience who will see these unexpected results as a challenge and may help find a solution.

Dr Ben Goldacre is a British medical doctor who has spent much of his career trying to get medical scientists, the pharmaceutical industry, and the mass media to be more transparent in publishing negative results. He talks about the dangers (including the death of innocent patients) of suppressing negative data. This is what he says in his fascinating and very readable book "Bad Science":

> 'Publication bias' is a very interesting and very human phenomenon. For a number of reasons, positive trials are more likely to get published than negative ones. It's easy enough to understand, if you put yourself in the shoes of the researcher. Firstly, when you get a negative result, it feels as if it's all been a bit of a waste of time. It's easy to convince yourself that you found nothing, when in fact you discovered a very useful piece of information: the thing that you were testing doesn't work. . . Publication bias is common, and in some fields it is more rife [widespread] than in others. In 1995, only 1 per cent of all articles published in alternative medicine journals gave a negative result. The most recent figure is 5 per cent negative.

The aim of a congress is to share experiences – both good and bad. If you have, or appear to have, negative results, the audience will certainly be sympathetic, and probably relieved, because most of them will have been in the same situation. So:

- admit to the audience that the results were not what you were hoping for;
- never hide the poor results or invent anything to make them more interesting;
- say what you plan to do next to resolve these problems;
- ask the audience for help—have they experienced this, what did they do? Encourage them to come and talk to you later.

If you don't do the above, you risk giving a bad presentation because you won't be motivated to prepare well, thinking that your results are not interesting, and thus your presentation is unlikely to be inspiring. In any case, consider asking your professors and colleagues about how they resolve the problems of presenting negative or unexpected data.

Encourage discussion and debate

Conferences tend to be much more interesting when the presenters speak convincingly about their topic, but they leave the door open to other possible approaches and interpretations. Also, they are willing to discuss any limitations in their research. If you follow this practice, you will:

- Sound more credible. You will seem confident enough to give the audience space to suggest alternative interpretations;
- Sound less arrogant. Your aim is not to lecture to the audience like a university professor, but rather to discuss your ideas with them. It is important that your tone of voice is friendly and not hard. You do not want

the audience to be passive listeners but to be active in asking questions, both in the Q&A session and after the presentation in the café or at social dinner.

A series of presentations where ideas and results are presented in a way that there is no room for debate does not make for a stimulating conference.

5. Questions and Answers

Don't underestimate the importance of the Q&A session

If you know you have prepared well for this difficult part of the presentation, it will give you confidence. In addition, the questioners may be the same people that could help you clarify important points about your research or who may want to collaborate with you or invite you to their lab.

You may feel that the worst is over and you can relax. But don't feel too relaxed because you need to be completely focused to answer questions, particularly difficult ones. If you are very hesitant or seem unsure about your answers in the Q&A session, then much of the positive impact of your presentation will be lost.

Be very careful of your body language. For example, presenters who fold their arms may be perceived as being defensive.

Prepare in advance for all possible questions

Practise your presentation in front of colleagues, friends, and relatives, and ask them to write down three questions that they would like you to answer. Choose the ones that you think are the most relevant, then prepare answers to them. If you have thought of all the questions your audience are likely to ask, it will enable you to:

- seem professional in your immediate ability to answer a question;
- stand a better chance of understanding (in terms of the words the questioner uses) such questions when they are asked;
- prepare in advance extra slides to answer such questions;
- prepare yourself mentally for difficult questions from difficult people, and during the session remain calm and polite.

Learn what to say before you introduce the Q&A session

Some things you might want to say before the question and answer session are:

- tell the audience where they can find relevant documentation, handouts, etc.;
- tell them whether they can/should contact you (give your details) or someone else;
- thank the audience;
- ask them if they have any questions.

Note: if you are at a conference and the chairperson is present, then he or she will generally invite the audience to ask questions.

Give the audience time to respond to your call for questions

When you say, "*Does anyone have any questions?*", give the audience more than just a few seconds, even if you secretly hope that no one will ask you anything so that you can finish and return to your hotel room! On the other hand, if you are worried that no one will ask you a question, you can:

- arrange for one of your colleagues to ask a question that you have already prepared for him/her;
- ask yourself a question, e.g., *One question I am often asked is ...*

Get the questioner to stand up and reply to the whole audience

Sometimes the reason you or the audience can't understand the question, is because the questioner is sitting down and he/she cannot be seen or heard very easily. Simply say: *"Do you think you could stand up and speak a bit louder? Thank you."*

This has the added advantage that you have a second chance to hear the question yourself!

Answer not only the questioner but the whole audience. Good presenters tend to maintain eye contact with all the audience, but keep going back to the questioner to check from their body language (e.g., nodding, positive smiling) that he/she is satisfied with the answer.

Repeat the questions

If your audience is quite big, repeat any questions from the audience so that:

- the rest of the audience can hear the question clearly – this is particularly true if the question comes from someone in the front row, as the back rows will not be able to hear it;
- you can reformulate any contorted questions;
- you have time to think about an answer;
- the questioner can check that you have understood his/her question.

In any case, give yourself two to three seconds to formulate your answer before responding.

Remember that it is not just your fault if you can't understand the question

Your ability to understand the questions depends not just on you. It is also the responsibility of the questioner to phrase and enunciate the question in a way that you will understand it. So, if you don't understand a question, particularly from a native speaker of English, simply say, *"I am sorry, but like many people in the audience, I am not a native English speaker. Could you speak a little more slowly please? Thank you."* Alternatively, you could say: *"Would you mind emailing me that question, and then I will get back to you? / Do you think you*

could ask me that question again during the coffee break? / Sorry, I really need to check with a colleague before being able to answer that question."

Don't interrupt the questioner unless ...

Most people don't appreciate being interrupted when they are asking a question. However, if they are clearly having difficulty in expressing themselves and you feel it would be right to help them, you could say, "*So you are asking me if . . .*" Basically you are anticipating what they want to say, and saying it in your own words for them.

If their question is taking a very long time to ask (particularly if it seems that they are just using the opportunity to talk themselves), you can say, *"Sorry, I am not exactly sure what your question is. I think it might be best if you asked me in the café."*

If you realize that the question has limited interest for the rest of the audience, respectfully say to the questioner: *"For me this is a fascinating topic, but I think it might be best if we discuss this during the break. If that's okay with you. Now, does anyone else have any questions?"*

Be concise

When answering a question, it helps to be concise, particularly as you might otherwise forget what the original question was. If the question only requires the answer *yes* or *no*, you can be suitably brief and move on to the next question.

Sometimes you will get two-part questions. It's generally the best option to choose the part of the question that is simplest to answer first. If you forget the other part of the question, you can ask them again, or move on to another question, and then go up to the person after the presentation and talk to them directly.

There are some questions that you could discuss for hours, but the questioner is not asking you to tell them everything you know about the topic, but just what is relevant now. If you are tempted to begin a long conversation with someone in the audience, offer to meet up later.

Always be polite

Very occasionally questioners in the audience seem to want to provoke us, and one natural tendency is to become defensive. However, if you watch professional presenters they never say anything negative about other researchers or their findings. Likewise, you don't need to take any criticisms or objections personally. Simply say: *"I think you have raised an interesting point and it would be great if we could discuss it in the café. / I was not aware of those findings. Perhaps you could tell me about them at the social dinner."*

Be aware that some people just ask questions to demonstrate their own knowledge. In this case, you can say: *"You are absolutely right. I didn't mention that point because it is quite technical/because there was no time. But it is covered in my paper."*

Homework

1. Study Unit 4 (Module 2) in the coursebook "English for Academics" (Book 1).

2. Study Units 41–42 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Write down what you are going to say in your report. Bear in mind the advice given in this section.

NB! Turn to Chapter 17 Useful Phrases in English for Presentations at International Conferences by Adrian Wallwork and choose the phrases that might be of help to you.

4. Grammar Point: Conditionals and the Subjunctive Mood
Study Units 65 – 71 in Grammar Practice for Upper Intermediate Students by D. Powell, et al. (Pearson Longman, 3rd edition) and do the exercises. For more practice on how to express hypothetical meaning turn to Units 81 – 86 in Advanced Grammar in Use by M. Hewings (Cambridge, 2nd edition).

5. Listen to the presentation http://www.fields.utoronto.ca/video-archive/2015/07/338-4861. Is it easy to follow the speaker? Why? What parts are there in his talk? How does he communicate with the audience?

Tutorial 7

1. Read the articles "Talks Are Not the Same As Papers" and "Be considerate of your audience" by Terry Tao, who was awarded the Fields Medal in 2006 "for his contributions to partial differential equations, combinatorics, harmonic analysis and additive number theory"[7], as well as the Breakthrough Prize in Mathematics in 2014. Say what advice he gives to the reader. Summarize the articles and write an abstract.

Talks Are Not the Same As Papers

https://terrytao.wordpress.com/career-advice/talks-are-not-the-same-as%20papers/

The mediocre teacher tells. The good teacher explains.
The superior teacher demonstrates. The great teacher inspires.
(William Ward)

It is difficult to give good talks, especially when one is just starting out one's career.

One should avoid the common error of treating a talk like a paper, with all the attendant details, technicalities, and formalism. (In particular, one should never give a talk which consists solely of transparencies of one's research paper!) Such talks are almost impossible for anyone not intimately familiar with your work to be able to follow, especially since (unlike when reading a paper) it is difficult for an audience member to refer back to notation that had been defined, or comments that had been made, four slides or five blackboards ago.

Instead, a talk should complement a paper by providing a high-level and more informal overview of the same material, especially for the more standard or routine components of the argument; this allows one to channel more of the audience's attention onto the most interesting or important components, which can be described in more detail.

A good talk should also be "friendly" to non-experts by devoting at least the first few minutes going over basic examples or background, so that they are not completely lost even from the beginning. Actually, even the experts will appreciate a review of the background material; even if none of this material is new, sometimes you will have a new perspective on the old material, which is of interest. Also, if you organize your presentation of background material correctly, your treatment of the new material should flow more naturally and be more readily appreciated by the audience.

[7] http://www.mathunion.org/o/General/Prizes/2006/TaoENG.pdf

One particularly effective method is to present a proof of New Theorem Y by first reviewing a proof of Standard Theorem X in the style of the proof of Y, and then later in the lecture, when the time comes to prove Y, just note that one simply repeats all the steps used to prove X with only a few key changes, which one then highlights. (Of course, it would be a good idea to keep the proof of X on the blackboard or on screen during all of this, if possible.) This often works better, and can even be a little bit faster, than if one skipped the proof of X "to save time" and started directly on the proof of Y.

There are three main formats in which one gives mathematical talks: blackboard (or whiteboard), transparencies, and computer presentations. They all have their strengths and weaknesses:

1. Blackboard talks are very flexible, allowing for rather nonlinear and adaptable presentations. A good lecture hall with plenty of blackboard space allows for the audience to see a large part of the talk at any given time, making it easier to follow and to refer back to previous parts of the talk.
2. Transparencies can convey detailed information, such as tables, computations, or graphics, efficiently and rapidly (sometimes too rapidly!). If two projectors are available, make full use of both; in particular, it can be invaluable to have a key transparency with some crucial definitions or theorems on one of the projectors during the main part of your talk.
3. Computer presentations are of course excellent for animations, graphics, and other "eye candy", although one should not let the style of the presentation obscure the substance. They also have the advantage of being easily made available on-line. One can also use "hypertext" features, such as popup windows, to good effect, although this requires some careful thought and planning to be effective.

One should try to keep these various attributes in mind when designing the format and content of one's talks. Sometimes a hybrid approach works well (e.g. transparencies for some key details, blackboard for the intuitive "big picture", and/or computer for illustrative examples). Note also that some conferences (particularly those held in conference centers or hotels) may not have blackboards or overhead projectors available.

It takes a bit of practice to figure out how much material one can fit into a given time frame (e.g. a 50 minute lecture). Cramming in too much mathematics, or running hopelessly over time, is generally not a good thing, unless your work is really, really exciting (and this, honestly, only occurs very rarely). It therefore is a good idea to move the more "optional" part of the talk to the end, so that it can be easily dropped or abridged if necessary. After a while, you will get a sense of how many of your slides or how many pages of your handwritten notes can typically be presented effectively in any given time frame. I of course can't tell you what these

numbers will be for you, since each person's style in writing slides or notes is so different; you'll have to find out for yourself.

If you have to give the very first talk of your career, it may help to practise it, even to an empty room, to get a rough idea of how much time it will take and whether anything should be put in, taken out, moved, or modified to make the talk flow better.

Be considerate of your audience

https://terrytao.wordpress.com/career-advice/be-considerate-of-your-audience/

By Terry Tao

Think like a wise man, but communicate
in the language of the people.
(William Butler Yeats)

This advice applies primarily to papers, but also to lectures and seminars (though one should also bear in mind that talks are not the same as papers).

On the one hand, one of the most important things in mathematics (though certainly not the only thing) is to get results, and prove them correctly. However, one also needs to make a good faith effort to communicate these results to their intended audience. (It may feel like you have attained some level of intellectual achievement if you can discuss a topic which is so difficult or jargon-heavy that most of your audience do not understand what you are talking about, but it is in fact a far greater intellectual achievement if you can actually communicate that difficult topic effectively to such an audience.)

Good exposition is hard work – almost as hard as good research, sometimes – and one may feel that having proved the result, one has no further obligation to explain it. However, this type of attitude tends to needlessly infuriate the very people who would otherwise be the strongest supporters and developers of your work, and is ultimately counter-productive. Thus, one should devote serious thought (and effort) to issues such as logical layout of a paper, choice and placement of notation, and the addition of heuristic, informal, motivational or overview material in the introduction and in other sections of a paper.

Ideally, at every point in the paper, the reader should know what the immediate goal is, what the long-term goal is, where various key statements or steps will be justified, why the notation, lemmas, and other material just introduced will be relevant to these goals, and have a reasonable idea of the context in which these

arguments are placed in. (In short, a good paper should tell the reader "Why" and "Where" and not just "How" and "What".)

In practice one tends to fall far short of such ideals, but there are often still ways one can make one's papers more accessible without compromising the results. It sometimes helps to sit on a paper for a while, until the details have faded somewhat from your memory, and then reread it with a fresher perspective (and one closer to that of your typical audience); this can often highlight some significant issues with the exposition (e.g. use of some specialised jargon, without ever defining the term or citing a reference for it) which can then be easily addressed.

Homework

1. Study Lessons 1–3 (Unit 1, Module 3) in the coursebook "English for Academics" (Book 1).

2. Study Units 43–44 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Present your report to your friends and ask them to give you their feedback. Do not exceed a given time limit.

4. Grammar Point: Conditionals and the Subjunctive Mood
Study Units 10 – 11 in Longman Advanced Learner's Grammar by Mark Foley and Diane Hall (2006) and do the exercises.

5. Listen to the report (http://www.fields.utoronto.ca/video-archive/2015/09/359-5238) and say how the author manages to hold the audience's attention.

Tutorial 8

1. Read the article "How to Give a Good Colloquim" by John E. McCarthy and say what aspects the author draws our attention to. Discuss them with your groupmates. Remember the advice John E.McCarthy gives while preparing your own report.

How to Give a Good Colloquium

John E. McCarthy
Washington University in St. Louis
http://www.ams.org/profession/leaders/workshops/gcoll.pdf

Most colloquia are bad. They are too technical, and aimed at too specialized an audience. Consequently, most mathematicians skip colloquia in areas not in their general field (unless the speaker is famous: mathematicians are very class-conscious). So when a conscientious speaker actually listens to the routinely ignored advice to prepare a lecture "accessible to graduate students", he or she looks out on the audience and sees only experts in the field, and feels stupid for preparing an elementary lecture.

But the colloquium should be the center of the department's week, the time when all the faculty and graduate students get together to learn of somebody else's perspective on mathematics, and to broaden their own. Many person-hours go into listening to colloquia; the speaker has an obligation not to waste them.

Here are some suggestions on giving a colloquium. They are guidelines, not absolute rules.

1. Don't be intimidated by the audience

Just because John von Neumann is in the audience does not mean you have to aim the lecture at him. All too often one hears remarks like *"I'm sure everybody here knows..."* What this really means is that the speaker knows 3 members of the audience in his or her specialty, and to avoid the risk that they find parts of the talk trivial, the speaker ignores the remainder of the audience. The speaker also incorrectly assumes that other members of the department must have at least a nodding acquaintance with their colleagues' work.

2. Don't try to impress the audience with your brilliance

Making the talk complicated so that your work appears profound is a greater sin than being intimidated, because it stems from vanity rather than insecurity. The effect is just as bad: the speaker presupposes that the audience knows what a class number field, bornology and Koszul complex are, and loses everyone. Such a talk is often preceded by an "apology to the experts", just to make sure everyone realizes that this stuff is all trivial to the great mind at the blackboard.

3. The first 20 minutes should be completely understandable to graduate students

Be honest when deciding what a graduate student knows. It does not mean that the first 20 minutes should be understandable to a student who knew everything you did just before you got your Ph.D., plus a few things you learned since then but feel you ought to have known; it means a student who just scraped by the required coursework in your area, and went into a different field. So you can assume they know what Lp is, but not what a Sobolov space or pseudo-differential operator is; you can assume they know what a manifold is, but not what Poincaré duality is; you can assume they know what a field extension is, but not what an induced representation is.

4. Carry everyone along

The rest of the talk, except perhaps for the last 5 minutes, should be understandable in outline, if not in every detail, by an alert (but not brilliant) student. This means giving informal descriptions along with (or instead of) formal definitions; explaining examples of what you are talking about; and periodically regrouping so that the audience can understand what the main idea is. Even the theorems do not have to be stated precisely: you can add the hypothesis that something be "nice" without saying exactly what "nice" means.

5. Talk about examples

Choose an example that illustrates the main point of the theorem. If you have a theorem that applies to all strictly pseudo-convex domains, but is non-trivial on the ball, just talk about the ball. Don't strive for generality. And if there are no examples that you can explain in the course of the talk, then the theorem is probably not suitable for a colloquium talk.

6. Prove only tautologies

Often the original definition of an object is not the way you want to think about it as your talk develops. It is useful to prove the (perhaps trivial) equivalence of two different ways of looking at something, so the audience can actually see the connection rather than having to take it on faith. Proving a real theorem, though, is pointless; nobody will understand the proof, not even those in the audience whom you assume are experts.

7. Put the theorem in context

Discuss the history of the problem — how it is connected to earlier results, and how it relates to the major problems in the field.

8. Pay attention to the audience

When teaching calculus, you know (or should) that looking at students' faces is a good way of gauging how they are following the material, and whether you

need to slow down, or to go back over what you have just done. Do the same when giving a colloquium (and just because one person in the front row is nodding in agreement does not mean that everyone is following). I was once at a colloquium where, 3 minutes into it, a member of the audience asked: "Could you define a von Neumann algebra, please?" The audience member, as the speaker knew, was an expert in von Neumann algebras. The question clearly meant "You are pitching this talk at too high a level — make it more elementary." Unfortunately, the speaker did not get the hint, gave a quick definition, and proceeded to give a very erudite talk that at most 2 of the 40 people in the audience could follow at all.

9. Don't introduce too many ideas

I once went to a talk (given to an undergraduate audience), in which the speaker started out by defining a manifold, and 30 minutes later was talking about Chern classes. This was ridiculous. Even though he defined everything logically necessary to understand the definition, nobody who started out not knowing what a manifold was could have absorbed all the ideas necessary to understand what a Chern class is. We know that, when teaching calculus, one cannot on the first day of class give the definition of a limit, derivative and integral and go on to prove the fundamental theorem of calculus. So, too, every member of the colloquium audience can only take in a couple of new concepts. If you introduce too many, the audience will cease to understand you.

10. Write an abstract

The main purpose of the abstract is to advertise your talk and to attract people's interest. It should also indicate the level at which the talk will be pitched, and what prerequisites will be assumed. Be honest — if you say your talk is accessible to graduate students, make sure that it is.

11. Find out in advance how long the colloquium is, and prepare accordingly

Some are 50 minutes, some are 60 minutes (ours are 57 minutes long, after the audience settles down and the introduction is made). It is all right to end 5 minutes early; it is not all right to end 5 minutes late.

12. Don't use an overhead projector

It is possible to give a good talk with an overhead projector, but most people are better off without them. Even if you can resist the temptation to go too fast, there is still the insuperable problem that material does not stay around long enough. During a blackboard talk, if I forget what T_1 is, or was not paying attention when it was defined, I can look at the other side of the board and be reminded. In a well-designed lecture hall with plenty of blackboard space, you should have to erase something only after it has been on the board for at least 30 minutes; the important things can stay unerased for the whole lecture. If you have

complicated pictures to show, then you may be forced to use an overhead projector. Try to set it up on one side, so that you still have plenty of blackboard space for the non-pictorial part of your talk.

13. You do not have to talk about your own work

There is much to be said for talking about somebody else's work. Unless you happen to have recently revolutionized the field, your latest theorem is probably pretty technical, and by the time you explain everything necessary to understand the statement, you will have lost much of the audience. But if you are willing to talk about somebody else's work, you can (i) choose a more important theorem and (ii) more easily simplify it to get the big idea across (if you sweated for 6 months to get the extra epsilon in the theorem, you will want to include it; if somebody else sweated for 6 months, you can easily drop it). It is, of course, rare for a colloquium speaker not to mention his or her own work, and it is perfectly legitimate to want to let the audience know what you have been doing. But you should give a broad overview of the field, and wait till the end to describe your latest contribution.

I end with some advice to audience members and colloquium organizers.

1. Don't be too polite

I have heard terrible colloquia from senior mathematicians, who have been giving bad talks for 30 years. I can only conclude that they do not realize their talks are bad. Why? Because afterwards, people come up politely and say, *"Nice Talk"*, thinking it is a harmless white lie. It is not: it means that the next unfortunate audience will have to sit through a bad talk, the speaker obliviously thinking that he or she is doing a great job.

2. Subsidize graduate students who dine with the speaker

An important part of the colloquium is the post-colloquium dinner, where people chat with the speaker about their departments, exchange gossip, and discuss mathematics. A relatively quiet restaurant that facilitates group discussions should be chosen. It is good for graduate students to come to these dinners — it is part of joining the mathematical community. Faculty should ensure that graduate students can afford to do so by subsidizing their share of the bill.

3. Consider asking the speaker to give two talks, a seminar and a colloquium

In the seminar, the speaker can describe his or her latest theorems in detail, and what clever ideas went into the proof. At the colloquium there is then less incentive to try to impress the audience. It is an honor to be invited to give a colloquium. It is not the occasion to tell a few of your friends the details of your

work. It is your opportunity to show mathematicians in other areas and other fields the exciting work that is going on in your area. Seize this opportunity.

The author would like to thank Steven Krantz for many valuable suggestions.

Homework

1. Study Lesson 4-6 (Unit 1, Module 3) in the coursebook "English for Academics" (Book 1).

2. Study Units 45–46 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Listen to the geometric analysis colloquium and discuss the advantages disadvantages of the chalk presentation (http://www.fields.utoronto.ca/video-archive/2014/03/252-3071). Do you think the author manages to convey the ideas to non-specialists? If yes, say how he does it.

4. Grammar Point: The Article

Study modules 3, 4, 5 in English for Research: Usage, Style and Grammar by Adrian Wallwork and Units 1-4 in Longman Grammar Practice by D.Powell and do the exercises.

Tutorial 9

1. Read the "Tips for Giving Talks" by Jordan Ellenberg, an American mathematician, Professor of Mathematics at the University of Wisconsin–Madison. Discuss the advice the author gives with your group mates.

Tips on giving talks

https://quomodocumque.files.wordpress.com/2010/09/talktipsheet.pdf

October 13, 2005

The following are some tips about giving math talks. Some of the advice may seem obvious, but there is not a suggestion here that I haven't seen violated by someone. Often that someone was me; that's how I know this is good advice.

Planning

• Know how much time is alotted for your talk. Break your talk down into sections and know how much time you mean to spend on each; write schedule notations ("10 minutes," "35 minutes") at the relevant points in your notes so that you'll realize in time if you're far behind or far ahead.
• Know your audience. Will you be speaking in front of graduate students? Experts in your research area? Mathematicians from a variety of areas?
• Practice your talk in advance, with a real audience – one person is enough. No matter how carefully you write your notes, there's going to be some howling mistake that you don't notice until you are actually standing at the board in front of another human being trying to explain your argument.
• If you're using slides, make the slides before you leave on your trip. If you're not, you may find it useful to TeX up notes: what you scrawl on the back of a paper towel may make sense to you when you write it, but less so when it's time to give the talk, and even less the next time you have to give the same talk.

What should go in the talk?

• Tell a story. At the beginning of your talk you should mention some topic, problem, or theorem that everyone will agree is interesting. Your goal is to present a question to which the audience will want to know the answer; this provides suspense. You then satisfy the audience by providing the answer, or providing a partial answer, or providing the answer to an analogous question...

• Explaining too little is a much more common problem than explaining too much, especially among younger mathematicians with something to prove. Nobody ever gets mad at you for spending the first 15 minutes of the talk explaining your

problem to those who have never thought about it before; even the audience members who are familiar with your problem will learn from your exposition how you think about it.

• On the other hand, you don't need to include a formal definition of every mathematical entity that appears in your talk. If you are talking about modular forms, you don't need to spend 10 minutes going through the precise definition; this will be boring for people who know the subject and unenlightening for those who don't. It is enough to explain that a modular form is a function on the upper half plane which satisfies certain transformation laws under the group of M¨obius transformations, and which satisfies a certain growth condition as the imaginary part of τ goes to ∞.

• How do you know if you're including too much exposition? In an hour talk, you should make sure to start speaking about your own work, at latest, halfway in. In a 20- or 30-minute talk, especially if the theorem is fairly technical, you may have to devote the body of the talk to definitions and motivation and trim your discussion of your own work to a theorem statement near the end.

• The most interesting part of your paper to you is the technical obstacle that you overcame in Lemma 5.23 by cleverly estimating for an error term. Be warned that this is not the most interesting part to your audience. Spend your limited time explaining why the theorem is interesting and what the large-scale architecture of the proof looks like. If there's no time for both, explaining why the theorem is interesting takes precedence. If you leave out details, people will ask you about them after the talk – but if you leave out the motivation, people will just tune out!

• Make it clear which results are yours – and which are not. You don't need to give full bibliographic references on the blackboard – it's sufficient, when mentioning someone else's result, to give the authors' names and a publication year.

• Try to include examples if at all possible. Examples clarify the main points, and give people who may have drifted away a chance to return their attention to your talk.

• Never say anything negative about your theorem or yourself in your talk – don't say your theorem is "trivial," or that your paper contains "no new ideas," or that you'd like to generalize your theorem to arbitrary Kahler manifolds but "you don't understand them." A wise person once told me, "There are plenty of people who will be happy to tell you if your theorems are trivial – there's no reason to do their work for them." Perhaps this is obvious, but you should also avoid saying negative things about other people's theorems!

Slides and blackboard

• For an hour-long seminar, most people prefer the flexibility of a blackboard talk: the blackboard gives you the flexibility to add or omit material as you see fit, and it forces you not to go to fast. For a half-hour talk, the time-saving that comes with slides usually makes them a better choice. Slides are also useful if the talks require a lot of complicated diagrams and pictures; of course, in a case like this you can give your talk primarily on the blackboard and show one or two slides when it's time for your diagram.

• The main thing to remember about slides is that it's easy to put too much information on each one. If your slide looks like a page of your paper, there is too much stuff on there. A good rule of thumb: you should allow between 30 seconds and 1 minute per slide, and the slides should have little enough text that it should take no more than 1 minute to read every word aloud.

• Don't cover your slides, revealing each line as you present it. This means that the last line of your slide will be in view for about 5 seconds; annoying for everyone who's taking notes. Similarly, if you're writing on the blackboard, don't write something down and then immediately erase it!

• Number your slides. Someone asks a question at the end of your talk – you have to rummage through your slides to find the relevant one – now they're randomly permuted and you have to fix this problem before the next time you give the talk.

• Handwritten slides are fine if your handwriting is neat. Otherwise, TeX them up – but use a large font so you're not tempted to violate the 1 minute rule! LaTeX provides a "slides" document class which makes perfectly nice slides; if you really need something more fancy (e.g. if someone asks you to give a "PowerPoint-style" talk) you can use a package like LaTeX-beamer or prosper.

During the talk

• *Don't go overtime*. The three surest ways to irritate the audience, in ascending order of irritatingness, are: a) incomprehensibility, b) overpacked slides, and c) going overtime. Cases a) and b) at least have the mitigating feature that your audience can ignore your talk and they've only wasted an hour of their time. But c) is really pushing it. If you have planned the timing of your talk well, you shouldn't find yourself with 5 minutes left and 20 more minutes of material. If you do, be realistic with yourself about what you can really say: it's better to make one point clearly than two points incoherently. If there is something you feel you absolutely must mention and there's no time, an acceptable last resort is to say "I'm sorry, it seems I've used up my time; I didn't get to talk about the equivariant-hyperlocal

case, but I'd be happy to do so in the question period if anyone likes." Someone will oblige you.

• One way you may, through no fault of your own, end up in a rush is if there are lots of questions throughout the talk. This is, of course, great for you, because it means people are paying attention. If you feel a question is taking you too far away from the main point of the talk and you are worried about time, it's perfectly acceptable to say to the questioner, "Let's finish discussing this point after the talk."

• It's natural to find yourself aiming the talk directly at the person who's sitting in front, who you know understands your problem, and who is nodding vigorously throughout. Try to avoid this – that person is going to enjoy your talk whatever you do! Make sure you keep talking to the whole room.

• Finally – have fun!

Homework

1. Study Lessons 1-2 (Unit 2, Module 3) in the coursebook "English for Academics" (Book 1).

2. Study Units 47–48 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Bearing in mind the advice given by the author in the above article say whether the speaker (http://www.fields.utoronto.ca/video-archive/2014/04/252-3123) makes a successful presentation.

4. Grammar Point: Modal Verbs

Study module 12 in English for Research: Usage, Style and Grammar by Adrian Wallwork and units 31 – 35 in Longman Grammar Practice for Upper Intermediate Students by D.Powell et al. do the exercises.

Tutorial 10

1. Read the article "Giving a Talk" by an American mathematician Bryna Kra, especially paying attention to the advice on short talks.

Giving a Talk

by Bryna Kra

http://www.math.northwestern.edu/~kra/papers/talks.pdf

No one likes to sit through a bad talk, but unfortunately everyone does it much too frequently. And no one sets out to give a bad talk, but probably all of us have done so. Paul Halmos [1] wrote a beautiful article on how to give a talk and his advice remains apt today (and some of it is repeated here). But new technology, varying audiences, and different venues force modifications in how we give talks. This is subjective advice on how to give a good talk, and especially, how to avoid giving a bad talk. Of course, not all of it applies to everyone or to every situation, but my hope is that anyone reading this is provoked into thinking a bit more when preparing a talk.

1. What kind of talk?

Think about the purpose of the talk: is it a seminar? colloquium? conference? job talk? What is the target audience: is it a survey talk? aimed at graduate students? meant for experts? The answers affect all aspects of the talk, starting with the format: an "old fashioned" chalk talk? projecting via a document camera or overhead? a computer presentation?

There are no right or wrong answers, but before making a decision, think about the audience and the venue. For a survey talk with many references, a computer presentation might be appropriate. For a large conference, boards might not be available. For a small seminar, one can include details of a proof that can only be done on a board (or perhaps more accurately, should only be done on a board). Find out if the room is appropriate for using the board, particularly if it is a large room. When using technology, find out if the screen is easily visible, if it can be combined with the use of a board, and if a computer is provided. These decisions depend on the culture of the venue for the talk, but with proper planning, any presentation method available can be used to give an excellent talk geared to the appropriate target audience.

2. Plan and scope

The first piece of advice is obvious, but still needs stating: plan the talk. The talk should be a cohesive narrative, telling a story from beginning to end. Overall, plan to keep it simple. The whole audience should follow at least half of the talk, and most of the audience should be able to follow most of the talk. Do not just

address the experts; save any comments meant for them until the last few minutes of the talk.

How does one go about planning? Perhaps the best advice is a negative piece of advice: do not try to cover too much! This especially applies to computer talks – just because it is easy to ash many theorems and explanations on a screen does not mean that anyone can follow. Instead, pick a focus. Do not set out to tell the audience every theorem in a subject or every theorem from a paper, but take the time to delve into a particular aspect.

Start with a hook: a general problem or subject likely to be of interest to the audience. By providing background, history, and placing the subject in a greater context, one can pique the audience's interest before delving into any details. The exact type of motivation depends, as always, on the purpose of the talk and the target audience. For example, a colloquium on patterns in the primes might start with the Twin Prime Conjecture and one on the wave equation might start with a picture or graphic, whereas for a talk in a Number Theory or PDE seminar, one should assume familiarity with these topics.

Take time in giving the definitions or stating a theorem, and make sure that the audience has the time to digest it. If at all possible, use examples or pictures. Speakers, especially young speakers, believe that the audience knows the subject better than they actually do. But even when this is true, introducing the basic definitions and statements is a time to set notation, give the flavor of how the basics are used, and how these notions fit into the topic. In spite of what many people believe, the reality is that the speaker has probably thought more about the topic than anyone else in the room and even experts do not always remember all the definitions and basic theorems. Of course, one can go too far by including too many basics for the particular audience: for a talk in a dynamics seminar, there is no need to define the word ergodic, but one should in a colloquium. A good rule of thumb (other than for expository talks) is that at least half the talk should be devoted to your own work. You should get to your own work as early as is practical – *the earlier the better*. If left to the last five minutes, the audience does not have time to absorb the material and pose questions.

Everyone likes coming out of a talk having learned something, and the speaker should try to include some sort of proof, even in a general audience talk. It might be a very simple fact or a much simplified toy version of the real problem. If the talk is a seminar, it might be an outline of steps in a long proof or the proof of a crucial, technical lemma. If the statement or proof can be given in a simple case, do it. The audience does not need to hear the details of the most general setting in which the theorem can be proven, and can instead be directed to the paper(s). By avoiding the most general possible statement, much heavy (and incomprehensible) notation is also avoided. It is even acceptable to fib a bit in the process of keeping things simple, so long as this distortion is shared with the audience. More important than the details is the motivation of the subject, an overview of the ideas, and the intuition behind them.

Talks are meant to convey something that is not in the literature, and not just be a repetition of the introduction of a recent article. A useful exercise is to think back to how the result was proven: what were false steps? what were examples used to test the ideas? Explaining such steps can be instructive components of a talk.

For a seminar or typical conference talk, one theorem or a few related theorems are usually enough material. If the theorems covered naturally split into two different papers, then this is probably material for two separate talks. This does not mean that any result from another article ought to be omitted, but rather they should be used to bolster the main focus of the talk. Surveys are different: they should go slowly and have a goal, but are likely to include many more (inter-related) topics.

The last step of preparing a talk, particularly for inexperienced speakers, is practice. Practice the talk out loud and time it. Frequently, people are surprised to find that what they thought would be easy to say in 20 minutes really takes 45 minutes, or vice versa. Even experienced speakers benefit by saying all the words before the actual talk, even if each iteration is somewhat different. I still write every word that I plan to say, though I rarely refer to these extensive notes during the talk – just the exercise of thinking through the words improves the presentation.

3. Citations and thanks

Make it clear which results are yours and which are in the literature. Give citations for any results used and for any previous results on the same topic; there is no need to give complete bibliographic listings, just the author(s) names and years of publication suffice.

Always thank the host or hosts for the invitation. Remember to cite any co-authors and anyone else who helped with the work.

4. Computer talks

The biggest change over the past ten years has been the proliferation of computer talks, leading to a host of self-created problems. The most basic is unreadable slides: the computer is not set up correctly for projection, the type is too small, or the slide is too crowded. The first of these problems is easily corrected with a few minutes of planning. Check in advance that the file works in full screen mode and know how to put the computer into this mode. If at all possible, try the file on the computer to be used during the talk. Before the talk begins, make sure to close any other programs running in the background, especially anything that may interrupt the presentation with a pop-up.

The other two issues need to be addressed during the preparation of the talk. Simply put, computer talks do not work if the slides are too crowded. The type size has to be large and should be readable at the back of the room. This means that there is plenty of space between the lines and a maximum of about 10 lines per slide (fewer is even better). Leave out as many words as possible and do not write

full paragraphs. Beamer [2], a commonly used LATEX class for creating slides, as with most other presentation programs, comes with pre-set margins and spacings. They are designed so that one cannot put too much on a single slide, and there is no reason to override the settings.

There is also no reason to put every word on the slide and do nothing more than read it aloud – if that is the plan, just post the slides on a website and forget about giving the talk. It is better to have less on the slides and then use many words to explain what it all means. You should be able to state everything on a slide in less than a minute, but spend at least two to three minutes per slide, fleshing out the explanations. Many excellent speakers spend 5-6 minutes per slide.

A pointer or the mouse is useful for highlighting what the audience should focus on, but do not overdo it. Use it to highlight a particular object for a few seconds and then let the audience continue to look (or not) themselves. A bouncing laser pointer is a sure way to make the audience dizzy.

Some speakers like to reveal the lines of a presentation one line at a time. But this means that the last line is only visible for a few seconds before it is replaced by a new page. It is often better to show the whole slide at once and let the audience see what is coming. To draw the audience's attention to a particular statement, use the pointer, highlight the particular statement in another color (easy to do, for example, in Beamer), or use a lighter color to show the lower portions of the slide (again, easy in Beamer).

Slides are great for repeating something that is needed more than once. But that does not mean scrolling back to an earlier slide out of order. Instead, include another slide that repeats the result, instantly reminding the audience exactly what is needed – this is one of the benefits of a computer presentation.

Background graphics are almost always distracting. To get the audience to focus on the math, leave out the background of a beautiful sunset that obscures the equations and theorems. Some colors do not project well and should be avoided; particularly, many light colors do not work on rear projection screens. When in doubt, try the colors in advance on a real screen, not just on a small computer screen. On the other hand, when all the talks look the same, the audience begins to glaze over. Judicious use of color on slides can break up the monotony without being distracting. Pictures and graphics can enhance a talk, and when appropriate, an animation is an excellent tool for explaining an idea or a proof. The animations should be embedded in the file and tested in advance – no one enjoys watching a speaker search through hundreds of files on a computer.

5. Short talks

Many conferences include short (twenty minutes or less) talks. Although one might think that these are easier to prepare, in some sense they are even harder. In twenty minutes, there is no time to present all the history, give a complete proof, or enter into the details of a construction. The goal is to convey a single result or several very closely related results, and this requires stripping out all other

elements from the talk. Usually 6-7 slides is more than enough for 20 minutes. Think of a 20 minute talk as an extended movie trailer for the results: get the audience interested in finding out more.

Most advice for short presentations is the same as that for longer ones, but just compressed: the results should be placed in context, important earlier results should be cited, and there should be a hint as to the ingredients that enter the proof. Heavy notation and long statements should be avoided, even if this means that the general statement is omitted or the statements are less precise (so long as the imprecisions are made clear to the audience).

6. Language issues

For non-native English speakers, giving a talk in English can often be a significant hurdle, but there are several ways to make it easier. The first is to practise the talk, even practising it multiple times, with or without an audience. It may be easier to use a computer for the presentation and use the slides as a memory tool for difficult words or phrases. If it is more appropriate to give a chalk talk, a handout can help by summarizing key points. Always remember to speak in full sentences and try to explain everything as much as possible.

7. Pet peeves

This is a personal list of egregious errors that I have witnessed. Having said that, I am sure that I have committed each of these violations at some point, but these errors can be easily avoided:

- Do not number your theorems. To refer back to a theorem, give it a memorable name, like the "Comparison Theorem" or the "Main Estimate." No one can remember what Theorem 2 was, much less Theorem 8!
- Do not use the same letter for two different purposes, even if this seems entirely natural. For example, if there is a map that is $C2$ and a constant c, use k for the constant. Instead of using both a capital and lower case version of a letter, such as φ and Φ, use different letters unless they are very closely linked. Otherwise it is too hard to distinguish the two while talking, leading to awkward statements like "little φ" and "capital Φ."
- Do not introduce new definitions or a new topic in the last five minutes (the exception being a short talk). Instead, use this time to sum up main points, describe future directions, or address the experts.
- Do not reveal your own insecurities, with comments such as "my result is trivial" or "I would extend the result to case X, but I don't understand X" or "I am sure everyone in the audience knows more about this." Never belittle your own work, as there are many other people who are happy to do this for you.

8. Finishing up

Do not rush the talk, but do not go over. It is better to finish with a minute or two left rather than keep impatient people in their seats for extra time. Be prepared for questions at the end and leave time for the audience to ask them.

Keep in mind that you, the speaker, know more about your work than the audience does. So relax, good luck, and enjoy yourself.

References

[1] Paul R. Halmos. How to talk mathematics. *Notices Am. Math. Soc*. 21 (1974), 155-158.

[2] http://en.wikipedia.org/wiki/Beamer (LaTeX) Department of Mathematics, Northwestern University, 2033 Sheridan Road, Evanston, IL 60208

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Homework

1. Study Lessons 3–4 (Unit 2, Module 3) in the coursebook "English for Academics" (Book 1).

2. Study Units 49–50 in "Academic Vocabulary in Use" by Michael McCarthy and Felicity O'Dell (CUP, 2008).

3. Present your report to your group and discuss your results with your colleagues.