Aviation English Standards

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ATC LANGUAGE

MEANS AND METHODS

INTRODUCTION

CLA
Aviation English Team :
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Aviation English Standards was chosen as the theme of the Fourth Aviation English Forum because harmonisation of professional qualifications and examinations on a European and ultimately an international scale is currently being undertaken in many areas. Also, defining and maintaining standards of language requires language testing, a subject whose impressive development in the last decade deserves a better understanding.

It was decided to use a hotel venue this time in the interests both of efficiency and conviviality, and this was wholeheartedly appreciated. The CLA Aviation English team has increased in size from two to four, and the number of participants at this Forum also doubled. We were delighted to meet many of those who had taken an active role in the three previous conferences, and also to welcome new faces particularly those from S.E. Asia, Eastern Europe, North and South America.

As before, people expressed a great deal of enthusiasm for this opportunity to meet and exchange ideas and a desire to preserve and develop the links that were established, so the International Aviation English Association was formed and launched. In this way the dynamism produced by the Forum can be developed.

We would like to thank Air Inter for their kind help, the University of Franche-Comté for their assistance and the British Council for paying the expenses of our Keynote speaker.

The final thanks must of course go to all of you, speakers and participants, because in the last analysis it is you who made the Fourth Forum a resounding success.

THURSDAY 21st NOVEMBER

8.30-9.30 Registration in Room 'Campus'.

9.30-10.00 Opening - M. Régis CRISTIN, Directeur Pédagogique du CLA
Organisation details - Ms Fiona A. ROBERTSON

10.00-11.25 Keynote speech: plenary

Basic Principles of Language Testing
Dr Peter SKEHAN
Research Professor of English Language, West London Polytechnic.

11.25-11.45 Coffee

11.45-13.00 A Choice of four activities

Enforcement of International Standards of Phraseology in Air Traffic Control
Mr E G H GREEN, O.B.E.
Head of Air Traffic Service Standards Department, Safety Regulation Group, Civil Aviation Authority, United Kingdom

or

Means and Methods I:
1. A presentation of a language resource centre 'Espace Langues'
Mme HERVAIS and Mme Lori RONGIER, Air Inter (11.45-12.05)
2.Learner training and learner independence
Ms Gail ELLIS (12.05-13.00)

or

Simplifed English an update.
Discussion chaired by Mr Philip SHAWCROSS, Gradation.

or

Book display : KELTIC

13.00-14.30 Lunch

14.30-15.45 A choice of three activities

What are the language requirements today? - Part I -
Chair:Mr Michael O'Donoghue
Representatives of different countries explain the English language testing/examination systems in the various aeronautic professions.
Mr Michael O'Donoghue (ENAC, France)
Mr Kalevi Vainioranta (Finnair, Finland)
Mr Paul McCann (Spain)

or

Training English speakers to use and maintain a restricted language
Mr John Williams, Manager Training London Air Traffic Control Centre.

or

Book Display : KELTIC

15.45-16.00 Coffee

16.00-18.00 Four choices

Language Requirements. - Part II -

Representatives of different aviation careers (flying crew, cabin staff, ground staff, controllers, engineers) present their view of language needs and requirements. Followed by discussion on how the trainers try to ensure the needs are met. (in 2 groups)

Group I - Chair : Mr Philip SHAWCROSS
Pilot
Ground mechanic
Passenger service agent

Group II - Chair : Mr Jeremy MELL
Controller
Flight Attendant
Engineer

or

Radiotelephony: Remedial Training Workshop

Mr John WILLIAMS (delegates are encouraged to provide their own examples of incorrect RTF on short - max.2 min.- tapes or videos)

or

Book Display

18.30 FRANCHE COMTE APERITIF

(an opportunity to sample some of the specialities from the region surrounding Besançon)

FRIDAY 22nd NOVEMBER 9.00-11.00 A choice of several activities

1. Towards a European harmonisation of ATC English language standards
   Mr Adrian ENRIGHT, Eurocontrol Institute of Air Navigation Services Luxemburg, and Mr Paul DOCHERTY, English Language Division, The British Council, London (9.00-10.00)
2. Singapore Airlines Language Training Project
   Mr Paul DOCHERTY (10.00-10.30)

or

Means and Methods II
1. ATCOs training in Sweden
   Mr Bengt JAMTHAMMAR, Director, Swedish ATS Academy (9.00-9.45)
2. Teaching EST to non-native student pilots
   Mme Helena KUKOVEC, University of Ljubljana, Yugoslavia (9.45-10.30)

or

Means and Methods III :
1. Teaching beginners to read maintenance documents
   Mr David JONES, SOGERMA-SOCEA (9.00-9.45)
2. Aviation English Training in England
   Mr F.E. HERRING, Director, Anglo-Continental Educational Group, Bournemouth (9.45-10.30)
3. Reasons for incomprehension and possible solutions
   Mr Patrick BRUNET, Aviation Civile,Lyon (10.30-11.00)

or

Computer Demonstration
   ARDEMI (10.30-11.00)

11.00-11.20 Coffee

11.20-13.00 A choice of three activities

I. What happens if RT standards start to slide.
Mr Philippe DOMOGALA, Eurocontrol Guild of Air Traffic Services
(11.30-12.30)

or

Means and methods IV
Learner autonomy and the resource centre
Mr Richard DUDA, CRAPEL, University of Nancy

or

Computer demonstrations
MEDIACONCEPT (11.30-12.00)
DEFILANGUES (12.30-13.00)

13.00-14.30 Lunch

14.30-16.20 A choice of four activities

I. Tips and techniques for using video for language training
Mme Joan BELLEC, CLA, and Ms Jenny SMITH, Heinemann Books.

or

II. Presentations of International English Language Examinations
Chair : Dr Peter SKEHAN
Mr Ian BELL, TOEIC
Mr John SLADE, Cambridge Exams
Dr Alan MOLLER, London University Examinations
Ms Virginia HAMORI, American University, ACTFL

or

III. Presentations and discussion
Chair : Mr Michael O'DONOGHUE
1. What is NOT standard in real R/T?
Mr Jeremy MELL, Ecole Nationale de l'Aviation Civile, Toulouse.
2. "Social/cognitive mismatch as a source of fatal language errors"
Dr Steven CUSHING, University of Boston.

or

IV. Computer presentations
De WILDE BUYCK (14.30-15.00)
VARIETEXT (pub. by CUP)
ELT for the "Aircraft Documentation Handbook" (16.00-16.30)

16.20-16.45 Coffee

16.45-17.45 An Aviation English Association

17.45-18.00 Close : Mr E.G.H.GREEN

BASIC PRINCIPLES OF TESTING

TESTING AVIATION ENGLISH

Peter SKEHAN
Thames Valley University

Basically, testing is an attempt to:

- obtain information
  - about relevant things
    - which is important for decisions
      - and which is not subjective

Each of these aspects of testing is important to consider in general, and also important to bear in mind when testing any specific area, such as Aviation English. They will each be described in fairly general terms, and then some possible approaches to testing English in the aviation area will be discussed.

The basic issue in *obtaining information* is that a test is a method of sampling behaviour in such a way that generalisations can be made. One is hoping, that is, to gather information, following some standardised procedure, that can most efficiently be the basis for predicting how well someone will do in non-test performances. For example, one might obtain test information about businessmen and want to use it to predict how well they do in actual business negotiations. So the emphasis is on efficiency, and best use of the time available. For that reason, it is important to sample behaviour in the most principled manner possible, because this should provide the best basis for generalisation.

One approach here is to draw upon a model of underlying language competences as the basis for the sampling that is done. Currently, the most influential model of communicative competence is that of Bachman (1990). He has proposed the following structure for language abilities:

Communicative Competence

Language Competence			Strategic Competence
Organisational Competence		Pragmatic Competence	
Linguistic Competence	Textual Competence	Sociolinguistic Competence	Illocutionary Competence

Bachman is proposing, that is, that the ability to communicate in real life is dependent upon these different underlying competences. The model is complex, and although actual communication draws upon all these abilities simultaneously, we need to consider the parts of the model separately to make sense of it. First, there is a distinction between language competence and strategic competence. What Bachman means here is that strategic competence concerns the improvisation or resourcefulness abilities that we draw upon when other competences are lacking. It is used, in other words, when we hit a problem that

we cannot solve by other, more basic, competences. These other competences, called language competence, are the most important components of his model, and are themselves divided into organisational and pragmatic competences. The first of these is concerned with the formal elements, the second with the way in which we make sense of language in relation to situations. The first involves linguistic competence, (i.e. grammar, vocabulary, pronunciation - the different separate elements of the language system), and textual competence, (i.e. conversation ability, and being able to make sense of longer reading texts - knowledge, that is, about units of language longer than sentences). The second concerns sociolinguistic competence, (i.e. the capacity to use language appropriately in different situations, and to vary the way we speak to take account of different people and settings), and illocutionary competence (i.e. the capacity to reach the underlying meaning of what is said, and to work out the connections between utterances). For example, the pair of utterances "I say!", and "Empty" might be said by, respectively, an airline passenger and a steward, in the context of the steward starting to turn away from where the passenger is sitting ("I say!", from the passenger) and then the steward brandishing the coffee jug and saying "Empty". Elliptical utterances here, (and ones that might not be taught in a language class) are easily interpreted as a request for a cup of coffee by the passenger, tinged with worry (or even desperation) and a feeling that one's rights are being ignored, met from the steward with a one-word response which, in effect, says "I accept your right to expect a coffee; I will meet it later; but currently I can't do anything about it".

Bachman is arguing that each of these different parts of the ability to communicate are

important and may be drawn on in different ways to achieve communication in different situations. Further, and very importantly for testing, people may vary in how good they are in different areas, so it easy to imagine someone who is good in linguistic competence, but who is lacking in the capacity to use language appropriately and sensitively, and who may also have no improvising ability if a communication problem arises. All communication will draw upon these abilities, and so if one wants to measure underlying communicative capacity, a test will need to look at each of these areas if it is to be as representative as possible, and to be able to predict performance in a wide range of different situations, all of which will draw upon different combinations of these same basic abilities.

Tests also need to be *about relevant things*. Two aspects of this need to be commented upon here. First, it is important that tests do not simply test what tests test, as opposed to things that matter in the real world. In particular, it is important that tests are not affected too much by the formats that they use. In the last few years language testers have become much more sensitive to the effects of the testing *method* on the results that are obtained. Multiple-choice and cloze formats as well as self-report procedures are especially susceptible in this regard, so that if someone gets a certain score on a multiple choice test it is difficult to know whether the score reflects (a) language ability, or (b) the ability to do multiple-choice tests.

The second aspect of relevance here is that the test should have some sort of relationship to performance, i.e. the sorts of things that candidates are asked to do in the test should bear a

resemblance to the use of language in real life. Keith Morrow (1979) has put forward the following performance conditions which must be met if a test is to be considered truly communicative:

- unpredictability
- time pressure
- a context and a purpose for communication
- interaction-based
- authentic materials
- outcome evaluated

By producing test formats which meet these conditions, Morrow is suggesting that we will be dealing with communicative tests which will be more convincing as the basis for judgements about how people are actually able to handle language. The conditions, that is, are a threshold or minimum that need to be met before a test format can be taken seriously.

This brings us to one of the fundamental problems of language testing - that there are tensions when one tries to satisfy what may turn out to be conflicting criteria. The "obtaining information" approach, associated with a framework such as Bachman's, and the "performance testing" approach, perhaps associated with Morrow, are both concerned with the basic issue of test *validity*, i.e. whether a test is measuring what we want it to measure. The problem is that the two approaches take different perspectives to the same basic problem, and as a result lead us in different directions.

The Bachman approach provides a framework for the systematic sampling of underlying abilities. The justification for doing this is that the more effective the sampling is of the range of underlying abilties, the better will be the basis for generalising to new situations, because all real-life communicative situations will draw upon these underlying or foundational abilities to some degree. By having wide-ranging measures of the basic abilities, it will be easier to make prediction to a range of target language use situations, and this can be done equally well to different target situations, provided one knows how the different underlying components relate to these different areas and what adjustments have to be made in each case, e.g. more emphasis on strategic competence in one situation, more emphasis on sociolinguistic competence in another.

The Morrow approach, in contrast, does not attempt to achieve generality, and the capacity to make flexible predictions in a range of situations. Instead, it suggests that we should focus on specific situations, identify how communicative criteria can be met in these situations, and then design tests which may be very specifically focused (and perhaps limited therefore in their potential for prediction), but which bear a direct relationship to the specific language situation to which we want to predict. We will return to this issue and to the inevitable compromises it involves when we look at practical testing decisions later.

We next need to consider the issue of obtaining *important* information, i.e. information which enables decisions to be made rather than simply the accumulation of information for

its own sake. We are concerned, that is, with how tests can be used purposefully. There are two basic aspects to this - the issue of what the decision is about, and the issue of what sort of evidence is used as the basis for the decision.

As regards the former, the main contrast is between information and decisions about *learning*, on the one hand, and *general language proficiency*, on the other. In the first case we are interested in the nature of the teaching that has taken place, and the learning that has been produced by it. The decision, in other words, is about how much of what has been taught has been learned. In the second case the focus is not on the teaching that someone has received, but instead on someone's general ability in a language. The decision is therefore more likely to be about what someone can do in the language, or perhaps what strengths and weaknesses they have and what they can do best.

But another way to think about the decisions that are made is to ask what the evidence is on which the decision is actually based, and what sort of number or result a test system gives us. In this respect the most important decision is between norm and criterion referencing. The former type of test is one where (a) the test gives some numerical score about any particular candidate, and (b) this numerical performance of a candidate is judged in relation to the other candidates who took this same test. Consider, for example, a 100 item multiple-choice test of grammar. Suppose two candidates obtained scores of 56 and 76% correct out of the 100 items. These are easy and convenient numbers to report, but when we ask what they mean, we can say little more than that the second candidate did

better than the first candidate. In themselves, the numbers do not relate in any easy or direct way to the real world, and the tester has to *interpret* the meaning of the numbers which have been obtained.

There are several reasons for this. First of all, the multiple-choice format is really a device for testing: it does not mimic or simulate real-world performance, and it is necessary to find some indirect way of relating how well somebody makes choices on such tests to how they would use language in real situations. Second, there is no obvious way in which we can assess the difficulty of the test. The question becomes one of "56% of what?". The answer is "of the items in the test", but the next question relates to where these questions came from. And here little can be said, because the imagination of the test writer does not lend itself to any precise assessment of difficulty. The result is that scores of 56 or 76% are dependent on the arbitrary difficulty of the items which have been devised.

So norm-referenced tests of the above sort, with arbitrary numbers which are useful only if they can be interpreted effectively, have their limitations. They are more appropriate when it is *relative* performance that is most important, and especially when there is some straightforward *selection* that needs to be accomplished. (They have been characterised, in fact, as "spread 'em out, and spot the best".) In contrast, when it is important to be able to relate test performance directly to real-life performance, it is more likely that we will need *criterion referenced* tests. These are tests where the methods of interpretation are fairly transparent, and where the emphasis in the test is not on a range of performance, but

instead on a *threshold* which separates those who can accomplish a particular real-life task from those who cannot. There is less concern with discriminating between test-takers at all levels of ability than with being able to be precise at a particularly important point, the threshold itself. On such occasions, "extra" ability may not be important, as long as what is required to reach a certain acceptable level of performance is present. Similarly, a criterion referenced approach may not be interested in *degrees* of failure, but simply that a particular level of performance was not reached.

Finally, in this introductory section on the basics of testing, we need to be concerned with how tests can provide information which is *not subjective*. It is a fundamental part of most testing that it should try and demonstrate how test performance is not subjective by demonstrating its reliability or error-free nature. In other words, testers put a premium on being able to demonstrate that test performance is consistent and not the result of the manner of testing that happened to be employed. To deal with this problem of achieving consistency and eliminating error, testers focus on three areas:

- the tester and testing conditions
- the content of the test itself
- the scoring and assessment that is carried out on the test performance

In the first case, testers concentrate upon factors such as the quality of the instructions, the clarity of the examples that are given, and the standardisation of the conditions under

which the test is administered. They will then look for evidence of how different groups of people might be performing differently for no apparent reason, e.g. because of language background, or the time of day when testing took place, or a range of miscellaneous factors of this nature. They are likely to try and calculate how much tests are affected by factors of this sort by calculating a test-retest reliability (correlation) coefficient, to get an indication of the *stability* of the test's behaviour.

In terms of the content of the test itself, testers are mainly concerned to establish that the items or parts which compose a test are related to one another in an acceptable way. The basic premise here is that no one item or section of a test is going to provide a reliable measure of any ability, and that several items or test sections need to be pooled to give a more dependable estimate of whatever ability a particular test is targeting. Basically, testers here are concerned with the homogeneity of the components or items of any particular test. They prefer tests composed of parts which correlate with one another, because this suggests that the different items or sections are "pulling together" effectively.

There are then two things to be done to increase the dependability of the estimate of ability that a test produces. First of all, one can simply make the test longer. Other things being equal, the longer the test, the more reliable or dependable will its results be. So, as a rule of thumb, even though one doesn't want tests which take up more time than they need to, it is desirable to make a test as long as possible! The second method testers can use here to increase the reliability of a test is to ensure that the items which compose it relate to one

another as tightly as possible. To achieve this they are likely to pilot the test (with, in this case, "piloting" meaning trialling the test with a comparable group of subjects ahead of the real administration of the test!) and then examine the test on an item-by-item basis. They would then discard items which do not correlate with the total test score, on the grounds that they are not contributing to the overall direction in which the test is aiming, and retain items which do relate to the total test score. Basically the assumption is being made that the total test score is a more dependable indicator than any one individual item, and that one can use the total to get a validating criterion against which to judge any one item. One would also get an overall measure of test homogeneity (or internal consistency) by computing one of a variety of internal consistency measures, such as the split-half reliability coefficient (i.e. correlating the score for the odd numbered items with the score for the even numbered items); or one of the slightly better measures based on each item separately, such as Cronbach's coefficient alpha, or one of the Kuder-Richardson formulae. In each case, the measure concerned would have a maximum value of 1.00, and one would expect a test to achieve better than 0.85 before it can really start to claim to be reliable.

The final source of error comes from the way in which the test is scored. Obviously in cases where there is an exact answer, e.g. with a multiple-choice test, this source of error is minimal. But where the test is more complex, for example an interview performance rated by different judges, the chances of disagreement are much higher, as different judges apply different standards to evaluate the performance that they are seeing. To guard against the rating being more connected with the rater than on what is actually being rated, it is

important to have clear criteria to evaluate the performance involved. So raters need to be clear about what they are looking for; they need to be trained; they need to be subjected to monitoring at regular intervals; and they benefit from having "marker" performances available to them on video or tape. It is also important to institute statistical checks to ensure that with all the above safeguards, the inevitable divergences that will occur will be within acceptable bounds. The general way this will be done is through the calculation of inter-marker reliability coefficient, i.e. by correlating the scores awarded by one marker for a given set of performances with the scores awarded by another marker *for that same set of performances*. The coefficient involved should be above 0.75 to be acceptable, and it would be desirable if it were above 0.8 (again with the maximum value being 1.00).

Examples of Tests and Their Qualities

To illustrate the more general arguments presented in the last section, we will next compare three tests, a multiple-choice grammar test, an oral interview, and a medical English test, under each of the major headings that were the basis for the last section. An overview of this comparison is presented in Table One.[1]

The three tests which form the basis for Table One contrast with one another in interesting ways. The first two are general purpose in orientation, while the third, the medical examination, is focused on a specific context. The first is an attempt to gather information

1. The issues in this section on avoiding subjectivity are discussed more fully in Hughes (1989).

about *underlying* factors, while the second and third require *performance* on the part of the examinee. Many of the detailed contrasts between the tests flow from these two basic differences, and we will cover these next, following the organisation of the table.

The M/C test obtains information by sampling grammar. It assumes, that is, that this is a viable level to work at, and that how much grammar people know will have some direct and foundational influence on how they use language. This allows a large number of items to be used quickly and efficiently, following the assumption that language is equal to the sum of the different parts (and in this case, grammar parts). However, the efficiency which is obtained by multiple choice tests carries with it the danger that there will be a format effect, i.e. that the scores which are obtained may partly be caused by the type of response required, (since only one response type is used) and that some people may simply be good at doing multiple-choice tests.

Table One: A Comparison of Three Tests

Test	Obtain Information	About Relevant Things	Which is Important	Not subjective
M/C Grammar	Grammar Sampling	Efficient : Large n° of items Method Effect	Norm-Referenced - how much	Very high Cronbach alpha, Count
Oral Interview	Grammar, Function Task Sampling	Fairly pure, Fairly real	If tasks are chosen, can be criterion referenced	Rating Define levels
Medical Exam	Task-based Situation-related	Not a real patient, but someone pretending to be Performance conditions	Threshold-based Criterion referencing	Defined satisfactory answers, Count or Rate

The test is also norm-referenced. Scores are simply numbers which are based on counting the correct answers *to the items which were included in the test*. But the scores do not have meaning in themselves - there is no inherent and clear meaning to getting a particular item right on a piece of paper. As a result the test score only enables us to say who got a higher or lower grammar score than somebody else, and we are then left with the problem of deciding of what "high" or "low" means in the real world. Finally, the M/C test can claim to have high internal reliability, because it will be possible to establish clearly which items

are functioning well together, and contributing to test reliability. In addition, the marking will clearly be objective, although the decisions which have been made as to which items to include in the test will clearly have been subjective.

The Oral Interview is very different from the M/C test. It obtains information by sampling widely not just grammar but also the ability to use language functionally, and to transact tasks. As a result, the sampling is not so likely to be extensive, since covering each topic or task will be time-consuming. There will also be a representativeness issue, in that the questions which are asked during the interview will partly depend on how the interview develops, with new questions being dependent on the answers to previous ones. Even so there is the advantage that the information will be about fairly relevant things. Questions will relate to real-life, and the interview, if well-conducted, should be fairly natural, engaging the testee in using language in a way resembling how it would be used in real-life. This, in turn, means that the decisions that are made about the language produced can be either norm or criterion referenced. If the judgements that are made are based on comparing the performance of one testee with another, then clearly the former is involved. If, on the other hand, the rating that is produced is in terms of a criterion level of performance, e.g. being able to handle routine travel demands, or if the interview contains tasks which have to be completed successfully by reaching some benchmark or criterion, then the latter is involved. The problem of avoiding subjectivity in this case is quite different from that which operates in the M/C test. It becomes important to train examiners to avoid interviewing mistakes and to be representative and fair in the way in which an

interview is run. Different candidates, that is, have to be presented with roughly the same set of problems or challenges to respond to. In addition, it will be important to establish that those who are doing the *ratings* of candidates' performances are doing so based on defined levels of what is being rated, and the rating scale is defined/ described clearly enough so that the rater can make unambiguous decisions.

The Medical Test is potentially different yet again. One assumes that the sampling or obtaining information problem will be handled very differently. One assumes that there will be some analysis of how language is used in the range of fairly specific target situations, and that the language contained in the test will be situation-related and probably task-based. The survey of how language is used in the relevant area will, that is, focus the test constructor's mind very clearly, and reveal that the limited domain can be sampled from more comprehensively. In terms of "relevant things" one would imagine that there would be an attempt to obtain relevant *performance*. One might not use real patients with real illnesses, but it should be possible to have people convincingly pretending to be real patients, with adequate briefing as to their medical problems! Clearly, there are limitations as to what could be asked here within a test, but it should be possible to simulate real performance about a variety of medical situations.

Assuming that the purpose of the Medical test is to be able to make predictions about someone's performance in a real situation, it is probable that a norm-referenced approach is inappropriate. Not only do we want to know how candidates can meet the criterion of real-

world performance, but we will probably have a particular threshold which needs to be achieved for us to have confidence that the candidates in question can cope with the language required to carry out a particular job, and not make mistakes which, in this case, might be fatal. In other words, we will want to know whether the candidate has enough language to do something specific, e.g. obtain information from a doctor-patient consultation to be able to diagnose illness effectively. Finally, in terms of avoiding subjectivity, the likely response here to the mixture of language and content knowledge is to *define* correct answers, and to examine the "doctor-patient" conversations to see whether the required content-language mixture is present. To some extent, this resembles the rating of the oral interview performance, but otherwise it is closer to a more complicated version of counting, i.e. the necessary information is provided or it isn't, and the problem then is simply one of defining "requisite information" clearly enough to avoid ambiguity for the judges.

Two Tensions in Testing

As the three tests make clear, testing is compromise, and involves decisions being made about a number of different issues, with the decisions having implications for the focus of a particular test, and the emphases it contains. We can summarise these decisions in the form of two contrasts, since the decisions that are made in relation to these two contrasts will have a strong influence on the character of the test that is produced. The contrasts are:

a) General Ability	vs	Specific Task Performance
b) Counting	vs	Rating

The first contrast starts with tests which emphasise general abilities. Here the test maker is emphasising (a) underlying abilities, (b) probably a model of ability, and (c) effective sampling, all with the idea of being able to generalise as widely as possible, and to use test data to predict performance in a wide range of situations. The advantages of this are fairly clear - a systematic framework for sampling, and the possibility of assessing underlying abilities which are pervasive and which are a "least bad" basis for generalisation to any situation. The difficulties are also fairly clear. The approach may have difficulty in dealing with actual performance, and the conditions which operate when people actually use language, since the sampling framework is not necessarily going to build in to the test performance conditions which are at all realistic, since these may be time consuming and reduce the breadth of the sampling that is possible. There is also the problem that as a "least bad" approach, which tries to find things out that are relevant for everybody, it may run the risk of not having much to say about any particular situation since it may require particular subsets of abilities and performance conditions which are outside the powers of prediction and generalisation of the abilities-driven model.

The advantages of the specific task performance approach are, to a certain extent, the reverse of the disadvantages of the general ability approach. It can be much more easily

connected with a particular situation. The "unit" of the test is likely to be a task which arises naturally out of the specific situation concerned. As a result, performance conditions are unlikely to be much of a problem, since the task concerned can be usually adapted to embody them. As a result, the prediction which is made to a particular situation is likely to be more accurate. Such a test is also likely to be more palatable for all concerned since it will not be appearing to do anything which is different or distracting from the sort of language use that will ultimately be required. As such the test is also likely to be consistent with the teaching goals in a specific situation. Of course, these advantages carry with them some costs as well. The main one is that the predictions which can be made have no generality. One situation is targeted, and the predictions of non-test performance are limited to that if they are to be dependable. Whereas an abilities approach could adapt prediction to a wide range of situations, the specific task performance is limited to just one, and contains little flexibility. Added to this, the approach is not very theoretical, in that it avoids making any statement or commitment as to what language and language performance are in general, but instead it attempts to mimic a particular target performance without concerning itself with underlying abilities. As a result, if things go wrong, the approach does not have any theory-driven method of explaining why the test does not work, instead leaving the test-maker with the problem of resorting to little more than trial-and-error, as some better simulation of the targeted situation is tried in whatever way seems hopeful.

The other contrast mentioned above is between counting and rating. Here we are dealing

with what sort of response format a test uses with a contrast between formats which are item-based, (and can be counted), and those which are inherently more integrated and complex, with the result that a marker has to make a judgement about the level of performance concerned. Once again, each of these has strong and weak points. Counting has the advantages that it lends itself quite easily to procedures for investigating the (internal consistency) reliability of the test concerned, and the identification and elimination of items which do not fit with the test as a whole. In this way the item-based nature of the test allows extensive sampling, and efficient sampling as items are replaced if they are shown not to be contributing as much information as possible to the discrimination that the test produces. Such tests are also fairly quick and easy to produce, since one can add to the stock of items that one has fairly systematically and cumulatively.

Despite these considerable advantages, there are some serious problems with counting-based tests. The first of these is simply that having to have something which can be counted may trivialise language performance because it makes it more likely that it will be taken out-of-context, and presented as a circumscribed, analysed item which does not then easily integrate in fluent performance. This can be overcome to some extent by having items which relate to complex stretches of language or performance, but this is likely to lead to prohibitively long tests. There is also the problem that item based tests do not link in any easy or natural way to criterion-referenced performance, since the items which are self-contained, decontextualised wholes do not have any straightforward connection with actual performance on tasks in the real world. Finally, item based tests are most likely to

be multiple-choice or cloze in format. Yet these are the test-types which are most likely to suffer from a format effect, i.e. that the test score measures the format of the test rather than any underlying language capacity.

Turning to rating-type tests, again there is a balance between the strengths and weaknesses of the test type concerned. The strengths are that by using a rating approach to assessment, one can hope that the judge can operate a complex scheme, and as a result, one can target the assessment on more complex performance. In particular, it is not necessary to cast whatever one wants to measure in terms of items. Instead, one can use realistic performance and then give the judge the problem of how to rate that performance. There is the additional advantage that the performance may be multi-dimensional, yet it may still be possible for the judge to perform effectively. As a result, there is a more natural connection with criterion linked performance, and decisions about important aspects of real language use. There is less need to make high inferences about what a particular test score means - the rating procedure can attempt to make the meaning of the rating itself transparent.

But of course this is a one-sidedly optimistic interpretation of what happens in rating procedures, since in reality there are serious problems with minimising subjectivity. Judges may arrive at certain ratings but the ratings may say more about what the particular judge thinks is important than it does about any objective notion of what level of language performance was achieved. Considerable time, effort, and skill are required to ensure that

the rating descriptions which are provided are sufficiently clear, and have been understood by the judges. Rating is also likely to take time. Judges cannot simply make snap judgements on the basis of very small samples, and, more important, it is likely that the rating procedure will require each candidate to be examined separately (or at most in small groups). Worthwhile performance may be being elicited, but it is at a certain cost if one has to budget time to give each candidate a sufficient opportunity for the testing procedure to be seen as fair. There are also factors associated with the administration of the test. If one is asking for communicative performance (as opposed to simply checking which response alternative seems best), then examiners in, for example, oral interviews, will need to ensure that they are treating each examinee similarly, and not inadvertently giving some test takers easier tasks to do than others.

To conclude this section on tensions in testing, one can summarise and say that abilities tests aim at generality and wide prediction, while direct performance tests aim at a clear but specific and limited relevance. Counting oriented tests favour reliability, while rating based tests are more concerned with validity. One would like to have as many desirable qualities in a test as possible, but in practice the fact that testing is compromise means that one or more qualities are likely to be promoted at the expense of others. We will consider each of these factors in the next section when the likely testing procedures for different Aviation English personnel are analysed.

We can try to apply the discussion from the previous sections to three situations where testing might be important in Aviation English. We will do this with the three groups of Air Traffic Controllers, Stewards, and Flight Deck Crew. We can portray the first two of these groups in a matrix, as shown in Table 2. The case of Flight Crews will be discussed after the two cases portrayed in the matrix have been covered.

Table 2: Test Analysis for Air Traffic Controllers and Stewards and Stewardesses

	Air Traffic Controllers	Stewards and Steawardesses
Obtain Information	Specific task Performance	Some specific but mainly general
Relevant Things	Important performance conditions - acoustics - speed - n° of problems - accent	Unpredictable Interaction Easy to Simulate Authentic material Context Purpose
Important for Decisions	Criterion Referenced	Hybrid, because of different components - promise
Not Subjective	Item Based - realistic approach	Some Counting - establish standards Some rating

In this table I have assumed that a needs analysis has been done, and that the information available from this needs analysis has been suggestive of the sorts of language demands put upon each type of personnel. The table is therefore based on speculation, whereas in reality it would be based on actual empirical work. It is presented here to show how decisions linked to testing *could* be implemented.

Air Traffic Controllers have a fairly circumscribed job, characterised by considerable importance for the decisions that they routinely make. The first of these factors, the circumscribed nature of their work, has implications for the information that a test needs to obtain as well as how this information is judged to be relevant. It is likely that the test concerned will be based on specific task performances which are modelled on those which prevail in the actual job situation. A needs analysis would provide the information required as to which areas are considered to be most important and representative in this regard. McCann (this volume) suggests that three such areas are *tower, perimeter, and approach*. Specific test items would then be needed to cover each of these areas. As to *how* the information is obtained, it is clear that Air Traffic Controllers work under specific conditions of language performance. These are fundamental in assessing the nature of their performance. Of particular significance are factors such as acoustic conditions, speed of delivery of incoming messages, the number messages that have to be dealt with (in the sense that a particular and changing set of messages will have to be in the forefront of the particular Air Traffic Controllers consciousness at any one time); and possibly the range of accents in which the messages are delivered. The crucial issue is that the test will not

emphasise underlying ability factors so much as capacity to deal with variation in performance conditions such as those which might be encountered in on-the-job experience. Sampling, that is, will primarily be driven by the need to consider *a representative range of performance conditions.*

Decision making in the case of Air Traffic Controllers is simple (in principle) and follows from the combination of (a) a well-defined specific job, and (b) the relative risks of meeting a criterion at a minimum acceptable level. In other words, there is a very clear need here to use a criterion referenced approach to decision making. It is envisaged that test takers either will or will not perform at an acceptable level. The tester is not interested in (a) how much below the test taker is from the level deemed acceptable, or (b) how the test taker performed relative to other people taking the test if below the acceptable level. The first type of information is irrelevant (unless there is the prospect of additional training), since not performing at a sufficient level means being beyond an acceptable level of decision making risk, while the second situation is also beside the point in that to learn that somebody did well in a poor year for aspiring Air Traffic Controllers would similarly be irrelevant for those who would be imperilled by ATCs of insufficient competence.

Finally, we need to establish that test information is not subjective. The initial decision here is between counting and rating. The latter might have some appeal in that it would allow a judge to take a balanced view of the performance of an Air Traffic Controller on a test and make a decision integrating the performance on several dimensions. Further

reflection, however, would suggest that if we continue to emphasise the well-defined nature of the tasks that are involved, the clarity with which we can define outcomes when faced with particular test items, and the need to sample a range of situations and performance conditions, then it is more appropriate to have a multi-item test with each item having realism as far as performance conditions are concerned, and each item lending itself to the definition of criterion levels of performance. It would then be a simple matter to establish what level of overall performance would be acceptable as an indication of the candidate meeting a general criterion of capacity to handle the realistic demands placed upon a real Air Traffic Controller. The test, in other words, would be based on the counting of items successfully performed, and so the reliability of the test could be checked easily, and improved by item replacement if it were necessary.

The situation with Stewards and Stewardesses contrasts interestingly with that for ATCs. Stewards and Stewardesses have jobs which require considerable routine language use, but at the same time they have other pressures upon them if they are to be effective. Not all the situations they deal with are predictable, and they must have the capacity to deal with communication as it evolves in a variety of situations (as shown by the example given earlier). They are also required to use language appropriately and with the correct combination of firmness and politeness, occasionally under conditions of stress for passengers. They also need to be able to use strategic competence effectively, when they are having to handle situations beyond their actual level of competence. The consequence of all these factors is that it might be more appropriate in English language tests for

Stewards and Stewardesses to use an abilities driven approach, with the idea that this will be more likely to generate effective and dependable sampling of a range of language behaviour, and also be a better basis for generalisation. It will still be important to meet realistic performance condition constraints, with unpredictable language and an interaction-based approach to testing. But in the case of Stewards and Stewardesses, it should not be too difficult to locate authentic material and use easy-to-simulate contexts and purposes for communication.

The problem of making decisions in this area is also more complex than was the case with ATCs. First of all, it is likely that the language competence of Stewards and Stewardesses will be more diverse, so that norm-referenced decisions will be appropriate in some areas while others will be more naturally tested through criterion-referenced techniques. Second, there is likely to be a different selection policy. It may be the case that from a group of prospective Stewards and Stewardesses, it is necessary to pick the best for the fixed number of vacancies which have occurred. A test which discriminates effectively on a norm-referenced basis may be the most effective for this. Even if all those who have applied for the fixed number of jobs are of reasonable English competence it may still be appropriate to pick the best of an already good bunch. Finally, there is the issue of promise, of how some people may develop and improve after they have been hired. Some tests can allow some degree of prediction of subsequent improvement. If, at the moment of initial hiring, a Steward or Stewardess is able to cope with linguistic aspects of the job minimally, but is exceptionally good in other respects, then it may be worth offering a post

on the assumption that deficiences in English will only be temporary and will not have any serious consequences while improvement is taking place. A conventional criterion-referenced approach would not easily allow this possibility, whereas a norm-referenced test which could predict *subsequent* language proficiency development would be more useful.

There is finally the issue of avoiding subjectivity. It is likely here that proposed tests will be a mixture of counting and rating. Where underlying ability is being measured through item-based means, a counting approach will give the benefit of conventional ways of ensuring reliability, i.e. good selection and retention of items which work, and the establishment of adequate levels for reliability coefficients. But some of the performance and communicative aspects of a test for Stewards and Stewardesses are likely to involve rating. There is likely to be a need, for example, to assess degree of appropriateness of language use, or capacity to improvise when communication problems occur. In these cases it will be better to try to establish public and agreed criteria and bandscales for evaluating performance, and then train judges in the use of such procedures. This is more likely to do justice to the complexity and integration of language use, while on the other hand minimising subjectivity.

Pursuing the armchair analysis approach, we come finally to the nature of English proficiency testing that would be appropriate for Flight Crew. In a way, this comes midway between the two groups we have already considered, reflecting the nature of the duties involved. Clearly, it is the Flight Crew that the ATCs are talking to, and so Flight

Crew will need to have the same level of competence in the relevant areas as the ATCs themselves. In that respect we would anticipate criterion-referenced specific task performance tests, perhaps additionally reflecting the ways flight crew are integrating RTE messages not with other messages from other aircraft, but with making decisions about the situation that their aircraft is currently in.

What goes beyond this is that flight crew have to do more with language than simply handle RTE. They have an extensive responsibility to their passengers and crew and may need to cope with routine social language, on the one hand, and the linguistic skills that are required to cope with unforeseen situations, e.g. the arrangements to handle a sick or an obstreperous passenger. As a result, it may be necessary to blend some elements of what has been sketched out for Stewards and Stewardesses into a more extended testing system for flight crews. The details would have to be dependent on a proper needs analysis, as would the weighting to be given to the different components of what could become an extensive test battery.

Conclusion

This brief survey of testing within the Aviation English field reveals it to be a complex area. Different jobs require different patterns of language ability, and depend on different decision making criteria. In some cases more indirect methods of testing may be desirable to enable generalisations to be made about complex language abilities. In other cases

direct testing will be essential, as will a careful analysis of performance conditions to ensure that the tests produced do not lead to unreliable, invalid, and in this case, dangerous decisions. But in either case, it is important that high standards of measurement are attained, and it is more likely that these will be realised by the techniques familiar to language testers being applied in conjunction with the insights and experience of those familiar with the Aviation English field.

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I am responsible for promoting the Cambridge exams (primarily Preliminary, First Certificate, Advanced & Proficiency) & coordinating over 30 exam centres in France.

CAMBRIDGE EXAMINATIONS

John SLADE
Cambridge Examinations Officer
France

STATISTICS

The French centres presented over 14,000 candidates in 1991: over 3,000 PET, almost 9,000 FCE & just under 2,000 CPE. This compares with worldwide figures of 240,000 candidates in 1990 in over 800 centres in over 80 countries.

USED WORLDWIDE

These statistics show the extent to which our exams are known throughout the world. Furthermore, they are recognised in both academic & professional spheres:

- UK universities (Proficiency, & potential interest in the - Advanced, as language entrance requirements).
- French universities & Grandes Ecoles (First & Proficiency).
- Commercial mailing (replies from the top 2,000 companies in France still coming in, including Sextant Avionique, & candidates from Air Traffic Control, Ajaccio; Ecole de l'Air, Salon; Air France, Abidjan & Sup Aero, Toulouse). N.B. Recognised by Aeroportos &Navegaçào Aérea & SATA Air Açores, Portugal.

SUPERVISION AND QUALITY CONTROL

- Joint committee, UCLES (Cambridge Exams) & British Council, since 1941 & RSA (TEFL), since 1988.
- Constant contact & committee meetings with all interested parties, including private & public sector schools and British publishers.
- Administered by experienced Local Secretaries worldwide, many of whom are British Council staff. Regular monitoring by Cambridge, British Council & Cambridge Examinations Officers.
- All papers set, marked & graded in Cambridge, except the oral interviews (face-to-face with a native speaker of English) where Cambridge provides the material & notes. Examiner meetings & videocassettes further facilitate standardisation.

THE EXAMS THEMSELVES

- Format: 5 papers (except Preliminary, with 3) covering the four skills & "Use of English".
- Dates: mid-June & mid-December, with enrolments in February & September (except Preliminary, with up to 5 possible dates a year).
- Place: 32 Open Centres in France.
- For further information, please contact: Cambridge Examinations Officer British Council 9, rue de Constantine 75007 PARIS.

ROUND-TABLE PRESENTATION

STATISTICS

FRANCE

Exam	**Session**	**1991**	**(1990)**
PET	All year	3,370	(3,104)
FCE	Jun	6,506	(5,536)
	Dec	2,392	(2,459)
	Total	**8,898**	**(7,995)**
CAE	Dec	207	(-)
CPE	Jun	1,187	(1,235)
	Dec	594	(719)
	Total	**1,781**	**(1,954)**
TOTAL		**14,256**	**(13,053)**

	WORLD 1990
PET	(20,000)
FCE	166,161
CPE	45,259
TOTAL	**231,420**

THE CERTIFICATE OF ATTAINMENT IN ENGLISH GRADED TESTS

Alan MOLLER
London University Examinations board

These new tests were introduced by the University of London Examinations and Assessment Council in May 1988. They are designed for those learners and teaching programmes looking for modern, communicative tests and for certification at regular intervals in the course of their learning English.

There are six levels of difficulty, starting with Beginners (Level l) and progressing through a range of intermediate levels to the Advanced level (level 6), which tests the fluency required for use in postgraduate study or in professional employment. Levels 4 and 5 are widely accepted in Britain and elsewhere as satisfying the language requirements for admission to a university or other institution at the tertiary level. Learners of English can enter at a level which suits them and work their way upwards in accordance with their needs or wishes at any particular moment in their life.

The tests at each level contain six sections and test the skills of listening, reading and informal and formal writing. They last from 1 hour 15 minutes at the lowest level to 2 hours and a half at level 6. They are graded in difficulty, and their content is based on the kind of realistic situation that young adults might expect to meet during the course of their life. The aim is to give candidates the opportunity to show what they can do in English and how well they can use the language.

The marking scheme stresses this positive approach and applies two criteria **communication and quality.** At certain points in the tests greater emphasis is put on the

candidate's ability to communicate or to understand the communication addressed to him/her either orally or in written form, while at other points emphasis is directed to his/her accuracy and appropriacy of expression.

In order to be successful in these tests a learner must be able to communicate with confidence in a variety of situations and must be able to use the grammar appropriately and correctly.

Since the introduction of these tests, a growing number of candidates has attempted them at all levels. More than 60% of the candidates have obtained a certificate. There are currently over 80 centres in more than 20 countries, particularly in France, Spain, Greece, Hong Kong, and Argentina.

From 1993/1994 these tests will be part of a wider group of tests in several European languages, to be known as THE EUROPEAN CERTIFICATE OF ATTAINMENT IN FOREIGN LANGUAGES.

Further details and past papers can be obtained from the writer or from Anne Rickwood, University of London Examinations and Assessment Council, 32 Russell Square, LONDON WC1B 5DN.

WHAT IS THE "ORAL PROFICIENCY INTERVIEW" ?

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France

DEFINITIONAL FRAMEWORK

The ACTFL Oral Proficiency Interview (OPI) is a standardized procedure for the global assessment of functional speaking ability, or oral proficiency. It is a standardized instrument since, to assure reliability in assessing different speech samples, a prescribed procedure must be observed.

It is a global assessment procedure because it measures language production holistically by determining patterns of strengths and weaknesses, establishing a speaker's level of consistent functional ability as well as the clear upper limitations of that ability. It does not measure discrete aspects of language use or knowledge about the language. There are four categories of assessment criteria: the global tasks or functions performed with the language; the social contexts and the content areas in which the language can be used; the accuracy features which define how well the speaker performs the tasks pertinent to those contexts and content areas, and the oral text types-from individual words to extended discourse-produced.

In this assessment of functional language skills, it is irrelevant to the tester when, where, why, and under what conditions speakers learned the language. The OPI is not an achievement test assessing a speaker's acquisition of various specific aspects of course and curriculum content. The OPI assesses language performance in terms of the ability to use the language effectively and appropriately in real-life situations. The speaker cannot

specifically prepare for the OPI. Nevertheless, at the lower levels of the rating scale (Novice and Intermediate), the OPI may resemble an achievement test due to the interviewee's very limited amount of learned material.

OPI PROCEDURE AND RATING

The OPI takes the form of a 10- to 30-minute tape recorded conversation between a trained interviewer and the interviewee whose speaking proficiency is being assessed. The OPI should resemble, to the greatest extent possible, a natural conversation.

There are two major interrelated aspects of the ATCFL OPI process: the elicitation of the speech sample and the rating of the speech sample. Elicitation involves a mandatory structure of four phases - warm-up, level checks, probes and wind-down. Rating is a two-step process: it is an on-going process during the OPI itself, and at the conclusion of the OPI the interviewer listens to an audiotape of the entire OPI before assigning a final rating. In each instance, features of the speech sample are first compared to the criteria for each major level (Novice, Intermediate, Advanced, Superior) of the rating scale, and then assigned a sublevel rating (Low, Mid, High) by carefully comparing the sample with the appropriate sublevel descriptions in the ACTFL Guidelines.

There is an intricate and dynamic relationship between elicitation technique and rating. If the sample is not properly elicited, it cannot be rated; to be properly elicited, the speaker's

language must be continuously evaluated by the interviewer during the OPI itself.

Although this preliminary rating process must take place during the interview if the OPI is to be conducted at the proper level, a final rating can't be assigned until the recorded interview has been heard; this affords the interviewer the opportunity to concentrate solely on assigning the correct rating. Ideally, the interviewer confirms or modifies only slightly the preliminary assessment made during the OPI.

THE OPI AS INTERACTIVE, DYNAMIC PROCESS

The structure of the OPI is standardized, but since the interview is based on as natural a conversation as possible between the two conversational partners, its content is unique to each interview and to the interviewee and his or her responses, responses reflecting individual background, life experiences, interests and opinions. In this adaptive, interactive process, the interviewer's line of questioning and task-posing is determined by the responses of the interviewee, and the level of difficulty is adjusted continuously according to the interviewee's responses. Although there are standard question types relative to proficiency level, the specific content of the OPI is determined in large part through conversational negotiation, depending on information offered in response to the interviewer's lines of questioning and the tasks posed. An experienced interviewer formulates questions based on continuous assessment of the interviewee's proficiency and on the topics which emerge in the conversation.

RELIABILITY OF THE OPI

The OPI is a criterion-referenced, rather than a norm referenced assessment. Each speech sample is rated solely according to the criteria of the rating scale rather than being compared to performances of other speakers. Because of the global, holistic nature of the assessment procedure, there will be a variety of individual performances within the same rating level. Yet each individual performance must evidence certain required features to be rated at a given level.

Although the OPI is not a fixed series of questions, the prescribed structure targeting the same global criteria in each OPI ensures comparability from one test to another. Specific tasks vary from OPI to OPI, but the types of tasks posed remain the same. It is, in fact, a critical feature of the design of the OPI that the specific questions vary from interview to interview; neither interviewers nor speakers can prepare for the OPI in the traditional sense.

The OPI assesses functional language skills as they exist at the moment of assessment without reference to the circumstances under which learning took place. Its goal is to permit the extrapolation of global linguistic competence on the basis of necessarily limited performance in the interview situation. One reflection of this goal is that the rating is based on determining a level of performance which the speaker can consistently sustain during the interview. That sustained level of communicative ability must be demonstrated in the

OPI across the level-appropriate range of assessment criteria: global tasks, formal and informal contexts, content areas, accuracy features and text type. These criteria, established on the basis of experiential data, are designed to predict the level of consistent functional ability in other real-life situations.

It is important that the OPI evidence test/re-test reliability and inter-rater reliability. Test/re-test reliability means that a speaker tested two or more times will be assigned the same rating in the re-test as in the initial test, assuming the proficiency level is in fact the same at the time of re-test. Inter-rater reliability refers to the degree to which two testers listening to the same OPI will assign it the same rating.

The ACTFL OPI tester training and certification process is based on inter-rater reliability, in addition to adequate elicitation technique, as its standard. For a tester to become certified, interviewer ratings must agree with trainer ratings on OPIs at all levels of the rating scale. In order to ensure inter-rater reliability over time, testers must be recertified every two years. This also protects the standard itself from drift.

Applications of the OPI

The OPI is used to predict a speaker's performance in a situation where a particular level of functional language use is required, such as a job, a language class, or living in a country where the language is spoken. It is used by government agencies, academic institutions,

and in the private sector. It can be used for diagnostic, placement, evaluation and research purposes. Since it is both time and labor intensive, the applications may be limited when dealing with larger numbers of speakers.

Table 3-E : Assessment Criteria: Speaking Proflciency

Global Tasks/ Functions	Context	Content	Accuracy	Text Type
SUPERIOR Can discuss extensively by supporting opinions, abstracting and hypothesizing	Most formal and informal settings	Wide range of general interest topics and some special fields of interest and expertise; concrete, abstract and unfamiliar topics	Errors virtually never interfere with communication or disturb the native speaker	Extended discourse
ADVANCED Can describe and narrate in major time/aspect frames	Most informal and some formal settings	Concrete and factual topics of personal and public interest	Can be understood without difficulty by speakers unaccustomed to non-native speakers	Paragraph discourse
INTERMEDIATE Can maintain simple face-to-face conversation by asking and responding to simple questions	Some informal settings and a limited number of transactional situations	Topics related primarily to self and immediate environment	Can be understood, with some repetition, by speakers accustomed to non-native speakers	Discrete sentences and strings of sentences
NOVICE Can produce only formulaic utterances, lists and enumerations	Highly predictable common daily settings	Common discrete elements of daily life	May be difficult to understand, even for those accustomed to non-native speakers	Discrete words and phrases

Table 4-A : General OPI Structure: Phrases and Planes of the OPI

FOUR PHASES: WARM-UP → LEVEL CHECKS ↔ PROBES → WIND-DOWN

iterative process

THREE PLANES:

PSYCHOLOGICAL	Puts interviewee at ease	Shows interviewee what s/he can do	Shows interviewee what s/he cannot do	Returns interviewee to level at which s/he functions most accurately, gives interviewee feeling of accomplishment
LINGUISTIC	Reacquaints interviewee with language, if necessary	Checks for functions & content handled with greatest accuracy	Checks for functions & content handled with least accuracy	Gives interviewer chance to check that iterative process is complete
EVALUATIVE	Gives tester preliminary indication of skill level	Finds highest level of sustained performance (floor)	Finds first level at which performance can no longer be sustained (ceiling)	

TOEIC EXAMINATIONS

Ian BELL

THE LANGUAGE OF INTERNATIONAL COMMERCE

English is the lingua franca of international business, industry, and commerce, and there is a growing need for multinational firms to assess the English-language skills of both incumbent and prospective employees. To help meet that need, Educational Testing Service has prepared the Test of English for International Communication (TOEIC).
TOEIC measures English-language proficiency in the work environment of international trade, unlike other tests that focus on English as it is used in an academic environment.

WHAT IS TOEIC?

TOEIC is a 200-item, multiple-choice test for adult non native speakers of English. It consists of 100 listening items, administered by audiotape, and 100 reading items. It requires approximately two-and-one-half hours to administer.

WHO USES TOEIC?

Multinational corporations, language schools, government agencies, and other public and private organizations use TOEIC for purposes such as :

- Hiring
- Assignment to overseas posts requiring English-language proficiency
- Assignment to or promotion within departments where English is needed or desirable

- Identification of employees who know English sufficiently well to benefit from corporate training programs abroad
- Determination of the effectiveness of English-language training programs
- Assignment to, placement within, or exit from company-sponsored English-language training programs

Based on their experience with employees who have taken TOEIC, a number of major firms have established minimum scores on TOEIC for specific job categories. In addition, thousands of individuals have taken TOEIC independently to establish their English-language credentials for personal and professional reasons.

WHAT SCORES DOES TOEIC PROVIDE?

TOEIC candidates receive a total test score, as well as subscores for listening and reading. The total score ranges from 010 to 990, the subscores from 005 to 495.

WHAT DO THE SCORES MEAN?

TOEIC scores correlate highly with direct assessments of listening, speaking, reading, and writing. As an independent measure of English proficiency, TOEIC provides practical information about performance in English - necessary information for today's business world.

WHERE IS TOEIC OFFERED?

TOEIC is offered regularly in a number of countries. TOEIC is also available by special arrangement through the Main Office in Princeton. New Jersey.

GROWTH OF TOEIC

TOEIC, the Test of English for International Communication, was introduced in December 1979. Since then, it has become the international standard for English-language proficiency testing.

TOEIC was developed through a cooperative effort between Educational Testing Service (ETS) and MITI, the Japanese Ministry of International Trade and Industry. In its first few years, TOEIC was administered primarily in Japan and Korea. Subsequently, the program expanded to serve Taiwan, Thailand, Hong Kong, Indonesia, Mexico, France, Switzerland, and Spain. TOEIC is available in the People's Republic of China through the Hong Kong Office and in Central America through the Mexico Office. Worldwide, the TOEIC program now administers over 550,000 tests annually.

TOEIC is available to corporations and language-training programs in the United States through the International Corporate Program (ICP), administered by the Main Office in Princeton, New Jersey. Both semi secure and off-the-shelf versions of TOEIC are available. The ICP also serves clients in countries without TOEIC representatives.

TOEIC is prepared by linguists and English-language specialists working with ETS

program and test development staff. Three new forms of the test are prepared each year to meet the demand for assessment of English language proficiency in the international context.

TOEIC OFFICES

Main Office

TOEIC Program

Office Educational Testing Service

Princeton, NJ 08541

U. S .A.

France

Council on International Educational Exchange

49, rue Pierre Charron

75008 Paris

TESTING AND EVALUATION : ATC TRAINEES - SPAIN

Paul McCann

Introduction

All Air Traffic Control trainees in Spain follow a course of training at one central establishment in Madrid - the Centro de Adiestramiento de la Direccion General de Aviacion Civil. Since 1988, the British Council Madrid has been collaborating with the Spanish Civil Aviation Authority in the area of English Language teaching and testing. A specific course book has been produced for English Language Training and this covers all aspects of the linguistic needs of an Air Traffic Controller - routine phraseology, non-routine language and "general" English. In addition, a series of English language tests has been produced. These tests comprise the following :-

- entry test (pre-training)
- assessment tasks (during training)
- exit test (post-training)

The entry and exit tests have been analysed by testing experts at Lancaster University for reliability and validity studies. The aim is to produce valid, reliable tests with statistical credentials. A full report has been provided by Lancaster University, and with a few modifications to certain items and sub-tests, both entry and exit tests should prove to be reliable measuring instruments. The exit test will, in fact, form a conceptual base for the coming Eurocontrol standard exit test project, which will have its operational centre in Madrid.

The aim of this document is to describe the testing and evaluation procedures in force in the Madrid Training School and consider some of the issues in the area of evaluation of Air Traffic Control trainees. The document is intended to be an accompaniment to the previous conference presentation - it therefore follows the same order of material.

Evaluation

When faced with a group of learners on one hand, and the need for a system of evaluation on the other, certain key questions have to be answered :-

- when to evaluate ?
- what to evaluate ?
- how to evaluate ?

In the context of Air Traffic Controllers in Spain, and it would seem that there are many similarities with other countries, these questions were answered in the following way :-

When to evaluate

- As the course in English follows the progression of the trainees' mainstream training programme, it would seem logical to evaluate students at approximately the same time as in this programme.

- The mainstream training programme follows the following pattern :

TWR ⟶ APP/ACC ⟶ RAD

The course in English has been designed to provide English Language Training for trainees in these areas in the same order. The decision was thus made to evaluate students' progress at the end of each of these distinct areas.

What to evaluate

- In an ESP situation such as Air Traffic Control, it would seem desirable to evaluate students' performance in direct relation to future job needs. Therefore, the decision was made to evaluate performance in listening and speaking skills, as these are the major skills required of a controller in a real life situation.
- Considering the subject a little more specifically within the context of the two skills to be evaluated, trainees must become proficient in the production and reception of routine phraseology, non-routine ATC language and also need a certain degree of "general" English, although needs would appear to dictate that this last category should still remain strictly within the field of aeronautical subjects.

How to evaluate

- We may well be able to decide on the "what" and "when" aspects of evaluation, but we must make a decision on the "how" i.e. what type of evaluation is suitable for a particular group of learners.
- In the context of the "when" aspect, our tests or evaluation methods must display

certain characteristics such as linking in with learning units, provide sufficient reliable data, have positive washback-effects, and in some way demonstrate some sort of continuous measurement of the students' progress.

- These problems were faced by considering three main areas of evaluation : self/peer evaluation, informal evaluation, formal evaluation.
- Self/peer evaluation takes place in the classroom while students engage in pair and group work activities. During task work involving paired communication sequences between pilot and control, they are encouraged to evaluate themselves and one another using a profile with performance descriptors.
- Informal evaluation also takes place in the classroom. The teacher can monitor student performance during class activities and, using the same profile with descriptors as in self and peer evaluation, can guide students, identify problem areas and give students feedback. Also, in assessment tasks one and two, speaking performance is evaluated informally.
- Formal evaluation takes place at the end of each work unit i.e. after TWR, APP/ACC and RAD. Over the duration of the training programme, students are formally evaluated three times - two assessment tasks and a final test.

ASSESSMENT TASK ONE

This assessment task is administered on completion of TWR inbound and outbound units. It consists of a listening test and is made up of the following elements :-

Routine

(i) VOLMET - filling in gaps with the correct numbers from a synthesised recording taken from the Madrid VOLMET service and updating each intake.

(ii) TWR inbound and outbound - true, false, don't know task in response to approximately 4 minutes of edited authentic recording taken from Madrid-Barajas TWR.

Non-routine

(iii) TWR - listening to authentic recording of non-routine language taken from Madrid-Barajas TWR frequency - this consists of a confusion over starting-up an engine / running up to full power on parking stand. Students listen to text in English for notes, then write summary in Spanish.

"General"

(iv) Excerpt of an unscripted interview between native and non-native speaker - subject is history of Air Traffic Control and changes between 1950 and present day.Students give short answers to questions.

Speaking : routine, non-routine and "general" are evaluated informally.

ASSESSMENT TASK TWO

As assessment task one with the following modifications :

(i) a short answer task is incorporated to cover APP and ACC - also authentic recordings

from Madrid frequencies.

(ii) non-routine task requires listening to an authentic 5 minute stretch of communications in Spanish and writing a summary in English.

(iii) "general" task is an excerpt of an interview between two native speakers (UK / USA) on the subject of differences between Europe and USA in control systems and training.

As in assessment task one, speaking is assessed informally by teacher during class activities.

FINAL TEST

Students are evaluated formally for both listening and speaking skills.

Listening

Consists of seven tasks :

- VOLMET : gap-fill
- VOLMET : information recognition
- NOTAM : table completion
- TWR : multiple-choice on take-off clearances
- APP/ACC : multiple-choice on FL changes/instructions
- "General" - multiple choice on radio report of accident
- Non-routine/emergency : matching heard situations with pictures

Speaking

- Routine : TWR - response to pilot requests on cassette tape
- Non-routine : APP/ACC - paired task requiring problem solving of non-routine/emergency situation
- "General" : paired role-play.

CRITERIA FOR EVALUATION

After each assessment task and the final test, students are issued with a report sheet which gives a mark for each aspect of the evaluation procedure. Students are evaluated on the following aspects :-

Speaking : pronunciation and use phraseology
Speaking : pronunciation and use non-routine language
Speaking : pronunciation and use standard English
Listening : comprehension routine ATC language
Listening : comprehension non-routine ATC language
Listening : comprehension standard English
Other : interactive skills
Other : checking, confirming and clarifying strategies

SUMMARY

The evaluation system for trainee Air Traffic Controllers in Spain is now a well established pedagogical tool and feedback from the users i.e. student and sponsor institution has been favourable. In the next two years, the whole system will be revolutionised, not only in Spain, but throughout Europe with the production and subsequent implementation of a standard testing scheme. British Council Madrid and DGAC Spain are pleased to have been nominated operational centre for this most prestigious project and both parties feel that the personnel at the Training Centre have much to offer a scheme of this kind. Civil Aviation Authorities, ATC trainers and trainees, the profession as a whole and, in the ultimate instance, the user of the system (the general public) must surely look forward to a future in which linguistic standards in Europe are standardised and testing techniques harmonised. This may be one of the many factors which contribute to the continuing excellent record of air safety as we move rapidly towards the year 2000.

EUROCONTROL ENGLISH LANGUAGE EXIT TEST FOR AIR TRAFFIC CONTROLLERS

Adrian ENRIGHT
Eurocontrol Institute of Air Navigation Services
Luxembourg

INTRODUCTION

Why an English test for air traffic controllers? Why English? Why a test?

Let me try and answer these questions in reverse order. A test is a means of assessing performance against defined objectives. It should be reliable, have validity and be acceptable. Although most people have an in-built aversion to taking tests, the successful accomplishment of a test indicates to all that a certain level of achievement or a standard has been attained. And perhaps it is in maintaining standards that we are here most interested.

Why English? Within the ECAC States of Europe English is recognised as the principal international language - but more specifically, in the technical and international environment in which we in aviation find ourselves, it has become the foremost language of communication.

So, we have tests and we have English.Why then put the two together for air traffic services and in particular for air traffic controllers? Don't they already speak English on the R/T? No they don't. R/T phraseology is not English, it is not a language. It is groups of coded phrases based on English vocabulary and as long as pilots and controllers communicate using standard ICAO phraseology in routine situations there is no great problem. But outside this limited environment things can and do begin to go wrong.

FLUENT R/T IS NOT FLUENT ENGLISH

Air traffic control communication is not restricted to the R/T. Controllers co-ordinate with colleagues in an adjacent country; liaise with flow management units and attend international meetings. There are though occasions, hopefully not too frequent, when controllers have to deal with emergency or unusual situations when the R/T is inadequate and plain language (English) has to be used.

Let me now explain, in slightly more detail, why EUROCONTROL has initiated this project - "English language exit tests for air traffic controllers".

This presentation will review:

- the background to the project
- the requirement for such tests
- for whom are the tests intended
- the management of the project.

This last item will be presented to you by Mr. Paul DOCHERTY of the British Council who will explain the strategy developed by the British Council in order to implement this project.

1. Background to the project

It cannot be disputed, that for whatever reason, the level of English among air traffic controllers in Europe varies greatly. Regrettably, media attention has brought unfair criticism to the profession and given to the controllers of some States an unwarrented reputation. Basic misunderstanding of English has caused incidents and, in a few tragic cases, linguistic deficiencies might have been possible contributory factors in aircraft accidents.

Discussions among controllers have highlighted the need for a common standard of English which should be aviation orientated. Clear pronunciation, irrespective of ethnic origins, attentive and accurate listening and comprehension of English, which may be distorted by transmission, are essential if communication is to be effective and the safety of air traffic maintained.

EUROCONTROL's involvement dates back to June 1988 when a workshop for English !anguage trainers in air traffic services (ATS) was held at the Institute in Luxembourg. The aim of this workshop was to promote the teaching of aviation orientated English to Air Traffic Services personnel.

From the discussions a general consensus emerged that:

- there is a need for a defined level of English together with appropriate examinations to determine proficiency in English at the end of ATC training
- there is a requirement for the harmonisation of the teaching of aviation English
- training documentation and teaching methods should reflect these needs in the best possible manner.

Perhaps I should state here that we are not advocating that all air traffic controllers should have a degree in English but they should have a pre-determined minimum level of knowledge and skills in this language - especially listening, pronunciation and comprehension - to enable them to carry out their tasks to the extent that communication contributes in a most positive manner to the safety of air traffic and no longer features as a "contributory cause".

In recognising this need EUROCONTROL's Training Working Group encouraged the Institute, in September 1988, to commence work on the development of appropriate tests. This commitment was confirmed by the TWG in May 1990 when it supported recommendations made by the 2nd English Language Workshop (held in Luxembourg in March 1990) for the development of a standard English Language exit test for ATS personnel. As a result of the recommendations of this workshop, the TWG decided to set

up a Project Supervision Team for which France, the Federal Republic of Germany, Greece, Portugal and Spain nominated representatives to monitor and guide test development with the EUROCONTROL institute assuming overall responsibility for project co-ordination.

In order to implement this project, which must have acceptance from among the users, very specific expertise is needed in four distinct fields:

- English language
- Test design
- Air Traffic Control
- Teaching English to non-English speakers.

In view of the complexity of this project, the EUROCONTROL Project Supervision Team meeting in Luxembourg in October 1990, decided that the British Council should be tasked with the management of the project and that the test development team should be composed of English language teachers with an extensive ATC background. These would be provided by ENAC in Toulouse and the Spanish ATC School in Madrid supported by testing experts from the Polytechnic of West London specialising in this sort of work. The British Council will co-ordinate the development work, contributing with its unique English language and test administration expertise.

These experts were selected on the basis of their acknowledged expertise and because of

the amount of research they have already carried out in the development of English language tests for air traffic controllers.

A contract has been signed this month (November 1991) between EUROCONTROL and the British Council for the development of English language exit tests for student air traffic controllers. With an expected duration of two years it is hoped that several versions of the tests will be available in early 1994.

EUROCONTROL maintains overall responsibility for the project liaising directly with the British Council Project Manager (who in turn deals directly with the item writers and testing specialists) and as Project Co-ordinator leading the Project Supervision Team.

2. The requirement for such tests

I have already mentioned the variation in the level of English among European controllers. The reasons do not concern us here - be they primarily historical or political. What we do want to achieve though is to eliminate, as far as possible, misunderstanding in communication. Nowhere is communication more critical and misunderstanding potentially so disastrous than in air traffic control. If we accept that R/T phraseology has its limitations and that English is the international language of aviation in Europe, then we have every justification in ensuring that all air traffic controllers obtain a minimum agreed standard of fluency in English consistent with the tasks they have to perform.

There is also at this time in Europe a demand for harmonisation. Harmonisation of equipment, procedures, training... so that aviation in Europe can be regarded as a whole, can tackle problems and shortcomings as a whole and no longer support an imbalance through fragmentation.

The EUROCONTROL tests have to be designed to cover the widest possible geographical, cultural and linguistic range of testees, and meet the needs of a very extensive and diverse group of user organisations. They will also have to be produced in a number of versions to preserve security. The magnitude of this project should not be underestimated.

The aim of these tests may be summarised as a means of determining the proficiency in English, at an agreed minimum level, which will allow air traffic controllers to carry out their tasks, with safety and expedition to air traffic, in the international environment in which they work.

3. For whom are the tests intended

It is not the intention of this project to have qualified air traffic controllers take these English language exit tests but that they be taken by student or trainee air traffic controllers in the final phase of their training. In practical terms this would probably be at an ATC school just prior to the final ATS examinations before students join operational units for

the last phase of on-the-job training.

The question of what happens if somebody fails the test (at least one re-sit should be foreseen) is a matter for National Administrations to decide. It is to be sincerely hoped that by supporting these exit tests for student air traffic controllers the ATC authorities will ensure that adequate English language training is given during the ATC training period.

An important aspect of the design of these tests is that inevitably the teaching of English will be orientated toward the tests. The danger here of course is that the tests become a means to an end and the English language training will no longer achieve the objectives which we are trying to establish.

The tests therefore have to be designed in such a way that the English taught is sufficiently broad based and provides adequate practical experience in the language beyond the mere goal of passing the test "because it's there". Students should be encouraged to continue learning and practising English beyond this level.

From the research and development of these tests a syllabus will be produced by the British Council. This syllabus should form the basis from which course designers and teachers of English will work.

The first results from the Needs Analysis and the Draft Test Design are expected to be

available in Spring 1992. Later in the year, probably in the autumn, EUROCONTROL will hold a two day information forum to report progress of the project to date.

PROJECT TIMETABLE

Start	November 1991	
Needs Analysis	12 weeks	Feb 1992
Draft test Design	6 weeks	April 1992
Item Construction	20 weeks	Sep 1992
Item Trialling	16 weeks	Dec 1992
Analysis	4 weeks	Feb 1993
Final Test Construct	8 weeks	May 1993
Norm Data Exercise	16 weeks	Oct 1993
Document Preparation	6 weeks	Nov 1993

THE EUROCONTROL-BRITISH COUNCIL ATC ENGLISH TESTING PROJECT

Mr Paul DOCHERTY,
The British Council
London

Mr Docherty started with a brief introduction of the British Council. He explained that it has similar functions to that of cultural attachés in that it is the principle agent of the British Government's cultural relations overseas. It is funded independently from government, with money coming partly from the Foreign and Commonwealth Office and from the Overseas Development Administration. The yearly turnover is £ 350,000,000. Revenue comes principally from English Language teaching.

The work of the British Council is very different in different parts of the world. In Finland, for example, it consists mainly of cultural activities, exchanges etc., while in the developing countries such as Bangladesh, the Council manages parts of Britain's aid programme.

The British Council has a great deal of expertise in the English language training field - 50 English language teaching centres throughout the world and 1,100 contract teachers. The English Language Division in London to which Mr Docherty belongs, provides contacts, advice and professional support.

What is the connexion with aviation English? One of the aims of the Forum is to unite two professional worlds, English language teachers, and aviation. The British Council is a potential bridge between them. So, the bridge can in the case of the Eurocontrol Project be made between Air Traffic Control English Language Training experts(such as those in ENAC Toulouse, and in Madrid) and the testing team (at the Polytechnic of West London).

Eurocontrol approached the British Council about this project, a technical proposal was made drawing both on in-house expertise and outside expertise in Britain, and subsequently Eurocontrol contracted the British Council to coordinate the project administration, its resources and quality control.

Reference was made to some of the points raised in Dr Peter Skehan's introduction to testing. While not wishing to prejudge the results of the needs analysis yet to be carried out for the project, Mr Docherty felt it safe to assume that the test produced should be objective, concerned with performance rather than competence, and criteria referenced rather than norm referenced.

There will be 8 stages in the development of the test

1. A needs analysis will be conducted which will be within the ATC environment and have many countries involved at the development stage. It will be based on authentic materials and real interaction and cover both routine and non-routine situations as well as cover general purpose English requirements of ATCOs
2. test design, writing specifications of test
3. making a skeleton test, a sort of blue-print
4. item construction
5. item trial and analysis(looking for reliability)
6. full version of test is tested

7. normative data exercise: a final check when the test is calibrated
8. documentation:finished product and process used to arrive at it is described.

Early 1994 is the proposed end date for the project.

Finally the speaker examined some of the difficulties involved in testing oral English which is a notoriously difficult area. Some of the questions that arise are:

Who does the testing?

What training is available for the testers?

How do we ensure there is inter- and intra-tester reliability?

Practically, how many oral tests can an examiner do in one day?

STANDARDS OF ENGLISH IN CIVIL AVIATION IN FRANCE

Michael O'Donoghue

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This article will first concentrate on the testing of the level of English of pilots in France, and a second part will deal with the new training programme for Air Traffic Controllers.

Pilots

Apart from the standards which the individual airlines require, professional pilots in France have to pass two exams in English to satisfy the French Administration's licensing requirements. The first one, called the QUALIFICATION RADIO INTERNATIONALE, is required to fly outside of France and is intended to check the pilot's ability to handle general R/T communications. It consists of a written test (which includes some multiple choice questions to check basic vocab and structures plus some aeronautical situations where the candidate has to produce messages), and an aural test which takes the form of a gap-filling test of comprehension of recorded live traffic and a simulated flight, in a language laboratory environment ,with qualified Air Traffic Controllers providing the ATC side of the dialogue.

The second exam, called EPREUVE SPECIFIQUE EN ANGLAIS, aims at testing a broader spectrum of language competence (the language needed to handle conversations with passengers, ground staff, ATC and Airport Authorities etc.) It is a purely aural/oral examination. The candidate is given a cassette which has 3 "items" recorded on it .S/he has 20 minutes to listen to the cassette in order to report back to the examiner on 1 of the 3 items. Notetaking is allowed and the candidate can listen to a passage as often as s/he

wishes (within the limits of the 20 minutes allotted.) The report usually leads on to discussion of the subject of the item and more general discussion of the pilot's job. The items which have been chosen for this exam are of an aeronautical nature and include news reports taken from radio and television as well as interviews of English speaking pilots. Examiners are instructed to check for fluency and accuracy in general, and depth of aeronautical vocabulary in particular.

Air traffic controllers

Recent changes to the status of Air Traffic Controllers within the French Civil Service have led to a complete overhaul of their training including a reinforcement of its English language component.

The entrance exam

The entrance requirements for ATC cadets is now two years of higher education in a scientific branch of study. They have to pass a competitive entrance exam which includes a written and an oral test in English. (the weighting of English in the selection process is high). The written exam is a multiple choice examination of General English which aims at testing the applicants' knowledge of English structure and vocabulary as well as their reading comprehension ability. A mark below 8/20 automatically eliminates the applicant from the selection process whatever his/her marks may be in the other subjects. Those who

are retained after the written exams have to take some oral exams. The English oral is similar to the EPREUVE SPECIFIQUE exam described above except that the items are of a general nature and the applicants have to report on 2 out of 4 items instead of 1 out of 3. It is to be noted that this type of oral exam is becoming standard in the French Civil Aviation Administration. It is favoured because it lays emphasis on aural comprehension as well as oral expression and has a backwash effect in that it encourages people who want to work in aviation to listen intensively to authentic materials on radio and T.V.

THE TRAINING PERIOD

The French Air Traffic Controllers' initial training lasts 30 months and is a sandwich course alternating theoretical work at the ENAC (the French Civil Aviation Academy based in Toulouse) with practical flight training and ATC on-the-job training in situ. The whole process is divided up into 8 modules as follows:

Location

	Duration		Hours of English
1. ENAC	(8 months)		126 (4/wk.)
2.	(4 months)	FAMILY 3 AERODROME PILOTING COURSE	40 (2wks intensive)
3. ENAC	(3 months)		48 (4/wk)
4.	(3.5 mths)	1st POSTING	
5.ENAC	(3 months)		48 (4/wk)
6.	(6 months)	1st POSTING	48
7.	(1.5 mths)	INTENSIVE COURSE IN ENGLAND	120
8.ENAC	(1 month)		

Objectives

The aim of the English courses is threefold:

1) Enable the trainees to reach a "level of competence" in English which involves acquiring the language skills and professional vocabulary which they will need in order to perform their jobs as controllers.
2) Lead the trainees to a "level of comfort" which means their having enough confidence in their grasp of English to be able to deal with unusual and

complex professional situations.

3) Encourage the trainees to consciously develop their learning skills so that they will be better armed to "manage" their own in-service training in English.

The whole course can be broadly divided into two parts.

Modules 1 to 3 (15 months) constitute the real "initial" training when the cadets come to terms with the aviation world and the basic skills of the job of Air Traffic Controller. In "English" terms this means reaching the "level of competence" defined above and this level is tested at the end of module 3 (c.f. annexe 1 for a definition of the levels used in the French Administration). Thus, at the beginning of module 1, the cadets will intensively study the language of aviation using in-house materials for the most part. Understanding pilot messages (using both synthetic traffic and live traffic recorded in various parts of the world) is one of the main skills which are developed. Producing correct ATC instructions is another. The language introduced in the English classes follows the progression of the cadets' technical classes: Aerodrome / ACC / Non-radar approach / back to Aerodrome for more complex situations (landing aids, incidents on take-off and landing etc).

In parallel the cadets spend **Module 1** developing their learning skills while concentrating on four main language areas:

1) General language revision and development using an appropriate published method.

2) Specific work on the phonological features of English.

3) Vocabulary development concentrating on the following priority areas:

Transport and travel

Technology

The weather

Geography

Notions of Time and Space

Human Behaviour.

4) Oral Expression and Aural Comprehension concentrating on the ability to process the information rapidly and to react appropriately.

Exercise types include:

Telephoning (voice-channel-only communication)

Information gap (essentially map based)

Cooperative problem solving

As well as different ways of processing aural information

From ticking boxes through drawing, to taking down the complete script.

Trainees are encouraged to analyse their preferred learning mode(s) and to experiment with different ways of recording and retrieving language. The assessment of their progress, at this stage, is partly based on the different language files they have built up during this first module.

Module 2 is a two week intensive course which aims at building up confidence with the spoken language. Activities include simulations and debates as well as more chatty social activities.

Module 3 continues and completes the programme started in Module 1
At the end of this module the cadets take a series of tests to check they have the required level of English. If they fail to meet the requirements they will not be allowed to continue their training.

From an English language point of view, **Modules 4 to 7** (culminating in the 6 weeks immersion course in England)can be considered more as in-service training. The cadets have their 1st posting and are settling into the job. They have met the basic requirements and therefore the emphasis is on their reaching the "level of comfort" which will enable them to cope with the more difficult situations they will meet in their job. Project work on aviation and more general cultural topics will be the norm ("will be" because the first group of trainees with this new programme are doing module 2 at the moment).

Annexe 1

The need for a yardstick to judge English language competence and to provide objectives for "ab initio" and "in-service" training courses led M. Rengade (head of the ENAC language department since 1968) to develop an 8 band scale based on target skills in both professional and general English. Level 0 is a complete beginner and level 8 "perfectly"

bilingual) In practice, however, levels 3 (intermediate) to 5 (advanced) are the significant levels. Trainees entering the ENAC, either to be pilots or controllers, should have at least level 3. For pilots the EPREUVE SPECIFIQUE targets level 4. As for controllers, the cadets are required to have reached level 3.5 at the end of the first module and level 4 at the end of the 3rd module. Level 5 is targeted for the end of module 7 though it is not tested for as such. From then onwards, the controllers are expected to maintain level 4 or better and it is being mooted that they may have to prove it at regular intervals during their career.

N.B. A consensus on the "exact" value of the different levels depends, to a certain extent, on experience and every effort is made to ensure that examiners are given the opportunity to coordinate their judgement in this field.

FINNAIR LANGUAGE TESTING

Kalevi VAINIORANTA

We organize the prestudy language evaluation tests of the applicants for pilot, cabin attendant and check-in agent training. The others are evaluated by the papers they present when applying for the job.

PILOTS

The test takes 90 minutes including :

- listening comprehension, RT dialogues, etc...
- structures : to check how good they are in aircraft flight manual English (use of passive voice, vocabulary, etc..)
- a check of their summary skills
- oral, conversational skills for commercial announcements from the cockpit, etc...

During training there is no time for English. Some 50% of the applicants pass the test. We work together with the other test experts. English is only one of the seven test items.

CABIN ATTENDANTS AND CHECK-IN AGENTS

They must have good conversational skills in Finnish, Swedish, English and German or French. Small talk and fluency are the most valuable and wanted skills we look for. They do not have any English in the course curriculum, only the announcements in the target languages.

TECHNICAL STAFF

The mechanics have 120 lessons of English during their basic modular four year training. The subjects are :

- Technical English 30%
- Travel English 30%
- Three language skills : reading, writing and speaking.

EVENING COURSES

Finnair gives evening lessons to the staff. Classes are open to all. We teach English, Swedish, French, German and Russian and in the future will have Spanish. The fee is $1.50 per lesson. The courses start in September and finish in April.

FINNAIR LANGUAGE TESTS

We arrange English, German, French and Russian language tests for two levels. They are industry oriented. When the testees are applying for other work or their work has been altered and they need language skills, we test them and give them an "official" FINNAIR certificate. This test gives them a language bonus as well.

ENGLISH LANGUAGE REQUIREMENTS FOR AVIATION PROFESSIONALS

Chairman
Mr Jeremy MELL
Language department of ENAC
Toulouse, France.

Representatives of different aeronautic professions presented their view of language requirements in their working lives.

FLIGHT ATTENDANTS : Renate PIERRE-BAUDET and M. Philippe SERRE from Air Inter

Two main reasons were given for the use of English

1. To interrelate with passengers, make them feel welcome, speak to them and offer services.
2. For safety. It is essential to speak English for public address announcements and safety demonstrations. It is also necessary to have precise and accurate technical terms for any unusual incidents that may arise - terms for parts of the plane, describing equipment and airports.

While questions and comments from the floor indicated some companies have hierarchical distinctions in English competence or else distinctions in passenger service (flight attendants for first class passengers speak better English), in Air Inter the crew work as an interchangeable team and tasks such as making announcements are rotated. Air Inter requires cabin attendants to have an intermediate level of English as a basic minimum and this is evaluated by an internal company testing system. Since the company started flying to European destinations the need for English has increased and a certain amount of investment has been made in the provision of a self-access language training centre and refresher courses to maintain the required level of language competence.

Interest was shown by the audience in procedures for emergency evacuation, what language to use, what to do with those who understand neither French or English (use

gesture and example). This led to an anecdote about a real emergency when the order to evacuate was given first in English and the ensuing noise caused by the English speakers leaving promptly drowned any further announcements, but everyone else simply followed suit.

Complaints were voiced about the incomprehensiblity of cabin announcements, including those on British and American airlines. This seems to be due both to the poor quality of cabin address acoustics and to the rapidity with which crews tend to read routine announcements.

Some of the language problems encountered by flight attendants include occasional lack of specific vocabulary, understanding different accents, and communicating with passengers whose English is very poor (eg. Japanese tour groups). Reading of routine announcements certainly needs attention. On some carriers recorded automatic messages are used.

We heard from the floor that research is being carried out to establish how many mistakes one can make and still be a good flight attendant. You can speak perfect English and be a horrible flight attendant. The cross-cultural aspect can be as important as the purely linguistic. Some national groups are more service-oriented and therefore expectations can be different. People should be hired who have the cultural capability to communicate with almost anybody.

During discussion, we learned that in the US cabin attendant training today puts a lot of emphasis on learning to defuse situations of conflict, that in Cathay Pacific Airlines only Chief Pursers, who have to pass a tough English exam, are allowed to make English announcements, and in Varig Brazilian Airlines there are training courses in English for

public address with attention paid to pronunciation for reading routine announcements, plus elements to help in improvised announcements. Thai International captain's announcements have been written avoiding the difficult phonemes /r/ and /l/ as much as possible.

As always, time pressed and the discussion had to be curtailed to turn to the next topic.

AIR TRAFFIC CONTROLLER: M. Philippe TANGUY from Brest Air Traffic Control Centre, France.

The speaker's job in Brest is to deal with flights in the cruise phase. There is not very much foreign traffic arriving and departing from the Brest area, so English is used mainly with traffic on routes between Northern Europe and Southern Europe or North Africa. His use of English in this job is confined mainly to routine phraseology with occasional non-routine incidents which step outside the standardised language of phraseology. Vocabulary may be a problem in non-routine exchanges. The words needed to cope with a technical incident, eg. names of parts of the aircraft are seldom used and therefore are not necessarily instantly recognisable or present on the tip of the tongue when required.

In addition to the ground-air communication link, there is also the controller-to-controller link which used to be done by telephone, using relatively standard phraseology, in English or French as appropriate. However this link is now performed automatically by computer and so the telephone is only used when there is something unusual to be dealt with - a computer failure, a request to use special regulations etc...

Some controllers at the centre attend meetings in English with other centres to discuss questions of procedure.

In Brest there are several means at controllers' disposal for maintaining or improving their level of English. There is a compulsory one week refresher course every three years with opportunities to attend such a course more frequently (although pressures of staffing, and lack of teachers -2 part-time for 150 staff- may make this difficult). These courses concentrate on general English. A new scheme has started to send a group for a week once a year to Plymouth for English training. A language lab is also available at the centre.

In the speaker's opinion it is important to use standard phraseology and speak fairly slowly because then the pilot will reply likewise. Whereas if you do not use standard phraseology, the pilot may speak quickly with non-standard language that is difficult to understand.

It was agreed that tower controllers need English for a greater variety of situations (taxiing, VFR, IFR, private pilots, touch and go's etc.) than en route phase controllers.

A query was made as to who was most difficult to understand, American or British pilots, and native or non-native speakers. Philippe Tanguy refused to be drawn into this cultural minefield by saying that it depended on the individual, and that British pilots generally used good phraseology. When pressed further on what the British could do to be more comprehensible, he jokingly suggested that they could learn French. This proposal received a round of applause.

A speaker from the floor complained vehemently about American military pilots' total lack of standard phraseology, but Mr Tanguy averred that there was no problem with transatlantic civilian flights. Sometimes, if there is an incident, native English speakers tend to speak very quickly, and the controller finds it hard to ask them to repeat or speak slowly. Even if asked to repeat, sometimes the pilot simply repeats exactly the same

phrase, just as quickly. In this case, "rephrase" is a useful request. Non-native speakers of English, on the other hand, may be even more difficult to communicate with when in a tight spot, as they sometimes revert to their native language. Pilots should also bear in mind that even if they are speaking clearly, the radio link may be poor with interference making communication hard.

The discussion dwelt on in-service training and how to define the type of general English required, and deal with constraints of time and money.

A language trainer from England spoke about a group of controllers who had a reasonable level of English phraseology ("enough to get by, provided everything is OK"). However, they had no English to fall back on in the the case of any kind of incident. With severe constraints on time for training(3, 2 or even just 1 month) the course syllabus has to be carefully targeted eg.simple tenses, normally the present, simple vocabulary and usage, and simple functions and situations such as asking questions, giving answers, giving information, giving directions etc. This person prefers the trainees to achieve a certain level of competence in general English before progressing to the technical register.

A successful in-service training system has been set up by Marseilles air traffic control centre where there is an exchange scheme with Britain - a French controller works for a week in an ATC centre in one of several British airports where s/he is looked after by a British counterpart. This works very well, and there seems to be no lack of British controllers volunteering for a week in the sunny South of France.

It was pointed our how lucky the French are to have a boundary with Britain and hence the contacts to set up such a scheme. Poland, for example, has virtually no in-service training,

so it's left to the individuals themselves to find some means to maintain or improve. Problems here also stem from lack of candidates at recruitment level.

In summing up the chairman mentioned some of the difficulties of in-service training: problems of defining what the needs are, practical constraints on the availability of controllers for training, and the motivation of controllers to carry on with English. Sometimes general English is offered to attract people to courses and the syllabus writer is constantly trying to balance the idea of making English an attractive option and at the same time trying to target the language work so as to be relevant to ATC situations.

AVIONICS ENGINEER: M Patrick DEBUCHY from Air Inter.

As most avionics suppliers are American or English, the avionics engineer has to use English every day. There are two very distinct levels of language required for this job:

1. to be able to read technical notes and written communications correctly, but nothing more
2. to be able to communicate with suppliers.

There are several different means of communication:

Telephone -requiring a certain amount of fluency

Fax - requiring written English

Meetings

As aircraft are becoming increasingly complicated, so the number of meetings increases. On these occasions one must be able to understand different accents, make clear suggestions, and explain one's position. This becomes easier only with experience. It is

necessary to master the specific vocabulary, including a large number of abbreviations. The speaker made a comparison with listening to music and getting different messages from Mozart or Bach - he felt that with practice of attending meetings, one could tune in to them and after a while be able to follow and make accurate reports even on very long drawn out discussions.

M. Debuchy works with Americans every day, so he sometimes has problems understanding English people. He finds Americans speak louder.

He made a very strong plea for training which emphasises fluency as opposed to grammatical correctness, saying people are often afraid to speak because they are afraid of looking stupid if they make grammatical mistakes. He acknowledged that grammar is absolutely necessary as you need a basis, but you cannot speak if you are worrying about the construction of the sentence.

This point of view led to discussion where it was indicated that modern textbooks using communicative methods cope better with fluency practice and that a distinction must be made between language as a means and language as an end in itself i.e. literature. In aviation it is a means. Some thought that the stress on grammar was due to both teachers and adult trainees persisting with the methods by which they had been taught at school, while others felt that even if the teachers wanted to encourage fluency as a priority, the students pressurised them into giving grammatical criteria of right and wrong. It was claimed that it is very French to be perfectionist and afraid of seeming ridiculous and this may be a result of school training which goes into great depth of grammatical analysis.

The session drew to its close with a comparison of ages when English starts in school.

THE ENFORCEMENT OF RTF PHRASEOLOGY AND ASPECTS OF CALLSIGN CONFUSION

E G H Green, OBE
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Introduction

In my presentation today I am going to talk about two aspects of RTF phraseology which have an enormous impact on day-to-day operations. Both have significant safety implications in their practical application. The first part of my presentation deals with the "Enforcement of RTF Phraseology" and the second part deals with "Aspects of Callsign Confusion".

The Enforcement of RTF Phraseology

Why is it necessary? Many people, especially those whose mother tongue is English think that it is probably not necessary! As Head of the ATS Standards Department one of my tasks is to investigate incidents that have an ATC content in them. Data is available which shows when pilots or controllers are under stress. RTF is not a good medium for communication. RTF becomes congested and adds to controllers' concern. Cases have been investigated where "Mayday" calls have been ignored by otherwise competent controllers. In one case a controller chose to ignore such a call believing that if it had been a "Mayday" the pilot would call again. It was - he didn't! I come across almost daily examples of poor RTF phraseology which either cause misunderstanding or are misinterpreted by the pilot. I am not saying that the fault is always with the Air Traffic Controller but I think that the following examples illustrates what can happen when a controller uses non-standard phraseology (tape). I wonder how many of you picked up the

incident in the first place. Quite clearly if the controller had used standard RT this incident would not have happened. I think the real classic in recent years was the incident at New York when the Avianca ran out of fuel and crashed on the final approach. Right up to the crash ATC were unaware that the fuel state was critical. It is easy to be critical of the crew but one must ask the question, was the training of the crew in the English language adequate? Perhaps the ATC system was also inadequate - the USA is well known for its go-it-alone attitude and, even now, does not fully enforce standard ICAO phraseology even though it was a major contributor to the present international standard. Many Americans believe their RT is immaculate but surveys have been done to show that it is the cause of considerable worry for foreign pilots in the USA. My own Authority is not above criticism. The UK is famous for its non-standard 'land after' technique that is not considered necessary in any other part of the world.

'Readbacks', that is the read back of vital information to ensure its accuracy, also forms another important safeguard to ensure that there is no misunderstanding on the part of the pilot. Many pilots and controllers tend to omit this important part of the system, particularly when they are busy and the heat is on. Such an omission or more importantly, failure by one party to check the contents of this message, can lead to disaster. Let me read you this extract from an actual accident report.

At 0607 hrs, the commander contacted the radar approach control, on frequency 123.75 MHz, and received the aerodrome information "Runway in use is

14, surface wind 140/5 kt, (visibility) 4000 metres in mist, three oktas (cloud) 100 feet, seven oktas 200 feet, the QNH is 1008, QFE 983 millibars, temperature +12°, runway surface is wet". Initially, the commander did not read this information back to the controller, as is 'required', nor did the controller ask him to do so, as is 'recommended' by the Manual of Air Traffic services. However, a few seconds later, the commander asked for confirmation of the QFE as "987 or 983" . The controller then repeated both the QNH (1008) and the QFE (983).

At 0608 hrs, the controller established radar contact with the aircraft and cleared it to descend to 3500 feet on the QNH 1008. This message was again not read back by the commander. The controller then passed the recommended operating meteorological minima for non Public Transport aircraft when making the "Localiser/DME" approach to runway 14 for which he had been cleared.

At 0611 hrs, the controller re-cleared the aircraft to descend to 3000 feet on the QNH 1008. This clearance the commander did read back to the controller, but incorrectly, as "... 3000 feet on 998". This again was not noticed by the controller who, at 0612 hrs, re-cleared the aircraft to 1900 feet on the QFE 983. Again, this was not read back by the commander nor was read-back requested by the controller. At 0613 hrs, following the

commander's confirmation of arrival at 1900 feet, another clearance was issued for "further descent at 5 nm DME with the procedure, contact the Tower (on frequency) 120.3 MHz". Only the frequency change was read back and the commander called the Tower at 0615 hrs, receiving permission to continue the approach and then at 0615.50 hrs permission to land. This again was not acknowledged nor was any further contact with the aircraft established. However, the lack of an acknowledgement by the commander might, on this occasion, have been caused by an immediate transmission from another aircraft.

From 0618 hrs, repeated but unsuccessful attempts were made by the controller to re-establish radio contact with the aircraft, following which a Full Emergency was declared. The aircraft was found to have crashed into some mature trees close to the top of the north facing slope of the ridge whilst flying at an altitude of 830 feet.

Now listen to this tape. (tape) The readback was there but the controller failed to pick up the error and the incident occurred directly as the result of it. This next tape is also quite interesting in that the incident itself was laid firmly at the door of the Pan Am Captain. It wasn't until the incident was fully investigated that my investigators came to the conclusion that ATC had been a contributory factor. It is all too easy to blame a Captain for making an error in the operation when good procedures and techniques should be quite

capable of detecting the error in the first place. (tape)

I have played all these incidents to you to enable you to hear at first hand the importance of standard RT and the significant role it has to play, not only in the serious incidents like the New York crash and the one in the UK but also in a multitude of smaller incidents that occur almost on a daily basis. What can we do to enforce these standards? First of all there must be proper training. There can be no substitute for this. I often think that the importance of this is not always recognised, especially when we hear some of the verbal diarrhoea that occurs at some of the smaller and less busy airfields. People who come from that environment often come unstuck when they move to busier units because they just do not have time for the unnecessary phrases! In the United Kingdom we consider that RT is so important that even a student controller is required to have a minimum standard of training in RT before he can start work under supervision. There is a lot of debate about the pleasantries of "good mornings" and "cheerio" etc. I have to say that whilst I am not very enthusiastic about their use I do respect the argument that their omission can be counter-productive in that failure to respond to a 'goodbye' leaves the captain with the feeling that the controller is a miserable bastard!

In any case, I have noticed that these pleasantries tend to be naturally dispensed with the busier the environment becomes. However, I do deprecate the use of the word 'sir'. It is unnecessary and serves no useful purpose. These points all need to be addressed during training because once a controller (or pilot for that matter) starts to use nonstandard

phraseology it tends to stick - especially for those who do not have English as their native language.

Training and testing at an initial stage is all very well but what else can we do to ensure that standards are maintained. Monitoring is obviously another tool that can be employed but again care needs to be used to avoid the 'big brother is watching you' approach. To do this in the UK we employ ATC inspectors and Flight Operations inspectors to monitor the daily operation. Every controller in the UK is subject to an annual competency check either by his assigned inspector for the smaller airports, or at the larger airports by a system of local authorised examiners who set up a system of continuous assessment. Great emphasis is placed on the importance of maintaining high standards of RT. Examiners will sometimes 'pull' tapes to go over with individual controllers points of deficiency, be it RT or something else. Incidents, such as those that we have listened to, are also another good indication of the standards that are being used by pilots and controllers. Follow-up action can, and will, be taken when an RT incident is determined to be a contributory cause in an incident. Retraining can be used in appropriate cases. In the cases of identified pilot faults in RT, representations will be made to their company or, in the case of foreign companies, to their own administrations. This is not to penalise the individuals but to impress upon them that when they come to a busy environment like the UK, strict adherence to international standards of RT are not only expected but are demanded. To be fair the standard of RT used by foreign pilots in UK airspace is high and we seldom get serious incidents. This is remarkable when you think of the number of foreign airlines serving

London airports alone.

Much can be done by action such as I have outlined but whilst this may help I believe that the only convincing method of getting the necessary standards is by persuasion, by publicity and by airing the problems at international fora, such as this. To this end we continually publish NOTAMS and AIC's as reminders drawing attention to perceived faults, recent incidents and the need for corrective action. We need to persuade all the aviation world that, in the interests of aviation safety, internationally recognised standards of RT must be used. Only then will we achieve what all of us desire - the highest standards available.

Aspects of Callsign Confusion

I am going to take this opportunity today to talk to you about another area which, in my opinion, and that of many other aviation observers, needs to be addressed and that is callsign confusion.

Callsign confusion has been around a long time, many people have made attempts to solve the problems. In the States we are aware of a considerable amount of research into the problem. In the CAA we do not consider we have sufficient resources to tackle the problem although the current Safety Data Analysis Unit's data base shows a total of 154 incidents for aircraft in UK airspace for the last 5 years.

As an Appendix to my paper I enclose a list of RTF Phraseology induced incidents.

Callsign confusion has been responsible for countless numbers of incidents and as the density of traffic increases so the problem becomes greater. Callsign confusion occurs when numbers or letters are used together which sound to the recipient similar. The simplest example is the use of many airlines using the callsign with the suffix AIR (eg SwissAIR, FinnAIR, TurkAIR, USAIR, etc.). This is unnecessary because international regulations permit any approved Radio callsign. Credit to British Airways, to Air France, Qantas and Aeroflot and many others who have developed their own distinctive callsign which in respect of this point are unlikely to be confused. First then a plea for the other companies to help out. Perhaps the worst case was Air 2000 which produced many opportunities for confusion. However, they were big enough to accept the criticism and have now become the exclusive 'Jet Set'. Unfortunately the problem does not stop there. In my day at Heathrow we had Clipper One, Speedbird One, Qantas One and so on, all prestige flights, often round the world, that the commercial people jealously protected. Fortunately, common sense has prevailed and most have gone. However, combination of figures is just as deadly, listen now to this incident at the arrival runway at Heathrow (tape).

The combination of numbers in a callsign can be catastrophic and requires the utmost care by both ATC and the pilots. There is no doubt that it was a black day for safety when the then British European Airways (BEA), the largest airline in Europe at the time, made the

decision to move from 'alpha' callsigns to numerics. At that time, every air traffic controller in Europe knew every single type of aircraft that regularly used their airport by its callsign, what a bonus that would be today with all the complicated separations used for wake Vortex reasons! The sad thing about it is that safety was not taken into account when the changeover was made - it was done for good reasons because the systems at that time could not cope. One of the other problems is the interface between passenger handling at airports and ATC if different callsigns are used. The trouble with numeric callsigns is that we only have ten to choose from whereas we have at least 24 usable alpha figures. I actually favour the colloquial system adopted in the States where they refer to a callsign of one zero two zero as ten twenty. Let me hasten to add though not unilaterally! The advantage of such a system is that it starts to introduce more numeric combinations than the basic ten but it needs to be done by international agreement.

What can we do now? First and foremost we need to convince the commercial boys that if there is a need for a change in callsign it is for safety reasons and commercial objections should be overridden. Many of the forward thinking people in aviation have tried combination of alphanumerics. The alphanumeric system worked on for many years by Captain Leonard of Dan Air (another AIR!), and operationally tried around Europe is an example. The simpler shuttle callsigns used by British Airways is another useful example (even if the last system did inadvertently duplicate a highly sensitive military callsign used by a helicopter covert operation!) where people have constructively tried to help. British Airways have now introduced a trial of alphanumerics for their UK domestic services. The

trouble with alphanumerics is that they are often difficult to get your tongue round and more significantly are difficult to read, especially in data blocks and particularly on radar where an 'S' looks like a '5' and is a nought an '0'? In general alphanumerics have not been very popular with controllers even though they recognise that it is a bona fide effort to attempt to solve the problem. What else can be done?

In the UK we have made representations to airlines to try and overcome problems that certain services cause every day of the week particularly those on domestic routes. One airline had a series of callsigns all using double '8' or triple '8' depending on the time of the day! That was fine until one of the flights ran late and we finished up several double '8's on one frequency!

I believe that the only sensible solution to this problem is international co-ordination. It really is no good persuading KLM to change their KLM 130 to 120 because London has a Qantas 130 at the same time if the problem is transferred to Amsterdam who may already have two 120's!
The International Civil Aviation Organisation (ICAO) already co-ordinate five figure position report identifiers to avoid international duplication. I see no reason, although it would be a much bigger task, why ICAO or another international organisation such as IATA, could not be given the same remit with callsigns so that they were not introduced by the commercial whim but were introduced as a part of an overall constructive safety plan.

Conclusion

My presentation today is an attempt to explain to you the importance of getting the overall aviation language right. Much of it is dependent on the procedures in use in particular parts of the world. This is not an area for the cowboy approach of go-it-alone. It needs serious consideration by experts like yourselves, above all, until the introduction of efficient datalink systems, it needs international agreement and enforcement to ensure that a phrase used in Japan or Brazil means exactly the same thing in Europe.

Thank you.

PHRASEOLOGY RELATED INCIDENTS

The following is a digest of incidents either directly or indirectly caused by the use of non standard RTF phraseology or procedures, by both pilots and controllers. The purpose of this handout is to illustrate the requirement for close monitoring of phraseology by controllers in the field. The use of a practical example may facilitate the understanding by controllers on the fundamental requirement to be safe by being standard.

A P P E N D I X

ATS Standards
August 1991

Aircraft type	Occurence
B707	"Cleared for ILS approach", the aircraft descended below the last cleared level.
B737	"Leave "XYZ" on a radial" was acknowledged as "Leave "XYZ" on a heading
DC8	The aircraft was heading 280 degrees and was transferred to the next sector with the instruction "Continue on to eight zero". The crew took this as an instruction to climb to flight level 80 and did so.
VC8	Non standard phraseology was used regarding an initial level restriction. This was not understood by the crew who then entered controlled airspace without a clearence.
B707	Aircraft on final approach with one aircraft on the runway. The approaching aircraft was instructed to"Pull up and turn right". The

	aircraft completed an overshoot and a right hand circuit.
B737	For some 5 minutes ATC gave climb instructions to the aircraft without prefixing these transmissions with an aircraft callsign.
DC9	Aircraft instructed to overshoot. The pilot did not understand but he knew what a go-around was.
Military	Non standard RTF and similar callsigns resulted in the wrong climbing and getting into a conflict situation.
B737	ATC gave a clearance to an aircraft to climb to FL 370. Due to simultaneous transmissions the instruction was picked up by another aircraft who acknowledged the climb instruction without using a callsign.
B737	Aircraft climbed above its cleared level due to non standard RTF by both crew and ATC.
BA11	Aircraft was instructed to "Line up and wait". The last part of the transmission was missed by the crew and they believe that they had to line up and take off.
PA31	Two similary sounding SIDs. The crew read back and understood that they had been cleared for one when, in fact, they had been cleared for the other SID. Incident caused by ATC wrongly phrasing SID instruction.
BA11	Conflict caused by non standard RTF and unnoticed error in the readback.
PA28	Aircraft was instructed to "Go around". The pilot carried out an orbit.
PA31	Conflict on final approach resulting from pilot thinking that he was on a

	radar heading. The previous controller did not use the correct phraseology when terminating the radar service.
S61	Pilot reported "On 5 miles", which sounded to ATC like "On finals". S61 was cleared to land and conflicted with traffic on final.
B747	Confusion between 2 similar callsigns, 5002 and 502. 5002 took 2 transmissions intended for 502.
BA11	Aircraft was instructed to climb to FL 290 and also given a frequency change in the same transmission. The pilot selected the wrong frequency and was out of contact for 30 seconds before reverting to the previous frequency.
BA11	Confusion and conflict caused by a foreign aircraft taking a descent clearence intended for another aircraft.
BE20	Aircraft climbed to 3000 feet before ABC on a ABC 1B SID. Pilot stated that he was given an ABC 1B - climb to 6000 feet. He interpreted this to mean unrestricted climb to 6000 feet.
PA28	Pilot called on the wrong frequency, using an abbreviated callsign, requesting taxi to the pumps. An adjacent aerodrome ATCU had an aircraft of similar callsign on their airfield. This ATCU received the call and cleared the aircraft to taxi, using their full identifying callsign. The aircraft taxied across the runway without contact or permission from the appropriate ATCU.
HS25	Pilot mistook ATC acknowledgement of a transmission from another

	aircraft as approval of his request to cross the runway.
DC10	Aircraft was cleared to descend to FL 210, but crew read back FL110. The error was not picked until Mode C indicated FL190.
A300	Aircraft was instructed to maintain FL 90, but was seen on Mode C indicating FL67 descending. The aircraft was instructed to climb back to FL 80. ATC had said "Nine zero"" (not niner zero) and the crew had heard and read back FL 50. This readback was not picked up by ATC.
C172	Aircraft had taken off from the left hand side of the numbers. On turning final the tower advised the aircraft to land on the other side of the numbers. The pilot interpreted this to mean the right hand side of the runway edge. On landing the nose wheel ran into boggy ground and the aircraft nosed over.
Unknown	Aircraft climbed above cleared level due to pilot misinterpreting traffic as a climb clearance. ATC did not use correct RTF phraseology and did not hear the incorrect readback.
TU34	ATC/Pilot confusion led aircraft to enter active runway in front of landing traffic. Landing aircraft's landing clearance was cancelled and the aircraft instructed to go around. Poor RTF phraseology led aircraft to believe that he had been cleared to enter the runway. The controller concerned then cleared the aircraft for take off without co-ordinating with the aerodrome controller.
B747	Pilot mistook a message of "Hold position" as permission to proceed

	and line up. The phrase "Position and hold" is used in North America instead of "Line up".
Tiger Moth	ATC had given agreement for the aircraft to depart off the runway, however, this agreement did not include take off from a divergent angle from the runway in use or preclude the pilot from maintaining an adequate lookout . A/G operator expected the pilot to take off in a direction on, or parallel to the runway in use, although confusion probably arose due to his incorrect phraseology. During the take off run the aircraft collided with a parked aircraft.
HS74	SID "ABC3" includes "Maintain 3000 feet to ABC reporting point". Tower cleared the aircraft to maintain FL 100 but when departure contol were asked to confirm, they instructed the aircraft to maintain 3000 feet due to crossing traffic. Tower clearance should have been "Expect FL 100".
HS74	Aircraft inbound to XYZ, cleared to maintain 5000 feet until passing XXX and to call XYZ tower, who then cleared the aircraft for an ILS approach onto runway 27. After XXX the aircraft commenced the procedure descending to 4000 feet in a tear drop turn back to the XXX and then followed the approach as per the Aerad chart. ATC stated that the aircraft should have maintained 5000 feet until XXX outbound as 4000 feet is reserved for departures.
B737	Aircraft given an instruction "Cleared to zero nine zero" meaning cleared

	to FL 90. Confusion between headings and levels.
MD80	Crew mistook clearance to 3500 feet as 2500 feet. Spot height of 2119 feet close by. Heavy accent by the conroller made distinguishing 2 and 3 difficult.
SH36	Both crew understood that clearance for take off had been given, but within 2 seconds of commencement of take off roll, ATC instructed the aircraft to stop as airways clearance only had been given. Controllers RTF was not perfect, however, the aircraft did attempt to take off without clearance.
Hughes 369	ATC instructed the helicopter twice to route to point "W" due to circuit traffic left hand on runway**. The helicopter was then seen crossing the extended centreline well within the ATZ and directly in confliction with a 152 airborne from runway**. Pilots phraseology was non standard.
PA28	The pilot assumed he had clearance to cross the control zone following an alleged non-standard RTF exchange.
B747	The aircraft failed to follow ATC descent instructions. The transcript revealed that the crew had failed to readback the correct cleared level and the level restriction included. These errors were compounded by ATC failing to note them.
B747	The aircraft followed un incorrect routeing into airspace and separation was compromised with respect to several other aircraft. The pilot had been passed the clearance by a sector controller and the pilot misread the

clearance back to him. The controller did not detect the error.

B757	The aircraft lined up on the runway without clearance, a B707 was on final approach. The B757 crew believed that they had been given line up clearance, however, some of the RTF messages from both the aircraft and ATC were ambiguous.
TU154	The aircraft climbed above the SID altitude and conflicted with other traffic. The pilot of the TU154 took a descent clearance intended for another aircraft and climbed to the level allocated. ATC failed to notice the readback was the wrong aircraft.
G4	The aircraft was cleared for descent and subsequently the level was amended to a higher one. The pilot did not acknowledge this new level and descended through it to the original level. ATC did not insist on a readback. The pilot later stated that he had heard a partial instruction but was unsure if it was addressed to him.
B707	The aircraft climbed above its cleared level having taken an instruction intended for another aircraft.

TRAINING ENGLISH SPEAKERS TO USE AND MAINTAIN A RESTRICTED LANGUAGE

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Air Traffic Control Centre

My job would be easier if English, or to be precise, American English, was not the language of aviation. A dead language eg Latin or Classical Greek would be far more effective as the words or phrases used would mean one thing only. A random check of a twenty minute duration interchange between Controller and Pilot revealed at least ten ways of indicating to a pilot that a change of level in a downwards direction was required.

For English speakers, RT tends to be learnt during basic training and modified thereafter. Revisions to Phraseology manuals tend to be overlooked and no amount of reminders seems to change the original ingrained messages. The last person that I knew who was still wedded to the 'Queenie Dog Mike' era rather than 'Quebec Delta Mike' or 'George Able Oboe How Nan' for 'Golf Alpha Oscar Hotel November'retired six years ago.

What does tend to be learnt are colloquialisms which are picked up by those who consider it slick to use such phrases and thus bad RTF is proliferated.

There are three areas where my responsibilities cover the use of RT - Training (both simulation and live), examinations and investigation.

Extensive use is made of simulators at the London Air Traffic Control Centre and it is necessary to first train people to act as pilots and fly the simulated aircraft providing the appropriate RT responses and requests.

Training for these pseudo pilots consists of instruction using tapes of RT messages; sitting with controllers who are controlling the live traffic and then monitoring the actual exchanges between pilot and controller; practical on the job training with a qualified pseudo pilot in the simulator. Once checked out they carry out periodic visits to the Operations Room to retain their expertise, also the instructors who are using the simulator keep check on their accuracy and soon pick up any lapses.

Controllers for the Centre arrive either from the College or from other units. New arrivals from the college come fresh with the latest phraseology which at times needs to be sharpened or reduced for work at a busy centre. New applications need to be learnt to convey to a pilot what is required of them.

Those who are already experienced need their phraseology updated to the latest issue. Classroom exercises in marking flight strips to reflect the situation in the air are carried out to get the controllers used to writing at the same time as they speak. Extensive use is made of RTF recordings for this, starting with specially recorded tapes without background noise ending with recordings of live RTF and its less than Hi Fi quality.

Training in the simulator is carried out with experienced instructors who are on the alert for lapses in RTF, also the pseudo pilots deliberately respond with incorrect messages to see whether they are picked up by the controller.

Following the simulator phase, training is carried out in the live environment with a qualified instructor sitting alongside and attention paid to RTF as well as expertise in controlling.

After about 200 hours training the trainee is recommended for a practical check which is undertaken by a CAA examiner and Phraseology is one of the items examined.

Once qualified controllers undertake an annual competency check whereby performance is assessed and confirmed by an examiner. The practical aspects of this check may either be carried out by an annual visit from an examiner or by continuous monitoring throughout the year. The latter method is in operation at any centre and it enables any deterioration in standards to be picked up.

My last area of interest is investigation. One of my sections is responsible for carrying out investigations into any incidents that have occurred. Extensive use is made of recordings: Radar, RTF and telephone exchanges. Whilst their prime task is incident prevention, these recordings can indicate if there are any bad habits creeping into the exchanges between pilots and controllers.

When necessary, remedial training is recommended and this is carried out with an instructor in the simulator, in the live environment or both. Examples can be put on video tape and used for Training sessions, either for new arrivals or qualified controllers.

With RTF being the prime tool for a controller and a pilot to indicate to the other their instructions and intentions it is vital that each understand what the other intends and that it is then carried out accurately and without discussion. To achieve this trainees must be trained to use standard phraseology and actual exchanges monitored to confirm that the required standard is maintained.

WHAT IS NOT STANDARD IN REAL R/T?

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Standards of language use in aeronautical radiotelephony need to be productive (being concise while avoiding misunderstandings) but also acceptable to users. Examples of naturally occurring non-standard usage can provide valuable clues as to what should or can be standardised. Only by comparing many instances of real language use by different individuals in similar situations is it possible to get an accurate idea of the nature of non-standard variations.

This paper presents advance results of the analysis[1] of the English parts of a corpus of recorded en route r/t (7,000 pilot and controller messages). We draw attention to the different levels of variation and the types of variation observed in a selection of message types with a view to establishing a sound basis for the definition of standards. It will also be pointed out that some categories of message are not taken into account in the official phraseologies.

1 The study, due to be completed early in 1992, has been carried out over a three year period at the Ecole Nationale de l'Aviation Civile with funding from the Centre d'Etudes de la Navigation Aérienne (CENA) within the framework of a project to develop a natural language interface for training simulators. The final report will contain an extensive analysis of the corpus of routine dialogue and a contrastive study of several incidents.

INTRODUCTION

Routine vs. non-routine

Numerous recent official reports, articles in aviation journals and linguistic studies have drawn attention to the influence of r/t communications in English on the outcome of aviation incidents[2]. Language errors have been cited as primary causes or aggravating factors when things start to go wrong in the air or on the ground.

2 There follows a selection of recent publications: CUSHING S (1991): Social/Cognitive Mismatch as a Source

of Fatal Language Errors; paper presented at this conference. GOLBY S B (1988); Say Again?; AOPA Pilot, January, 1988. HAWKINS F H (1987); Human Factors in Flight; Aldershot: Gower Technical Press. LEVESON L (1985); Language Problems in air traffic control; International Journal of Aviation Safety. December. MELL J (1987); The English Language Needs and Training Problems of Air Traffic Contollers (OCCA) in France; Université de Toulouse, le Mirail, (English translation by CAA, London). SCTA (1988); Special Phraséologie; Bulletin Sécurité Contrôle No. 8; Paris, SCTA.

While studies of non-routine situations point users and trainers to the (all too important) danger areas in r/t, they cannot provide the overview of the contextual and psychological factors that determine language requirements, which in turn are needed to inform language planning at all levels, from the creation of official procedures to language training in local establishments.

The submerged mass of the iceberg, of which incidents reveal but the tip, is made up of routine communications between a wide variety of individuals. Consistent patterns of usage in routine contexts can provide us with valuable information about the real communicative needs of pilots and controllers, while observed variations in the formulation of similar messages or in the organisation of the dialogue can allow us to take informed decisions about their acceptability in safety critical contexts.

Why study non-standard routine r/t?

The aim here is not initially to draw attention to variations as cases of non-standard phraseology - a more "naïve" approach is adopted. It is assumed that all forms of language (choice of words, uses of syntax, intonation, stress) are the translation of individually felt communicative needs[3] This translation is occasionally carried out consciously but for the most part takes place at unconscious levels particularly in the resolution of problems in real time.

We start with the assumption that all needs are of equal value. Before deciding whether a given need and its linguistic expression should be taken into account in the definition of

3 Such needs (apart from the fundamental requirement of communicating information and instructions clearly and concisely while avoiding ambiguity) will be as diverse as

standards, we will need to see:

(a) whether it is widely represented among the users

(b) whether it is in potential conflict with the basic requirements of clarity and concision.

emphasising a particular part of the message, linking up with previous messages, being polite, expressing urgency, authority, displeasure, etc, maintaining conversational rhythm, displaying group membership. Some of these needs may be in conflict with each other - the use of a minority jargon to display group membership may flout the requirement for clarity.

Existing procedures for radiotelephony stem from the ICAO recommendations contained Annex 10, Volume 2 and Document 4444-RAC 501/11 of the Convention of Procedures for Air Navigation Services. They provide the norms for worldwide communication in the most commonly occurring situations of air navigation.

These do not constitute a code, but a restricted sub-language derived from an already existing natural language - and this is both its strength and its weakness. As a sub-language it has benefited from all the resources of the wider language from which it is derived to meet the requirements of changing technology. Modifications to the recommendations in the early 80s took into account lessons learned from observed misunderstandings (restrictions on the use of the word "cleared", conversion of "affirmative" to "affirm" to avoid confusions with "negative" when only the final syllable is heard). It has proved itself to be a flexible as well as an easily usable tool.

It is, however, and for the very same reasons, an unpredictable tool. It is difficult for users in some circumstances to dissociate it from the needs expressed by the wider language. In addition, we will observe that some commonly occurring messages in r/t are not catered for by the phraseology, that the recommendations themselves provide contradictory norms,

and that in these cases, users make use of their (variable) command of the source language to get their message across.

What are the norms?

Before attempting to identify cases of non-standard usage it is necessary to define the norms for standard usage. However, even in the highly standardised world of air traffic control, this is by no means an easy task.

The ICAO recommendations mentioned above would seem to be an obvious candidate for external norms, but these may or may not be adopted in their entirety by member states, (who must nevertheless notify ICAO of any differences that they intend to adopt), and this leads to small differences of phraseology from one country to another. Within one country, local conditions such as traffic patterns, atc equipment, etc, can lead to the creation of a specialised phraseology to cover cases not included in ICAO recommendations. Finally, within one workplace (ground station or airline) idiosyncratic changes to phraseology may become a local norm.

Alternatively, one could base the analysis on internal norms - that is to say on norms that are inherent to the corpus itself. In this case, it is the frequent patterns of language use that establish the norm for a given message type. Less frequent patterns may be interpreted as deviations from this norm - but they may in some cases constitute evidence of the need to create a new message type.

It is these internal norms that have been adopted in our study as a starting point for analysis of the corpus. Observed patterns of language use will subsequently be compared with the official procedures laid down by the French Direction Générale de l'Aviation Civile in the document "Procédures de la Radiotéléphonie à l'Usage de la Circulation Aérienne" (DGAC/SIA 1985).

PRESENTATION OF THE STUDY

Objectives and methods

The study initially involved the collection of an extensive corpus of recorded conversations between a variety of pilots and controllers in European airspace during the en route phase of flight. These conversations were recorded both on the ground (8 sectors at Paris ACC) and in the air (16 complete flights by Danair and Iberia). They took place in English and in French and involved French, English, Spanish and Portuguese controllers.

These conversations were subsequently transcribed and broken up into numbered turns (uninterrupted utterances by one speaker) and numbered speech acts (individual messages within each turn). The resulting text was then used to create a data base of speech acts.

The primary aims of the study are to analyse the dominant characteristics of en route r/t under two headings:

- utterance characteristics:

  What messages are formulated? (semantic and pragmatic features) What are the different linguistic formulations of the same message? (lexical,syntactical and prosodic variation)

- interaction characteristics:

  How are messages distributed throughout the dialogue?

  How are messages sequenced and linked within turns? (turn structure)

  How are messages sequenced and linked between turns? (exchange structure)

  When do the different speakers tend to initiate exchanges?

In addition, we have collected information about the extra-linguistic context of each speech act to enable us to investigate the situational variables that may have a direct effect on linguistic features. Among these variables we have paid particular attention to:

- traffic density
- professional qualification of speaker
- native/non-native speaker status
- phase of flight/type of sector

The data base

The data base has been constructed using the ORACLE relational data base management system. The query language is SQL PLUS.

The principal table of the data base contains the text of speech acts of the corpus (one speech act for each row of the table) and, in adjacent columns, the results of a manual analysis of the speech acts consisting of the following:

- speech act meaning:
  - illocutionary force (giving instructions, requesting information, greeting, etc)
  - topic (flight level, route, weather, etc) sub-topic (climb, descend, maintain)
  - additional components (modalisation, qualification) communication problems
- speech act formulation:
  - language used
  - syntactic structure
  - ellipsis
  - prosodic marking
  - cohesive devices
  - hesitation phenomena
  - conformity to phraseology
- dialogue structure:
  - sequential structure of the turns and speech acts relationships between acts

within a turn (subordination) exchange structure (initiation, reaction) relationships between exchanges

(The analysis of the dialogue structure is based on much of the recent work done in the area of discourse analysis, and in particular on the model developed by the Geneva linguists working with Professor Eddy Roulet[4].)

4 ROULET E, (1981): Echanges, Interventions et Actes de Langage dans la Structure de la Conversation; Etudes de Linguistique Appliquée, 44, 7-39, Didier Erudition. ROULET E et al., (1985): L'articulation du discours en français contemporain; Berne, Peter Lang. ROULET E, (1986): Complétude interactive et mouvements discursifs; Cahiers de Linguistique Français; 7, 189-206; Genève, Université de Genève.

Other tables in the data base contain situational information concerning:

- speakers (nationality, experience, etc)
- flights (type of aircraft, route, weather conditions, etc)
- control sectors (traffic density, geographical location, etc)
- recordings (date, time, etc)

Queries of the data base allow two principal types of analysis:

- extraction of the text of speech acts according to specified criteria or combinations of criteria. For example, it is possible to display all climb instructions given by the controllers represented in the data base and to group them according to such variables as native-speaker status, density of traffic, syntactic structure and so on.
- frequency counts of speech acts in the data base

While the minimum unit of analysis is the speech act, it is nonetheless possible to carry out an analysis of the individual items of vocabulary (word counts and word searches) using the same query language and other software tools.

Statistical presentation of the corpus

The corpus is constituted as follows:

Length : 14,330 words

Vocabulary: 1,303 distinct words

Total number of speech acts: 6850
Number of different speech acts: 250
Number of different utterances: 3461

Total number of exchanges: 2155
initiated by pilot: 828
initiated by controller 1327

Dialogue in English represents approximately 70% of these totals.

NB. Figures are compiled from utterances which include number/letter sequences, place names and aircraft operator names. These variables will be excluded from utterances in later counts in order to give a more accurate view of variations.

SOME RESULTS OF THE ANALYSIS

A breakdown of the communicative tasks

Analysis of the speech acts reveals that less than half, in the form of instructions and information, are directly concerned with the management of aircraft movements, while slightly more than half are devoted to the management of the communication itself. 33% of the total number of acts are turn-management acts - that is, they serve to identify who is speaking to whom. A further 14% manage the different means of communication between pilot and controller (radio frequencies, transponder codes, radar contact) and 5% are "repairs", serving to patch up misunderstandings. Such a high proportion of "conversation about the conversation" may seem surprising, but this reflects the tenuous nature of the links between aircraft and ground stations, and the very real risks of confusion that they imply.

Level instructions (controller)

Instructions to climb, descend or maintain level are among the most frequent speech acts (278 occurrences in our corpus - 13.5% of all controller messages).

The basic syntactic pattern for formulating these instructions is:

VERB PHRASE + FLIGHT LEVEL PARAMETER

There is, however, a great deal of variation in the formulation of each of these two elements. While in the majority of occurrences the verb phrase uses the imperative form of the verbs "climb", "descend", "maintain" or "continue", a significant number (36) use

complete or abbreviated passive forms of the verbs "cleared" and "recleared". (The use of the terms "continue" and "recleared" is an example of a widespread tendency for speakers to acknowledge links with preceding discourse[5]). In 4 cases the verb is omitted entirely or replaced by a prepositional phrase ("Down to ..."), whereas in 3 cases both "climb" and "maintain" are used in the same message.

The flight level parameter is also subject to extensive variation. In 54 occurrences, most of which are instructions to maintain level, the parameter consists simply of the flight level number, while in a further 10 occurrences there is no explicit mention of the parameter at all ("Maintain"). In these cases, the instruction is in response to a message from the pilot in which his present flight level has been stated. Once again, and this time through ellipsis, the controller establishes a link with the preceding discourse - and saves himself some time.

Another form of variation is the addition of a preposition between the verb phrase and the parameter - including "to", notorious for its possible confusion with the number "two" ("Climb to 3 5 0" is attested in the corpus). Other additions are the adverbial elements "immediately", "initially" and "(for the) time being". While the first has official status as a marker of urgency, the two others seem to be frequent enough (28 occurrences) to constitute an element of unofficial phraseology whereby the speaker can inform the addressee of his/her plans for the future - in this case the controller reassures the pilot as to his/her intention to provide further instructions and thereby forestalls further questioning

5 The fact that phraseology is presented as a list of discrete messages means that this communicative need is not catered for. Other signs of its importance for speakers are: other verbs prefixed by "re-"; the addition of "now" to some instructions; the use of linking words ("and", "so", etc); ellipsis ("you can if you wish"); words with deictic reference ("this radar heading", "that'll be final"). While some of these devices may be seen as ways of economising on language, and thereby achieving concision, another communicative need may be at work here: namely, by exercising mastery of the discourse, the speaker may be ensuring the listener's confidence in his/her mastery of the situation.

from the pilot.

The positioning of these adverbials in the message is variable. "Initially" occurs both in medial (between the verb phrase and the flight level parameter) and final positions - 9 and 8 occurrences respectively. 3 out of the 8 occurrences of "(for the) time being" are in the initial position. All 3 occurrences of "immediately" are in the medial position. The tendency to avoid the initial position for adverbials (the position recommended by phraseology for "immediately" and similar words) may be due to cognitive preferences in the ordering of elements and/or to considerations of sentence rhythm.

Only 31% of all "level" instructions in English are standard with respect to phraseology. In this case, native speakers show a higher level of standardisation (46% of utterances are standard), but the sample is smaller than for non-native speakers. It should be pointed out that official procedures are contradictory on the use of the preposition "to" in front of flight level parameters, since both "CLIMB (or DESCEND) (level)" and "CONTINUE CLIMB (or DESCENT) TO (level)" are proposed.

Present level information (pilot)

Information given by the pilot to the controller concerning flight level may concern present or future level. The corpus contains 244 speech acts of this type in English (14% of all pilot messages), of which 200 concern a present level.

The most frequent syntactic pattern is made up of a verbless statement of the flight level parameter. However, this pattern accounts for only a slim majority (56%) of the occurrences, and consistent patterns of variation can be observed.

As in controller instructions, there may be omission of the marker "flight level" (83 occurrences) or omission of the word "flight" (54 occurrences). This latter variant gives rise to potentially ambiguous utterances like "Level 2 9 0", where the word "level" can be considered as an adjective describing the aircraft's current flight attitude or as a noun identifying the aircraft's current level regardless of its attitude.

The addition of a prepositional or verb phrase in front of the flight level parameter is a very common feature of these messages (107 occurrences), and can be interpreted as a need for the pilot to add to his information about the aircraft's current vertical position an indication of the aircraft's current vertical movement.

Verb phrases are usually in the verb + ING form, and the verb or prepositional phrases can be grouped according to notions of movement with reference to a fixed point:

"at"/"maintaining" (34 occurrences): no change of level, no change of attitude
"levelling" (3 occurrences): no change of level, change of attitude
"reaching" "approaching"/"coming to" (11 occurrences),
"crossing"~"passing" (17 occurrences): change of level, no change of attitude
"leaving"/"out of" (25 occurrences): change of level, change of attitude

This would seem to be a widely felt communicative need for pilots, for which no message type is officially provided. A certain consensus exists on terminology, but each different notion is expressed by more than one variant. Indeed one controller has informed us that he interprets differently the utterences "Approaching flight level 2 5 0" and "Reaching flight level 2 5 0". While the latter is a simple statement of current movement and level, the former is a gentle reminder by the pilot that he/she is expecting a further climb or descent clearance.

68% of the utterances are non-standard with respect to the phraseology, which specifies only one message type.

Indirect speech acts

The example of the differentiated interpretations "approaching" and "reaching" points to the infrequent, but consistently present phenomenon of speech acts that are "not what they seem", or "indirect" speech acts. These have the linguistic form of one type of speech act (for example "giving information"), but are interpreted by listeners as a different type of speech act (for example "requesting action"). A cursory glance at everyday conversation provides a multitude of indirect speech acts, which are often associated with attempts at "face-saving". A speaker may save his own face and that of a listener by formulating a request in such a way that the listener's freedom of action is not impinged upon, while diminishing the embarrassment of a possible refusal.[6] The mechanisms that result in listener's making correct inferences about the true intention behind such speech acts are

6 'Brr, it's cold in here" is more likely to be interpreted as a request for the listener to close a window, or at least to give

complex and subject to error - but they are highly dependent on all participants' knowledge of the relevant context.

permission to the speaker to do so, than as a simple piece of information or the starting point of a chat about the weather.

Indirect speech acts are common enough in our corpus to merit close examination. There are 48 occurrences, of which 43 are pilot messages. Not surprisingly, they are most frequent where the speaker is using his/her native language, and they mostly concern requests for levels and routes that are not in the flight plan. The variety and length of some of the utterances, and their punctuation by hesitation noises, betray the thorny nature of the problem!

"Can you give us some idea as to euh when we can euh expect higher level?"
"We could go to the euh Toulouse VOR, tango oscar uniform." "If FL is available, we would be obliged"
"X is standing by for FL should it become available" "Is there any chance of FL?"

Common features of these utterances are that they are disguised as messages giving or requesting information, and that they make use of a modal element expressing the notion of feasibility or capability.[7] One is tempted to conclude that the official procedure for requesting a clearance (REQUEST CLIMB ...), a direct speech act if ever there was one, does not always correspond to imperatives felt by pilots to save face!

7 This notion seems to be an important one for pilots and controllers to express in their messages, since it is a component of 43 speech acts in the corpus. (Other common modal notions are those of wishes and future likelihood.) Official phraseology is not clear on this point as it provides more than one syntactic pattern for r/t users to model other messages on: 11.2.3.4 (c) CAN YOU

Taken out of context, such messages are difficult to interpret. However a small minority (4

CLIMB ... ? 11.3.4 (b) ADVISE IF ABLE TO CROSS ... ?

occurences where French is being spoken as a native language) remain ambiguous even in context, leaving the agreed status of the speech act uncertain. They are all requests from the controller to the pilot about the ability of the pilot to accelerate or turn.

C. Vous pouvez accélérer la descente vers 50?
P. Affirmatif madame. On y va.

The messages use a declarative syntax and are marked as questions by rising intonation only. In the example above the pilot replies twice: once to the request for information and once to the implicit instruction.

COMMENTS

We have seen that language variation, both internally and in relation to external norms, is a constant feature of routine r/t. Some variations may be judged to be insignificant, while others have definite implications for the mutual understanding of intentions. Training should sensitise users to these areas.

In addition, many variations can be seen as the expression of a variety of communicative needs apart from the stated aims of concision and clarity. It is these needs themselves that must be evaluated before official language standards are decided on and, if necessary, new message categories are created. In any case, the needs can provide rich input for the

language training of pilots and controllers.

ENVOI

The following dialogue (attested in the corpus) will no doubt meet with the disapproval of phraseological purists:

1 P euh danair 4 5 7 1 who's ahead euh us or the air europe?
2 C well you're neck and neck
3 P euh: we can euh keep a high speed in the descent if you want us to
4 C euh yeah
i don't know how the t m a are going to plan this
you can if you wish
5 P you're the boss
6 C well they'll be the boss when you get down there
euh i'm just sort of keeping you apart for the moment
7 P understood

It serves nonetheless to underline the fact that, through radiotelephony, and despite the careful precautions of air navigation bodies at all levels, the respective roles of pilot and controller are undergoing constant renegotiation.

WHAT HAPPENS IF R/T STANDARDS START TO SLIDE?

Philippe DOMOGALA
EUROCONTROL, Guild of Air Traffic Services

1. With a title like this, you could talk for 30 seconds or 20 minutes. Either you say: sliding standards are a fact of life, they are compensated by experience, so the final result is pretty much the same, so why bother?
   But in Aviation and in Air Traffic Control in particular, sliding standards means eroding safety margins, equals danger. Therefore to the title of this presentation one MUST reply: it kills people. It has done so in the past, and unfortunately, since R/T phraseology is not a major element in the re-current training of both pilots and controllers, unfortunately I said, it will kill again.
2. We are here in an Aviation English Forum, the emphasis being on the word "English". There is a subtle difference between R/T and English and between R/T standards and English Standards.

By English language training, various people will understand very different things. Some will understand:

a. How to speak and understand English; some others
b. How to understand and read Shakespeare, or
c. How to communicate in a multi-cultural global civilisation.

In aviation, and especially in ATC, English language training is linked to R/T. But R/T is not English.

R/T procedures are a language in itself, with hardly any grammatical rules, using very few

English or American words (about 200) and code words of its own.

The goals of R/T procedures are:

1. to understand and to be understood in 260 different countries around the world, and
2. to avoid confusion.

As ICAO Annex 10 states R/T is not the English language but an Aviation language based on English.

Some English words are used which have a completely different meaning in daily Anglo-Saxon life than in aviation.

Some examples:

CLEAR : In ATC it is a kind of order as in "CLEAR FOR TAKE OFF" not a reference to a degree of darkness, luminosity or transparency.

SQUAWK : Any reference to screaming birds or complaints is not intended when referring to squawks in ATC.

12 O'CLOCK : Nobody apart from pilots and controllers will understand we mean a position, a location outside the cockpit and not the time.

ROGER : This is not a first name but a confirmation.

Some R/T words are completely coded and have no other meaning: WILCO is one example, and some typical abbreviations are also used which are coded for aviation, like QNH, QDM, VOR RADIAL, etc...

To be a licensed controller and pilot you must know by heart the R/T Procedures, and you learn these at the Aviation School.

The problem is that with R/T alone you do not get very far in the real world of Aviation and of ATC. One needs a communication tool for the UNUSUAL and the OUTSIDE procedures communications.

The pure English language is then being used. And this is where you, the English language teachers are coming into place, either to teach the English from scratch to Pilots and Controllers (and other Aviation staff) or to refresh their memories and to upgrade what they have learned at school

And what we have learned at school is exactly what we do not want in ATC.

I am not talking about the vocabulary aspect of the school training, I am talking about the methodology used in schools all over the world to teach a language. 90% of the time primary and high school language training (and that includes English) is based on **literature** or on **reading** and writing **essays** in that language.

We are then taught from an early stage, to avoid repetitions, to use our imagination and use adjectives, nuances, etc...

Everything we read today, being a book or a press article in a magazine or a newspaper is based on this: avoid repetition, use synonyms, play of words: to say the same thing ...

When we mean Mr. GORBATCHOV, we read: the President of the Soviets, the Head of State, Mr. BRESCHNEV's Successor, the USSR's top man, the Secretary of State of the biggest European Country ... etc.... in a single page and we tend to do the same, when we speak, of course, and the danger comes when we mix R/T procedures with real English language.

And this is the first point, and a major one which is causing R/T standards to slide.

The more the Controller (or the pilot) becomes fluent in the other language, in this case English, the more he will like to appear "literate" and "knowledgeable" and he will use this on day to day R/T as well. He will, most of the time completely unconsciously modify some key words, using synonyms, and "make his own R/T".

The ICAO R/T sentence "climb to FL 350" will be translated to: YOU ARE CLEARED UP FL 350 INITIALLY" then after a time to "UP YOU GO, FL 350", or even: "RECLEARED UP FL 350" etc.

The variations are almost infinite.

During a presentation in Heerlen in April 1985, Fiona Robertson used a chart from a professor FALZON where there were 50 different English expressions and variations of the same change of level clearance as recorded from 20 hours of R/T in Paris.

Where these diversions start to become dangerous is where the form created and used is misunderstood, let me give you the most classic example:

"DESCEND TO FL 280"

after various degradations it will become "CLEARED DOWN FL 280 then

"CLEAR 280"

until a pilot will understand "CLEAR TO 80" and will descend to 8,000 feet instead of 28,000 feet. The protections made on the R/T procedure were removed :

1) to avoid using the preposition "to" prior spelling numbers and

2) to always insert flight level, altitude or heading before spelling 3 digit figures

This common mistake (heard in my Air Traffic Control Centre at least once a week) is made because of another factor = the lack of time one has to make communications and need to make transmissions shorter. Therefore, the operator (pilot or controller) omits voluntarily, some parts or words in his transmission to gain time. He assumes the other partner will understand clearly what he means, but sometimes it does not work, as we will see later.

The 2 factors we just saw, the "need" to diversify a routine, or repetitive sentence, and the "need" to gain time in transmission are becoming even more dangerous when combined with a third. The "need" to express personality, to stand out in the crowd, not to appear as robots who say a thousand times the same words. This personality factor is often combined with a sense of complicity with the other (the pilot or the controller) with whom he communicates, and can be seen as a kind of "you known what I mean" - this trend is generally not only well received, but often encouraged by the other partner in communications.

This can start as an innocent "CHUG-A-LUG" remark, as a coded greeting between the Maastricht controllers and Dan-air pilots, to the "report over Potter's Bar" given to home-based pilots on final approach to a well-known British airport...

But it can take some extremes, especially in the U.S.A. The main reason is that in the U.S.A., terminal procedures are fixed for all and the inbound R/T clearance will be repeated a thousand times every day... something like "descend FL 200, to cross ABC at FL 100 or below, report overhead DE... for runway 09... (if you have the chance to go to New York TRACON Center turn the brightness down on one of the radar scopes, you will see a black broken line in the middle: this is the inbound route: the scope's burned because ALL aircraft are flying the same route).
The result of this: people are fed up and will repeat endlessly the same words and they develop their own code for a few initiated pilots.

An example I just overheard in Dallas, Texas recently. Dallas is the home-base (the Hub as they say over there) of American Airlines - this is an inbound clearance I heard (with a Texan accent): AM. 45, contact, down to south ... the reply "leaving' 35 for south ...". It took me some time to find out that the standard inbound FL for Dallas intermediate Approach is FL 180. So the clearance: "AM 45, contact, down to South" should have been: "American 45, radar contact, descend FL 180" and the reply: "Dallas American 45 leaving FL 350 for FL 180" South being heading 180 on a Radar Scope... the word "South" could be understood to mean FL 180 ... for someone with imagination. This is assumed to be US humour and is apparently welcome by pilots of American Airlines who feel "In good hands" by someone who "knows the business" and it gives to all, pilots and controllers a sense of "belonging to a small circle of initiates in a home base airfield ...
Both US controllers and pilots, defend this as being only used between people that do know each other and no-one else ... Fortunately, we are not yet that far in Europe ... but as we will see, not so far.

Now that we have seen the problems, let's see the consequences of sliding standards.

I am going to take a couple of accidents that did happen where one of the causes was lack of R/T enforcement.

First, I must insist for those of you not accustomed to aircraft accident investigations, that an aircraft accident NEVER has a single cause. There are many barriers, safety devices,

redundancies, etc. to protect the aircraft from hitting another one or hitting the ground.

The main problem being that because there are so many protections, when one or two fail, people get complacent and lose their alertness because there are so many others... It is when all the links in the chain fail that an accident occurs. R/T standard procedures are one of the safety devices built in the system. Never forget this.

In the following cases R/T procedures was one of the factors in the cause of the crash. Not the only one. But should that one have been corrected, the crash would not have occurred and hundreds of poeple would still be alive today.

The first one I am going to talk about is the crash of a DC9 over Ajaccio in Corsica in December 1981.

I will not go into technical details but basically give you the R/T clearances issued and what went wrong .

On 1 December 1981, a DC9 of INEX Adria, a Yugoslavian company, flew from Split to Ajaccio. This was for the complete crew the first time they went to that airfield, surrounded by mountains, which had no radar at the time.

This is the 1st exchange of communications between Ajaccio (APP) and the aircraft (JP):

07.47'10": JP: Bonjour Ajaccio, Adria 1308 we are level 110, approaching Ajaccio VOR and further descent.

07.47'22': APP: JP 1308, Ajaccio APP, good morning, number 1 in approach you maintain FL 110 until you reach AJO VOR, it will be for a procedure from the VOR, QNH 1009, QFE 1008, wind is 280 ° for 20 knots, runway 21 in use you report over AJO VOR and then descending over AJO VOR

07.47'37": JP: Roger Sir that means we are maintaining 110 until AJO VOR, in holding pattern, we'll have to descend ...
At the moment maintaining 110, runway 21 in use, wind is ...

07.49'32": JP: Just now AJO VOR, level is 110 in holding pattern.

07.49'36": APP: Roger report leaving AJO on radial 247 for final approach.

07.49'44": JP: JP we are just over AJO VOR requesting further descent

07.49'52": APP: JP 1308, you are cleared to descend to 3000 feet, ...on the radial 247 AJO VOR and you report leaving AJO

07.50'05": JP: Roger will do, we are leaving 11 for 3000, radial 247 ...

later

07.52'15": JP: We are rolling inbound out of 6000 ...

07.52'21": APP: Report turning inbound

07.53'20" **Aircraft collided in mountain at 4500 feet.**

What happened: In the initial call the controller said "it will be for" which is not an explicit clearance .
The pilot replied "Roger that means ..."
Which is not a confirmation nor an interrogation but was probably meant by the pilot: "I am not sure, correct me if I am wrong ..." and understood by the controller: "He understood everything".

But the danger came from the next calls.
When the pilot replied "we are leaving 11 for 3,000, radial 247" he was repeating the clearance received (which included radial 247) while the controller understood (as he had declared later) that the a/c was already on radial 247.

But the next calls were to prove fatal:

The pilot said "call you inbound, radial 247" very probably meant "call you [back when] inbound [to the VOR when on the] radial 247" but was understood by the controller "call you inbound [to the airfield] [established on the AJO VOR] radial 247."

The controller believed the aircraft had already passed the VOR and was on course to the sea, while the aircraft was making (too fast) a holding turn and believed he was cleared to descend in the holding pattern.

The main cause of the accident is that the pilot descended below minimum safe altitude (8600 feet) and was much too fast to enter the holding pattern.

However, should proper R/T procedures have been followed the crash could have been prevented.

In the Recommendations of the Accident Report, 3 of the 10 Recommendations have to do with R/T procedures

No. 1
the implementation of a standard vocabulary between pilots and controllers should be accelerated.
No. 2
the word "radial" still leads to misunderstandings.
No. 3
the words "inbound" and "outbound" are dangerous when employed on their own.

Another similar accident took place in Teneriffe on 25 April 1980 (one and half years earlier) when an unpublished holding was given to a DAN AIR Boeing 727 on final Approach. There as well, the primary cause of the accident was that the pilot, while disorientated and not knowing his exact position, descended below minimum safe altitude and crashed on a mountain.

But there again, should the proper R/T procedures have been used, the crash would probably not have occurred.

The tower controller told the aircraft:

TWR : "The standard holding over FP is inbound heading 150, turn to the left, call you back shortly . . .
The pilot replied to this ... Roger ...

But the pilot was confused:

1. The words "standard holding" were used for an unpublished manoeuvre;
2. The words "inbound heading" could have been understood by the pilot that he was under radar, (which he was not) the words inbound track should have been used;
3. "Turn to the left": could also have been understood by pilot as a radar advice (but controllers always add a heading figure). The Controller said he meant (turns to the left) but should the correct R/T have been used the words "LEFT HAND PATTERN" should have been added.

The pilot was confused by the transmission, this was obvious from the transcript of the cockpit voice recorder and contributed to the disorientation that led to the crash. But he never asked for clarification, simply replying "Roger"; which means "I understood" in ICAO terms, but which is too often used by pilots as "what did you say? give me some time to think ....".

I could give you many more such examples of incorrect R/T procedures being contributory factors to aircraft accidents. The well publicised Teneriffe collision of 2 747's in March 1977 is another one.

When the KLM pilot said "we are now at take off..." he meant "we are taking off now" but the controller understood it as "we are now at [the] take off [position]" since he did not

clear (authorise) the 747 to take off and was not expecting such an event.

Should proper R/T have been used the words "line up" should have appeared. There as well one of the 3 recommendations of the accident report says:

- use of standard, concise and unequivocal aeronautical language.

The last subject I want to talk about is the use of mother tongue on R/T. There is a fairy tale among anglo saxon aviation specialists that the main culprits are the controllers, especially the French.

The problem of use of mother tongues is far more complex than it looks. First it is a legal issue (the language to be used in telecommunications is the language of the country overflown).

This was decided in 1944 in Chicago, based on an ITU (International Telecommunication Union) Standard and was never changed .

ICAO stated later that ... "pending the development of an International language for Aviation (ILA) the procedures should be based on English, and made available to operators not speaking the mother tongue of the country overflown."

That is exactly what States are doing, especially, the South American Continent, the Soviet Union and China, which is more than half the world's airspace.

I always considered, in Europe at least, the linguistic problems as a Pilot problem: Every controller will reply IN ENGLISH to any pilot calling him in English - whether in France or in South America. Since pilots always initiate the R/T calls, if they have a problem with multi-lingual R/T, they can stop at right there, almost immediately.

Frequently, people not knowing better, use the Zagreb Collision of 1976 as an example of using mother-tongue R/T that "caused" an accident.
May I remind those people that all the time until 26 seconds prior to the collision, English R/T was used. Only a few seconds prior the collision (19 to be precise) did the controller use Serbo-Croat to pass essential traffic information to the Inex-Adria DC9.
He did so, as he would declare later, because he wanted to be understood fully by his compatriot to pass him a dangerous situation. This came automatically in his mind, and was received by the pilot as such because he too replied in Serbo Croat.

R/T procedures had very little or no consequences in the Zagreb Collision, and should proper English R/T procedures have been used, the collision would have probably occurred anyway.

But there are many reports (which do not receive the same publicity as the crashes) where accidents were prevented because controllers and pilots reverted to their common mother tongues to express an immediate danger. In aviation as in real life, all means should be used to warn someone of immediate danger, and if one of those means is the use of mother tongue between the one who warns and the one to be warned, we should not discourage this.
I wonder in which language a US Controller would communicate a potential danger to a US pilot, if a language other than English were the ATC language.
This is not a plea for using mother tongues in R/T, it is just setting the record straight.

CONCLUSIONS

We have seen what can and does go wrong when R/T standards are not complied with.
Do they slide with time or age? Yes because it is human nature, and human training to develop a personality, to avoid repeating themselves etc...

The first symptoms for a Pilot or a Controller of deteriorating standards are generally more "say again..." or silences after his or her transmissions.
Should they fail to react then incidents will inevitably follow and one day maybe an accident with loss of lives. They will have to live the rest of their lives with the knowledge it is partly their own fault if those people are dead.

We all know this, and, as we saw, a lot of recommendations from aircraft accident reports are stressing those points.

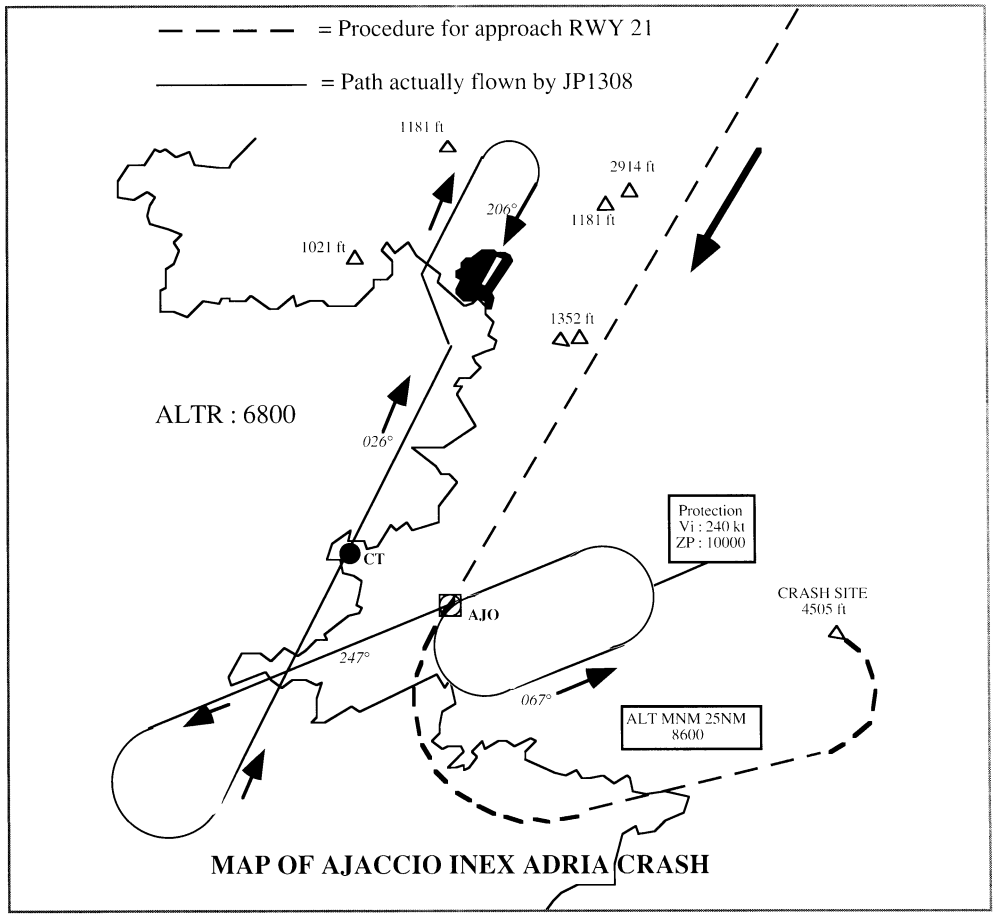
I am constantly surprised and angered when I see that our re-current training still considers R/T as secondary. This is valid for both pilots and controllers. During aircraft simulator sessions, the R/T is done by another pilot-instructor with no reality at all. Emphasis is on flying the aeroplane in difficult conditions, on following check-lists and drills, not on R/T. The same goes for controllers in refresher courses.

In ATC simulators the R/T is done by a so-called "pilot" who is, in fact, one of the

Simulator Operators. It is often staff with no or little ATC experience and the credibility of the R/T they provide is often the subject of many jokes.

There, also, emphasis of the training is not on R/T.
In aviation we need English as a tool to communicate, to pass on the unexpected, the emergencies, the out of the ordinary, the non-covered by R/T procedures. But to make sure we are understood without ambiguity we need standard R/T procedures.

It is our collective responsibility to ensure that R/T procedures are followed and that standards do not slide further. We should all put emphasis on this.
While improving the level of aviation English, one should not forget to retain standard R/T Procedures. They are what they are: **a tool that can save lives.**



MAP OF AJACCIO INEX ADRIA CRASH

Aircraft started its last turn at an altitude of 6600 ft with a rate of descent of 2200 ft/min and a rate of turn of 2°/sec. Heavy turbulence was recorded from 07:52:26 and increased until impact.

(AJACCIO)

Pilot said: call you inbound radial 247

but meant **call you [back when] inbound [to the AJO VOR]**

[when on the] radial 247

but understood by controller

call you inbound [to the airfield] [established on AJO VOR] radial 247.

DAN AIR TENERIFFE

TWR : "the standard holding over FP is inbound heading 150, turn to the left, call you back shortly.

A/C: … Roger …

Controller meant:

TURNS to the left

but correct phraseology is: **"LEFT HAND PATTERN".**

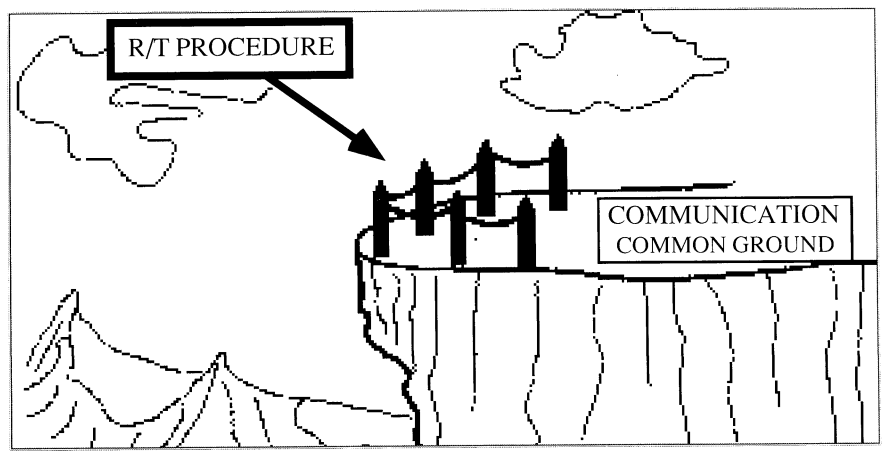
TENERIFFE KLM/PAA

Pilot : "... we are now at take off ..."

meant by pilot : **we are now [actually performing] take off [roll] or: [We are taking off]**

understood by controller

"we are now at [the] take off [position] or [waiting for clearance to take off]



SOCIAL/COGNITIVE MISMATCH AS A SOURCE OF FATAL LANGUAGE ERRORS: IMPLICATIONS FOR STANDARDIZATION

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The work reported here[2] derives from a broader study of linguistic and cognitive factors in aviation safety involving analysis of the air-ground protocol language as defined in official handbooks and as actually spoken by controllers and pilots,[3] modelling of the cognitive processes that controllers use in lining up aircraft for landing,[4] and the design of experimental tests to determine likely error types, their sources, and possible solutions.[5] In this paper I focus on *air-ground communication* and, more specifically, on the problems that arise from using *voice-mediated language* as the medium of that communication.

Voice has a natural appeal as the preferred means of communication both among humans themselves and between humans and machines, since it is the form of communication that people find most convenient. However, the complexity and flexibility of natural language are problematic, because of the confusions and misunderstandings that can readily arise through its use. In particular, language-related misunderstandings of various kinds have been a crucial contributing factor in aviation accidents and potential accidents.

For example, the accident at Los Rodeos Airport, Tenerife, The Canary Islands, on March 27, 1977, resulted, in part, from a misunderstanding of the phrase ***at takeoff***, which was used by the flight crew to indicate that they were "in the process of taking off," but was understood by the tower controller as meaning "at the takeoff point."[6] The accident at John Wayne Orange County Airport, Santa Ana, California on February 17, 1981, resulted, in part, from a misunderstanding of the verb *hold,* which *always* means "stop what you're doing" in standard aviation parlance, but can mean "continue what you're doing" in

[1] Author's address for correspondence: Boston University, 755 Commonwealth Ave., Boston, MA 02215, USA. E-mail: steve @ bumeta.bu.edu. Telephone: 617-353-2566.

[2] ACKNOWLEDGEMENTS: The work reported here was based, in part, on research supported by Grants NGT 05-020-412 and NAG 2-564 from NASA-Ames Research Center, Mountain View, California 94035, with Alfred T. Lee, Ph.D. as technical monitor. All opinions expressed are the author's. Most of the data presented here come from transcripts published in accident reports by the National Transportation Safety Board (NTSB) or from near-miss reports in the monthly bulletin ***Callback*** published by NASA's Aviation Safety Reporting System (NASA/ASRS). These bulletins report a wide range of such incidents, based on **self**-reports submitted by pilots, controllers, flight attendants,

idiomatic conversational English.[7] The accident that occurred at Miami International Airport, Miami, Florida, on December 29, 1972, resulted, in part, from a misunderstanding of the reference of the word *things*, which the approach controller intended to refer to the aircraft's declining elevation, but which the crew took to refer to a nose gear problem that they had been preoccupied with.[8] The accident that occurred at Cove Neck, NY, on January 25, 1990, resulted, in part, from the fact that the co-pilot used the normal English phrase ***running out of fuel,*** rather than the technical aviation term ***emergency,*** thereby failing to convey to the controller the intended degree of urgency.[9]

Many such occurrences can be attributed to a *clash* between individual cognitive and social interactive factors of language use. *Individual cognitive* factors are aspects of the communicative situation that have to do with the *internal mental states or processes of individual* speakers or hearers; *social interactive* factors are those aspects that have to do with the *relation or interaction of two or more* speakers or hearers. The former include such aspects as mental models of the world or of specific situations, judgements of the relative salience of various aspects of the world, preferred readings of words or phrases, assumed values or expectations, and systems of individual belief; the latter include such aspects as conventions of use, standardized definitions, officially prescribed protocols, cultural or ideological requirements, and relative status in a hierarchy of authority or command.

Much recent scientific linguistic research has involved arguments over which of these two sorts of factors is most important in language, but there appears to be an emerging

and sometimes even passengers. All identifying information is eliminated before publication, in order to ensure the anonymity and confidentiality that is necessary for the system to work, but each case is carefully checked up on by NASA/ASRS investigators to determine the accuracy of those self-reports.

[3] Cushing, Steven. "Language and Communication-related Problems of Aviation Safety." Washington, D.C.: U.S. Department of Education. (ERIC Document Reproduction Service No. ED 296 595, FL 017 504). 1988.

[4] Cushing, Steven. "From Where They Look to What They Think: Determining Controllers' Cognitive Strategies from Oculometer Scanning Data." In Tiwari, Surendra N. (Comp.). **NASA Contractor Report 181894.** (Contract No. NGT 47-003-029. NASA-Langley Research Center, Hampton, Virginia.) Springfield, Virginia: National Technical Information Service. 1939.

Cushing, Steven. Letter. ***The Sciences.*** **30(1):14.** January~February 1990.

Cushing, Steven. "The Cognitive Space of AirTraffic Control: A Parametric Dynamic Topological Model." *Proceedings, 12th Annuol Conference of the Cognitive Science Soclety.* Massachusetts Institute of Technology, Cambridge, Massachusetts. 1990.

[5] Cushing, Steven; Artemieff, Suzanne; Elkin, Gabriel; Paine, Barry; Willard, Susan; Sisco, Ann; and Ross, David. **An Error-resistant Linguistlc Protocol For Alr Traffic Control.** Final Report. Contract No. NAG 2-564. NASA-Ames

consensus that both are indispensable. Adequate *formal* models of language use will have to contain *parameters* representing the mutual relations of these sorts of factors. More generally, theories of *individual cognitive* phenomena must make reference to parameters whose values are set by *social interactions* [10] and theories of *social interactive* phenomena must make reference to parameters whose values are set by the *cognitive* particularities of the *individual* minds that participate in those phenomena.[11] As I will argue here, the facts of aviation communication appear to bear this out. As does meaningful human language use generally, aviation communication typically involves a complex interplay of both of these sorts of factors.[12] If the two sorts of factors fail to *match* in the ways they are supposed to, disaster can result.

For example, investigators determined the probable cause of the accident that occurred at Monroe County Airport, Rochester, New York, on July 9, 1978 to be **"the captain's complete lack of awareness** of airspeed, vertical speed, and aircraft performance," along with **"the first officer's failure to provide required callouts** which might have alerted the captain to the airspeed and sink rate deviations" (emphasis added). In other words, the accident resulted from the captain's *cognitive state,* his lack of awareness of the values of essential quantities which he should have been made aware of through a linguistic *social interaction,* the callouts required from the first officer. If the failure to provide required callouts resulted, in turn, from a feeling of *discomfort* or *intimidation* on the part of the first officer in response to his relation to the captain in the *authority hierarchy,* then that further clash of cognitive and social factors also contributed to this miscommunication. As

Research Center, Mountain View, California 94035. 1989.

Cushing, Steven. "'Air Cal Three Thirty Six, Go Around Three Thirty Six, Go Around': Linguistic Repetition in Air/Ground Communication." In Johnstone, Barbara. (ed.). *Repetition in Discourse: Interdisciplinary Perspectives.* Norwood, NJ: Ablex. 1992.

6 Spanish Ministry of Transport and Communications. (Translation by U.S. National Transportation Safety Board) "Spaniards Analyze Tenerife Accident." ***Aviation Week and Space Technology***, 109(21):113-121. November 20, 1978.

Spanish Ministry of Transport and Communications.(Translation by U.S. National Transportation Safety Board). "Clearances Cited in Tenerife Collision." *Aviation Week ond Space Technology, 109(22):* 67-74. November 27, 1978.

7 National Transportation Safety Board. *Aircraft Accident Report: Air California Flight 336 Boeing 737-293, N468AC, John Wayne Orange County Airport, Santa Ana, California, Februory 17, 1981.* Report No. NTSB-AAR-8 1-1 2. 1 98 1.

8 National Transportation Safety Board, *Aircraft Accident Report: Eastern Airlines, Inc., L-1011, N310EA, Miami, Florida, December 29, 1972.* National Transportation Safety Board. Report No. NTSB-AAR-73- 14. 1973.

9 Associated Press. "Avianca tape shows confusion in cockpit." *Boston Globe.* March 28. 1990.

10 For example, Noam Chomsky has postulated the existence of an inborn

a result, "the aircraft overran the end of the runway, ... crossed a drainage ditch and came to rest 728 ft past the end of the runway threshold." Damage to the aircraft was substantial, though there was no fire, and "... one passenger was injured seriously."[13]

Similarly, investigators determined the probable cause of the accident that occurred at Portland International Airport, Portland, Oregon, on December 28, 1978 to be **"the failure of the captain** to monitor properly the aircraft's fuel state and **to properly respond to** the low fuel state and **the crewmember's advisories regarding fuel state,"** a failure **resulting from "preoccupation with a landing gear malfunction** and preparations for a possible landing emergency" (emphasis added). "Contributing to the accident was the failure of the other two flight crew members **either to fully comprehend** the criticality of the fuel state **or to successfully communicate their concern to the captain"** (emphasis added). Here we have an interesting re-blending of aspects already seen in the examples cited earlier. As in the Cove Neck accident, the fuel is low and the other crew members realize this, but this time, as in the Miami example, the captain is too preoccupied with a landing gear problem to notice. In contrast to the Monroe County example, the crew members do provide the captain with appropriate advisories, but, as in the Miami case, these are not of a such a nature as to prompt the necessary corrective action. As in the Cove Neck accident, the crew members appear, from the investigators' report, to have said *something,* but not something that would succeed in conveying the proper degree of urgency.

system of *grammatical* "parameters that have to be fixed by experience," as a child goes about learning its first language *(Lectures on Government and Binding.* Dordrecht: Foris. 1981; p. 4). See also:

Cushing, Steven. *The Formal Semantics of Quantification.* UCLA doctoral dissertation. Ann Arbor, Michigan: University Microfilms. (OrderNo. 76-25,182) 1976.

Cushing, Steven. *Quantifier Meanings: A Study in the Dimensions of Semantic Competence* (Vol. 48 in the North-Holland Linguistic Series). Amsterdam: North-Holland. 1982.

Cushing, Steven. Dynamic Model Selection in the Interpretation of Discourse." In Vaina, L. and Hintikka, J. (eds.). *Cognitive Constraints on Communication: Representations and Processes.* Dordrecht: Reidel. 1984.

Cushing, Steven. Letter. *The Sciences.* 30(1):14. January/February. 1990.

Cushing, Steven. "Prototypical Considerations on Modal Meanings." In Tsohatzidis, S. L. (ed.). *Meanings and Prototypes: Studies on Linguistic Categorization.* London/New York: Routledge. 1990.

Cushing, Steven. Review of Sridhar, S. N., *Cognition and Sentence Production: A Crosslinguistic Study* (New York: Springer-Verlag, 1988). *Journal of Cross-Cultural Psychology. 1990.*

Cushing, Steven. "Explaining a Missing Modal Meaning: Ideology and Paradigm as Pragmatic Parameter." In Verschueren, J. (ed.). *Levels of*

The captain's *social* obligation to respond appropriately to the linguistic productions of interlocutors was undermined by his *cognitive* state of preoccupation. Conversely, those interlocutors failed to execute successfully their *social* obligation to communicate their message in a form that would succeed in altering the captain's *cognitive* state, perhaps because of their own *cognitive* failure "to fully comprehend the criticality" of the situation. In the end, the aircraft "crashed into a wooded populated area ... during an approach to the ... airport," resulting in the aircraft's complete destruction. "Of the 181 passengers and 8 crew members aboard, 8 passengers, the flight engineer, and a flight attendant were killed and 21 passengers and 2 crewmembers were injured seriously."[14]

These examples are representative of a wide range of fatal or near-fatal aviation accidents and near-accidents in which language misunderstandings or omissions of various sorts have played a central role. Looking more closely at the dialogue that took place in the Tenerife case, shown here in (1), we see that misunderstanding the ambiguous phrase ***at takeoff*** in line 1706:09.61 as meaning (2) (a), rather than (2) (b), which was what the pilot intended, prevented the Tower from telling the pilot to abort his takeoff.

Linguistic Adaptation: Selected Papers from the 1987 International Pragmatics Conference. Philadelphia/Amsterdam: Benjamins. 1991.

[11] Cushing, Steven. *Quantifier Meanings: A Study in the Dimensions of Semantic Competence (Vol.* 48 in the North-Holland Linguistic Series). Amsterdam: North-Holland. 1982.

Cushing, Steven. "Two Explanatory Principles in Semantics." In Vaina, L., (ed.). *Matters of Intelligence.* Dordrecht: Reidel. 1987.

Cushing, Steven. "The Cognitive Space of Air Traffic Control: A Parametric Dynamic Topological Model." *Proceedings, 12th Annual Conference of the Cognitive Science Society* . Massachusetts Institute of Technology, Cambridge, Massachusetts. 1990.

Cushing, Steven. "Prototypical Considerations on Modal Meanings." In Tsohatzidis, S. L. (ed.). *Meanings and Prototypes: Studies on Linguistic Categorization.* London/New York: Routledge. 1990.

[12] See the following for related background work:

Billings, C.E., and Cheaney, E.S. (eds.). *Information Transfer Problems in the Aviation System.* NASA Technical Paper 1875. Springfield, Virginia: National Technical Information Service. 1981.

Flathers, G.W. 11. *Development of an Air Ground Data Exchange Concept: Flight Deck Perspective.* NASA Contractor Report 4074. (Contract No. NAS 1-1 7974. NASA-Langley Research

Center, Hampton, Virginia.) Springfield, Virginia: National Technical Information Service. 1987.

Linde, Charlotte. "Who's in Charge Here?: Cooperative Work and Authority Negotiation in Police Helicopter Missions." *Proceedings, Second Annual ACM Conference on Computer Supported Collaborative Work.* 1988.

Linde, Charlotte. "The Quantitative Study of Communicative Success: Politeness and Accidents in Aviation Discourse." *Language in Society.* 17(3):375-399. 1988.

Mell, Jeremy. "English Language Requirements of OCCAs (Air Traffic Controllers) in France and Training Problems." Unpublished report. Université de Toulouse 11 (le Mirail), Section des Sciences du Langage. 1987.

[13] National Transportation Safety Board. *Aircraft Accident Report: Allegheny Airlines, Inc., BAC 1- 11, N1550, Rochester, New York, July 9, 1978.* Report No. NTSB-AAR-79-2. 1979.

[14] National Transportation Safety Board. *Aircraft Accident Report: United Airllnes, Inc., McDonnell-Douglas DC-8-6 1, N8082U, Portland, Oregon, December* 28, 1978. Report No. NTSB-AAR-79-7. 1979.

(1)

1705:44.6 KLM 4805: The KLM ***four*** **eight zero five** is now ready for takeoff and we are waiting for our ATC clearance (1705:50.77).

1705:53.41 Tower: KLM **eight *seven* zero five** you are cleared to the Papa Beacon, climb to and maintain flight level nine zero, right turn after takeoff, proceed with heading four zero until intercepting the three two five radial from Las Palmas VOR (1706:08.09).

1706:09.61 KLM 4805: Ah - Roger Sir, we are cleared to the Papa Beacon, flight level nine zero until intercepting the three two five. **We are now at takeoff** (1706:17.79).

1706:18.19 Tower: O.K.... **Stand by for takeoff**, I will call you (1706:2 1 .79). [Note: A squeal starts at 1706:19.39 and ends at 1706:22.06] [PAA: And we're still taxiing down the runway the Clipper one seven three six (1706:23.6)]

1706:21.92 PAA 1736: Clipper one seven three six (1706:23.39).

1706:25.47 Tower: Ah - Papa Alpha one seven three six report the runway clear (17 06:28.89).

1706:29.59 PAA 1736: O.K., will report when we're clear (1706:30.69).

1706:61[sic].69 Tower: Thank you.

« « 1706:50: Collision: KLM on takeoff run collides with PAA on ground. »»

Los Rodeos Airport, Tenerife, The Canary Islands, March 27, 1977.

(2)

(a) waiting at the takeoff point

(b) already on the takeoff roll

This misunderstanding resulted, in turn, from a prior confusion as to exactly what the clearance (3) in line 1705:53.41 — **potentially ambiguous since takeoff is not explicitly mentioned** — had been .

(3)

you are cleared to the Papa Beacon, climb to and maintain flight level nine zero

The KLM pilot *interprets* the clearance as permission to fly to the Papa Beacon, but the tower appears to have *intended* it as permission to fly to that beacon only after having received further clearance to leave the ground. The subsequent collision with another aircraft that was still on the runway resulted in the loss of 583 lives, the worst accident in aviation history. The use of alternative unambiguous phrases for the clearance and the takeoff announcement would have enabled the controller to advise some action that might have prevented the collision or prevented the takeoff roll in the first place.[15]

Ambiguity in the verb *hold* in lines 0134:16 and 0134:18 of the dialogue in (4) contributed to the accident at John Wayne.

[15] Spanish Ministry of Transport and Communications. (Translation by U.S. National Transportation Safety Board) "Spaniards Analyze Tenerife Accident." *Aviaion Week and Space Technology*, 109(21):113-121. November 20, 1978.

Spanish Ministry of Transport and Communications.(Translation by U.S. National Transportation Safety Board). "Clearances Cited in Tenerife Collision." *Aviation Week and Space Technology*. 109(22): 67-74. November 27, 1978.

(4)

0133:11 Tower: **Air California *three* thirty six**, you're cleared to land.

0133:33 Tower: **Air California *nine* thirty one** let's do it taxi into position and hold, be ready.

0133:37 AC 931: Nine thirty one's ready.

0133:52 Tower: Air Cal nine thirty one traffic clearing at the end, clear for takeoff sir, Boeing seven thirty seven a mile and a half final .

0133:57 AC 931: In sight we're rolling.

0134:13 Tower: Okay Air Cal ***three thirty six*, go around** three thirty six, **go around**.

(0134:16 AC **336** Captain: Can we **hold**, ask him if we can --- **hold**.)

0134:18 Tower: Air Cal ***nine thirty one*** if you can just **go ahead and hold** ---

0134:21 AC 336: Can we **land** tower?

0134:22 Tower: Behind you Air Cal nine thirty one just **abort**.

0134:25 Tower: Air Cal three thirty six, please go around sir traffic is going to abort on the departure.

(0134:27 AC 336 Captain: Gear up.)

«« 0134:36: Impact: Aircraft lands with gear retracted. »»

John Wayne Orange County Airport, Santa Ana, California, February 17, 1981.

In aviation parlance, *hold* always means to *stop* what you're now doing and thus to go *around* in a landing situation, but, in everyday English, it can also mean to *continue* what you're now doing and thus to *land* in such a situation. In fact, the 336 officer seems to interpret it in exactly the latter way at 0134:21, when he asks for permission to land in response to the captain's intra-cockpit instruction to ask for permission to hold. The resulting confusion led to Air California 336 landing with its gear retracted, having finally decided to go around, but too late actually to do so. This resulted in 34 injuries, 4 of them classified as serious, and the complete destruction of the aircraft by impact and post-impact fire. Of course, the accident could have been avoided altogether if the pilot had simply followed instructions and gone around when he was first told to.[16]

[16] National Transportation Safety Board. *Aircraft Accident Report: Air California Flight 336 Boeing 737-293, N468AC, John Wayne Orange County Airport, Santa Ana, California, February 17, 1981.* Report No. NTSB-AAR-8 1-12. 1981.

Problems of these sorts are supposed to be — but typically are not — avoided through the use of **repetition,** which can be categorized along several dimensions. *Apparent* instances of repetition can be categorized as genuine or virtual, correct or incorrect, full or partial, literal or conceptual, spontaneous or obligatory, and effective or ineffective. A *genuine* repetition is an utterance that replicates some previous utterance and is intended by the speaker as being a replication of that earlier utterance; a *virtual* repetition is an utterance that resembles some previous utterance in significant respects, but is not intended by the speaker to be such a replication. A *correct* repetition is an utterance that substantially replicates an earlier utterance in all relevant features; an *incorrect* repetition is an utterance that fails to replicate some key feature of an earlier utterance that it otherwise matches. A full repetition is an utterance that replicates all of a previous utterance; a *partial* repetition

is an utterance that replicates only part of an earlier utterance. A *literal* repetition is an utterance that replicates the words of a previous utterance, regardless of the meaning ; a *conceptual* repetition is an utterance that replicates the meaning of a previous utterance, regardless of the words. A *spontaneous* repetition is one that arises from a speaker's own initiative based on his judgement of a prevailing situation; an *obligatory* repetition is one that a speaker is required to utter by regulation or convention. An *effective* repetition is one that succeeds in having the impact on the hearer that the speaker intends it to have or that a post hoc observer takes the speaker to have intended it to have or considers that it might have had; an *ineffective* repetition is one that does not have such an impact.

All of these distinctions are clearly evident in the dialogues in (4) and (1). The call sign in line 0133:33 is a *virtual* repetition because it looks like a repetition of the call sign in line 0133:11 but in fact refers to a different aircraft. This contrasts with the call sign in line 1705:53.41, which is a *genuine*, but *incorrect* repetition of the one in line 1705:44.6. The clearance in the latter line is then repeated *literally* and *correctly* in line 1706:09.61, but *partially* — i.e., as (5) — and not *conceptually*, because it appears to have been misunderstood by the pilot as including a clearance to leave the ground, when the controller really meant it as a clearance to take effect only after a further clearance to leave the ground is given.

(5)

cleared to the Papa Beacon,
... flight level nine zero,
... until intercepting the three two five

In other words, the words are repeated but not the meaning, at least as intended by the respective speakers. Line 0134:18, in which Air Cal *nine thirty one* is told to go *ahead*, is a virtual repetition of line 0134:13, in which Air Cal *three thirty six* is told to go *around*. The latter, in turn, contains a *genuine* repetition of (6), while the former contains an apparent *contradiction* — i e., conceptual repetition with negation — between *go ahead* and *hold*, which in aviation parlance always means to interrupt what you're now doing and thus, in a landing situation, to go around.

(6)

three thirty six, go around

Since the captain's vernacular use of *hold* in line 0134:16 to mean to continue what he is now doing, and thus to complete his landing, conflicts with this technical usage, the first officer uses the conceptual repetition *land* in line 0134:21. The correct, literal, full repetition of the addressee and instruction in line 0134:13 is *spontaneous*, reflecting the controller's desire to emphasize the urgency of the situation, but it is also *ineffective* in convincing the pilot actually to go around. The correct, literal, partial repetition of the

clearance in line 1706:09.61 is *obligatory*, reflecting the requirements of the official protocol, and is also *effective* in convincing the tower, albeit erroneously, that the clearance has been correctly understood.

As was just seen for the examples in lines 0134:13 and 1706:09.61, effective and ineffective repetitions are equally capable of undermining the overall success of a longer linguistic interaction and correct ones are no less capable of doing so than incorrect ones. In the latter of these two examples, it is the very effectiveness of the repetition, a result of its correctness, that prevents the controller from noticing the pilot's misunderstanding of the intended meaning of the clearance. Confusion between genuine and virtual repetitions can also undermine communicative success, as in the call sign resemblance examples in (4).

The full/partial distinction is of special interest in aviation communication. Sometimes dangerous near-miss situations arise, when partial readbacks, rather than full ones occur, as in the actual dialogues in (7) and (8)[17]

[17] **Callback**. No. 3. September 1979.

(7)

1: Controller clears Aircraft A to descend to **flight level 280**.
2: Controller clears Aircraft B to climb to **flight level 270**.
3: Controller issues Aircraft A a **heading** of 240.
4: Pilot acknowledges with "**Roger two four zero**".
5: Aircraft A descends through Aircraft B's **altitude**.
6: Controller observes Aircraft A at **altitude 27,200** and questions pilot.
7: Pilot claims he was cleared to **flight level 240** and he acknowledged it

Controller: "heading" ⟶ Pilot: "flight level"

(8)

1: Aircraft is **heading 300** degrees at **flight level 270**.
2: Controller gives aircraft a **vector** to three one zero.
3: First Officer acknowledges **"three one zero"** but **climbs** to it instead of **turning** to it.
4: Captain, temporarily diverted, notices aircraft climbing and corrects error.

Controller: "vector" ⟶ Pilot: "flight level"

On the other hand, in a case such as the one in (9),[18] even a full readback would appear not to have been sufficient to remedy the misunderstanding.

[18] **Callback** No. 95. May 1987.

(9)

1: During climb Aircraft is cleared to **flight level 310**.
2: At about flight level 260 Center Controller asks about Aircraft's airspeed
3: Pilot answers " **315 knots** ".
4: Controller replies "Maintain **280**".
5: Pilot answers " **280 knots** ", slows to **280 knots**, and continues climb to flight level 310.
6: At about **flight level 295** Controller asks for Aircraft's **altitude** and pilot replies " **295**".
7: Controller says Aircraft was cleared only to **flight level 280**.

Controller: "flight level" ⟶ Pilot: "airspeed"

Having established a context of airspeed, through his first question and the pilot's fully adequate response, the controller provides insufficient information to indicate that he is changing his focus to flight level. The pilot then gives what *amounts to* a full readback by combining what the controller actually says with the already established context. In effect, he is reading back the *meaning* conveyed by the controller's *words-in-context*, rather than the words themselves, a non-literal conceptual repetition. Since the controller fails to take notice of the extra word in the pilot's response, a misunderstanding occurs.

A full readback was insufficient to prevent misunderstanding also in the case in (10).

(10)

1: Departure Control gives a clearance heard as "**Climb TWO five zero**".
2: Copilot repeats that clearance and dials **25,000** into the autopilot.
3: Pilot notices traffic **1500** feet above and resets dial to **descend TO 5000**.

Controller: "to" ⟶ Copilot: "two"

In this case, the controller's wrong choice of verb helped mislead the pilot to misconstrue a preposition as a number. This incident took place "at a foreign airport," where English, though required for aviation communications by international law, is likely otherwise to have been a foreign language.[19] In a similar example, a "US. military aircraft, on maneuvers in a foreign land, was cleared by the controller" to (11).

[19] **Callback**. No. 95. May 1987.

(11)

Runway 26 holding position.

The pilot "not inexplicably, understood this to mean" (12), but then found himself facing an aircraft on final that had to take a wave-off [20]

[20] **Callback** No. 65. November 1984.

(12)

Cleared to Runway 26; hold in position.

In (13), the pilot tells the co-pilot, in Spanish, to inform the controller that an *emergency* prevails, but the co-pilot tells the controller, in English, only that the plane is *running out of fuel* [21]

[21] Some intervening text is omitted. Text is quoted here in the language given in the source.

(13)

Pilot to co-pilot (in Spanish): Tell them we are **in an emergency**.

Co-pilot to controller (in English): We're **running out of fuel**.

Pilot to co-pilot (in Spanish): Digale que estamos **en emergencia**.

Co-pilot to pilot (in Spanish): Si, senor, **ya le dije**.

Co-pilot to controller (in English): We'll try once again. We're **running out of fuel**.

Pilot to co-pilot (in Spanish): I don't know what happened with the runway. I didn't see it.

Co-pilot to pilot (in Spanish): I didn't see it.

Pilot to co-pilot (in Spanish): [Advise the controller that] we **don't have fuel**.

Co-pilot to controller (in English): Climb and maintain 3000 and, ah, we're **running out of fuel**, sir.

Controller to co-pilot (in English): Is that fine with you and **your fuel**?

Co-pilot to controller (in English): I guess so. Thank you very much

«« Aircraft runs out of fuel and crashes »»

Cove Neck, New York, January 25, 1990

He then tells the pilot, in Spanish, that he *has* conveyed that the plane is *in an emergency*, even though that is not, in English, what he has actually said. The controller utters what he erroneously *takes to be* three conceptual repetitions of the pilot's words — i. e., (14) (a) for (14) (b) [22]

[22] Associated Press. "Avianca tape shows confusion in cockpit." *Boston Globe*. March 28, 1990.

(14)

(a) running out of fuel

(b) in an emergency

These are ineffective in conveying to the controller the proper degree of urgency, because the heightened sense of urgency conveyed by *emergency* in the aviation context makes the repetitions incorrect. The problem is probably compounded here, as in (10), by the fact that the language being used is a technical variant of a language other than the speaker's own, leaving him *twice* removed from the vernacular with which he is most familiar. The aircraft subsequently ran out of fuel, with 73 of the 159 persons aboard dying in the resulting crash, including the three crew members in the cockpit.

Language conflict may also be operative in (15), which resembles the near-miss in (10).

(15)

1: Controller clears the aircraft to descend "**Two four zero zero**."
2: Pilot reads clearance back as "**O.K. Four zero zero**."
3: Aircraft descends to **400** feet rather than the appropriate altitude of **2400** feet.

Controller: "2400" ⟶ Pilot: "[to] 400"

In this accident, which occurred at "a Southeast Asian airport - in marginal visual conditions at night," "an experienced US freighter crew" erroneously, though quite justifiably, gave what they *took* to be a full readback, but "there was no correction of this readback by the Tower." In consequence, "About eight miles short of the runway the aircraft struck the ground. All aboard were killed."[23]

[23] **Callback** No. 126. December 1989.

The requirement to give full readbacks, like other official constraints on language use, can be expected to be successful in preventing miscommunication only when both interlocutors are fully cognizant of the subtle nuances of the language they are using and fully engaged in their role as interlocutors. A speaker of a language in which explicit prepositions figure less prominently than they do in English may be more likely to omit such words, if the danger of doing so is not brought specifically to his attention in training. In both (9) and (16), the controller could have prevented the respective incidents by simply noticing that the readback did not match what he had said.

(16)

2334:05 EAL 401: Ah, tower this is Eastern, ah four zero one, it looks like we're gonna have to circle, **we don't have a light on our nose gear yet**.

2334:14 Tower: Eastern four oh one heavy, roger, pull up, climb straight ahead to two thousand, go back to approach control, one twenty eight six.

2334:21 EAL 401: Okay, going up to two thousand, one twenty eight six

2335:09 EAL 401: All right, ah, **approach control**, Eastern four zero one, we're right over the airport here and climbing to two thousand feet, in fact, we've just reached two thousand feet and **we've got to get a green light on our nose gear**.

2336:27 MIA App Con: Eastern four oh one, turn left heading three zero zero.

2338:46 EAL 401: Eastern four oh one'll go ah, out west just a little further if we can here and, ah, see if we can get this light to come on here.

2341 Second Officer within cockpit: I can't see it, it's pitch dark and **I throw the little light, I get, ah, nothing**.

2341:40 MIA App Con: Eastern, ah, four oh one **how are things comin' along** out there?

2341:44 EAL 401: Okay, we'd like to turn around and come, come back in.

2341:47 MIA App Con: Eastern four oh one turn left heading one eight zero.

«« **2342:12: Impact:** Aircraft crashes into the Everglades. »»

Miami International Airport, Miami, Florida, December 29, 1972

As was seen earlier the confusions and cross-purposes involved in (4) resulted, despite several repetitions of words or meanings, in Air California 336 landing with its gear retracted, having finally decided to go around, but too late actually to do so, and the misconstrued clearance in (1) led to collision with another aircraft that was still on the runway. The Captain's non-compliance in the former instance and the incorrect call sign repetition in the latter suggest degrees of engagement that were, for whatever reason, less than adequate.

In the incident in (16), though the crew repeats at least *three* times[24] their statement that they are unable to get their nose gear light to go on, the controller asks (17), using ***things*** in reference to a decline in *elevation* that he, but not the crew, has noticed on radar.[25]

(17)

how are things comin' along

He fails to realize that the special salience that the nose gear problem has for the crew, as indicated by all those repetitions, will prevent them from understanding that reference. The crew, in turn, reinforces their own preoccupation with the nose gear light through their repeated references to it, while failing to realize that those repetitions are *addressed to different interlocutors*, who are therefore not so reinforced.

It may be that the *routine* nature of much aviation communication, and of repetition in

[24] Some further intervening text is omitted from (54) that is not relevant to the issues at hand.

[25] National Transportation Safety Board, *Aircraft Accident Report: Eastern Airlines, Inc., L-1011, N310EA, Miami, Florida, December 29, 1972*. National Transportation Safety Board. Report No. NTSB-AAR-73- 14. 1973.

particular, induces a degree of ritualization, with statements and situations losing their cognitive impact and participants falling into a pattern of simply going through the motions just for their own sake.[26] An aircraft that had been 'cleared to 16,000' descended to 15,600 feet before its descent was stopped, because "every altitude from takeoff through descent was [of the form (18)]."

26 Wagner, Roy. *Symbols That Stand for Themselves*. Chicago/London: University of Chicago Press. 1986.

(18)

Cleared to --- ft.; expedite.

"Consequently, on descent through 18,000, resetting altimeters, altitude alert missed at 17,000'. Flight engineer was also distracted talking on company frequency. 'The perfect set-up.'"[27]

27 **Callback** No. 19. January 1981.

A pilot relates, "Just after the 'three mile final' report we took evasive action to avoid a small aircraft that had been instructed to follow us. He had acknowledged and reported us in sight." The pilot explains, " I believe he saw another aircraft and ASSUMED we had misrepresented our position"[28] Following the dialog in (19), a pilot reports, "we started our turn and (thinking we had been cleared for a visual approach) began a descent," but were then told by the controller that "he had not yet cleared us below 4000 "

28 **Callback** No. 28. October 1981.

(19)

Controller: Can you see the runway ?
Pilot: Yes.
Controller: Okay, turn to 360 degrees.

The very familiarity of the process misled the pilot into hearing more than was actually said.[29]

29 **Callback**. No. 86. August 1986.

An instructor pilot and his student "in a block altitude of 12,000-14,000 ft .. both thought the controller told them to turn left to a heading of 010 degrees and descend to and maintain 10,000 feet," but when they reached 10,700 "the controller stated the aircraft had been cleared to 12,000 not 10,000." The instructor explains:

> There are two contributing causes for this occurrence: 99% of all clearances from that area are to descend and maintain 10,000, and as the instructor I was conditioned to descend to 10,000 by many previous flights. The controller may have said 12,000 but I was programmed for 10,000 [30]

30 **Callback** No. 86. August 1986.

Such occurrences suggest that the standardization of terminology and protocol, though necessary up to a point, may be counterproductive beyond that point, and that ways will therefore have to be found to maintain meaningful interest among participants in the air-ground communication process. With a semi-automated communication system of an

appropriate sort,[31] a random number generator could be used to select, unpredictably, from among a *set* of standard formulations for a desired instruction, thereby preventing the constant boredom-inducing repetition of the same formulation. In the unlikely event that one formulation does get selected many times in succession, that very occurrence, in that setting, would itself be cause for surprise and therefore perk up attention.

31 Cushing, Steven. "Language and Communication-related Problems of Aviation Safety." Washington, D.C.: U.S. Department of Education. (ERIC Document Reproduction Service No. ED 296 595, FL 017 504). 1988.
Cushing, Steven; Artemieff, Suzanne; Elkin, Gabriel; Paine, Barry; Willard, Susan; Sisco, Ann; and Ross, David. An Error-resistant Linguistic Protocol For Air Traffic Control. Final Report. Contract No. NAG 2-564. NASA-Ames Research Center, Mountain View, California 94035. 1989.

LEARNER TRAINING AND LEARNER INDEPENDENCE

Gail ELLIS

This talk aimed to address the following questions:

1. What is learner training and its link with learner independence?

2. How can learner training be implemented ?

Although learner autonomy is not new, there has been a revival of interest in the field of foreign language learning in helping learners take on more responsibility for their own learning.

However, day-to-day classroom situations often do not reflect this interest. Teachers sometimes misunderstand the issue and fear it will lead to a disruption of classroom organisation, enormous changes in the roles of learners and teachers and, ultimately, not reflect the learners' interests. This may be because learner independence is often defined in behavioural terms, i.e., the learner decides what, why, where, when and how and with whom and for how long he or she learns. A rather black and white view: if a learner does not make these decisions, then he or she is not independent.

A more useful alternative, perhaps, is to define learner independence in terms of potential behaviour, i.e., the learner has the capacity to make the decisions about his or her own learning as outlined above, but need not do so all of the time.

Holec (1981) suggests that this capacity to be independent is not innate but needs to be trained and the techniques and procedures for preparing learners for independence is commonly known as learner training.

It is difficult to define learner training since there is little agreement at present concerning its aims, content and procedures. However, three main approaches to implementing it can be identified and these may be placed on a continuum according to the degree of learner directedness that is involved (see Fig. 1)

1. THE TEACHER-DIRECTED APPROACH

This involves teaching discrete sets of learning behaviours from a pre-designed plan or syllabus. There is a focus on "product" rather than "process" and all the learners are taught the same skills or strategies.

2. THE LEARNER-DIRECTED APPROACH

Here the learner training is neither pre-planned nor systematic. The focus is on "process" rather than "product" and the learner is expected to make informed decisions about his or her learning from the start and discover personally suitable learning strategies .

3. The teacher/learner-directed approach

The third approach lies between the above two extremes. Here the learner training is pre-planned, systematic and partly teacher directed in that the teacher provides information about learning and presents alternative learning strategies and techniques for the learner to experiment with and reflect on. It is learner-directed in that it is the learner who decides which strategies to adopt or to reject. Here the learners are in a position to make informed decisions about their own learning and choose for themselves according to their own preferences.

The latter approach as exemplified by the work of Ellis and Sinclair (1989) was then demonstrated through an activity related to developing vocabulary. A page from a learner's vocabulary book was used to initiate discussion about different ways of learning and organising vocabulary. The teacher would elicit possible alternatives from his or her learners but, if these did not arise, would suggest these him or herself. Alternatives could include, for example, grouping words by topic, visual reinforcement, word building, defining, noting words down in a vocabulary diary, grouping alphabetically, translation and so on. Learners would then be encouraged to select and try out a strategy or strategies and assess their effectiveness. In this way, the activity incorporates reflection and experimentation in the following way:

reflection (awareness raising) ⟶ experimentation ⟶ reflection (self-assessment)

It was suggested that this approach has potential for the classroom of the 90s because of its flexibility and manageability.

Flexibility:

- it can be used alongside or integrated into most syllabus types and language learning materials without causing disruption.
- it can accommodate different learning styles in a classroom as its outcomes are learner-directed.

Manageability:

For the teacher:

- it does not require as enormous a change in the teacher's role as that required by the learner directed approach as it offers a methodology in which the teacher retains a central guiding role.
- it does not require a great deal of time to be spent on it to the detriment of the language learning syllabus.

For the learner:

- it does not make too many demands on the learner too soon as it leads them gradually towards autonomy.

The talk finished with a quote from Holec (1981:34) in order to emphasise that autonomy should not be imposed upon the learner:

> "For the time being, therefore, there is no question of wishing to force the learner to assume responsibility for his learning at all costs, and there probably never will be; what must be developed is the learner's ability to assume this responsibility."

References.

Ellis, G., Sinclair, B. (1989) Learning to Learn English Cambridge University Press

Holec, H. (1981) Autonomy and Foreign Language Learning Pergamon

Skehan, P. (1989) Individual Differences in Second-Language Learning Edward Arnold

Sinclair, B., Ellis, G., "Survey review: Learner Training in EFL Coursebooks" ELT Journal, Vol 46/2 April 1992

Fig. 1

- LEARNER-DIRECTEDNESS +		
Teacher-Directed	Teacher/Learner-Directed	Learner-Directed

AVIATION ENGLISH TRAINERS' DIFFICULTIES

W. A. Caswell

JULIUS CAESAR divided Gaul into three parts, as you all know : his Roman rhetoric has had more success with modern presenters than with modern aircraft designers, who seem to have avoided three engine aircraft since the 1960's generation led by the B727. In my brief attempt to underline France-based Aviation English trainers' difficulties, I should first like to remind you that the Aviation English learner is a strange beast; secondly, to assert that the Aviation English trainer is a poor creature; finally to make a tentative training proposal. In doing so, I shall mention 4 research or analysis documents. As these are too dense to be presented on the Overhead Projector, they will be proposed in an annex to this paper.

Why is the Aviation English learner a 'strange beast' ? Because she, or mostly he at present, has a tendency to speak English when expected to speak French, and to speak French when trying to speak English. This is particularly true of the technicians, whose jargon is full of English, but less true, I admit, of Cabin Attendants. To illustrate the first part of my claim, I asked a small sample of 29 workers from AIR FRANCE's Direction du Matériel on training courses in 3 Intermediate-level groups to list two or three English terms which they commonly used in their jobs when speaking French. In under I5 minutes, these mechanics, electricians or electronicians and administrative workers had produced a list of around 100 words. What interests me is that this list comes, so to speak, from the horses's mouth. If these are the words they say are part of their everyday vocabulary, then we, the trainers, should be particularly interested in them. If they are representative (and the limited number of donors may indicate that further collection is desirable), then we

should take a very close look at them. An analysis reveals that 2 of the words are not in fact English, but French: carter (casing) and Karman (fairing panel). See document I in the Annex. I have to admit that, despite several years of work with these people, I did not know the word Karman. I thought perhaps it was a mistake for carman, i.e. cariste, fork lift truck operator. Nobody's perfect. Secondly, the list includes two terms which are "franglais", that's to say a mixture of English and French, or an English word turned into a French verb : "scrapper" and "surbook", from to scrap and to overbook. Thirdly, I considered the approximate percentage of words that a so-called General English teacher would find really obscure, and came to the conclusion that there were around 10% : peening, fore flap, NGV, shroud, spoiler, boroscope, doubler, snubber, and a couple of acronyms. However, another 10% or so would be misleading : although the term might seem familiar, the uninitiated would have no idea what a Main Engine Control is, for example, or that it has a twin called an FCU. They would not be sure of what 'bleed' is applied to, or, unless they had commercial experience, what an Air Waybill is; and the word "station" has several meanings, among which are the terms Station Manager (chef d'escale) and workstation (poste de travail), but the mechanic who wrote that word was thinking of an airframe position on the fuselage.

It must be obvious to you that the 100 words or so and 29 donors cannot be considered a satisfactory, scientific sample. The work needs to be continued and examined in much greater depth. What I should like to point out is that, to my knowledge, we do not yet possess the basic tools which would enable us to define the lexical requirements for

Aviation English instructors much more precisely, and therefore give much greater assistance to new teachers.

My "strange beast's" jargon is, then a mixture of terms that are often English, sometimes French, and sometimes in between - the famous "franglais". Codification of terminology, in the interests of simplicity and comprehensibility, further complicates the situation. Radiotelephony is the best-known example in Aviation of language codes, but there are many others. The emergency spare part order, for example, ranging from "A.O.G." (Aircraft On Ground) for which the manufacturers guarantee an action advisory within 4 hours, to "critical" (within 24 hours) and "expedite" (within 7 days), the first two categories now also requiring aircraft identification to prevent abuse of the system.

However, if the learner can't remember the appropriate English term, his only answer is to use the native language, in this case French. I support this claim by submitting to you on the O.P. a list of 14 corrections which I noted down during the first morning of an Intermediate-level course with 8 participants in April 1991. The survey concerned contacts in English since the previous week's intensive English course and 7 of the 8 described problems that they had discussed with manufacturers' representatives. There were more than 14 mistakes of course (some corrected on the board) but you don't have time to note everything while carrying out a 30 minute round-table survey. Of the 14 corrections noted, 5 could have been made by any English teacher aware of French to the extent of being able to correct interlingual errors. They were the following : +blocked (jammed), +equilibre

dynamique (dynamic balance), +a mass (weight), +a crochet (hook), and +to deplace (move or displace). the nine other corrections concerned common workshop terms (e.g. torquewrench), engine or aircraft terms (blade, slats), and machines or tools (boroscope or high speed grinding machine). However, the Aviation trainer must be very sure of her/his bilingual terminology to give instant and effective help. Recourse to dictionaries is always possible - and sometimes necessary - but it slows down the course and is not always successful for many reasons (you won't find the Karman in document I in an English dictionary !). One strategy for dealing with multi-specialist groups is to ask each person to share a sector of her or his specialist knowledge. It is a very good idea, but it throws considerable strain on the trainer, who cannot offer effective linguistic help without having a fair idea of the subject treated.

Some Aviation English teachers have taken me to task for my insistence on bilingual knowledge, I should say, and I have even been accused of discouraging aspirants. Nevertheless, I maintain that bilingualism is a must for trainers dealing with single - mother tongue groups of learners, as in France.

To sum up my first point, the Aviation English learner will tend to use English jargon, "franglais" jargon and the native language when expressing ideas. Perhaps that is not so strange, after all.

If the Aviation English Trainer is a "poor creature", it is because, when based in a country

where English is not the native language, she or he must do double homework and become proficient in two languages and one metalanguage - "franglais", for instance. But it is also because the field which must be dealt with is indeed vast. Two years ago we finalised the content of courses set up under my direction for AIR FRANCE maintenance staff for AFCA-SIPCA International. The final version, expanded to two 90-hour courses, was the work of Peter Wilson. The objective was to improve General English and General Aviation English skills of Intermediate level learners to ensure that they could read, understand and discuss an extract from a "typical" article from an English-language Aviation magazine. The analysis revealed a subject content of some 30 items ranging from Aquaplaning to waste treatment in workshops, the majority concerning systems and repairs (10) and new aircraft, airframe and flight movement questions (7). In such a course, you can and should rely on specialists in your group to give highly-informed opinion, but you have to be able to stimulate discussion by putting the right questions, and again to offer instant help in language matters. The theoretical requirement is even greater than this, as the teacher may have to deal with several types of specialist groups ranging from hostess or pilot to ramp mechanic or tyre specialist. My own breakdown of specialist areas is of at least 20, as the next two documents will show. The first (see document 2) is an attempt to interest newer Aviation English teachers by proposing a little language quiz which would illustrate the diversity of lexical domains, and is one of a series. It has 13 questions ranging from Aviation mechanics' slang - le saumon (wing-tip plate) or la biroute (windsock) - to basic aerodynamics (thrust, drag, lift, weight).

The next document (document 3) is an example, limited to 3 entries for each domain, of a French-English data bank for teachers. There are 7 headings concerning workshops (repairs, parts, procedures) 5 concerning the aircraft (airframe, engines, control surfaces, apparatus), 4 concerning flight (plus navigation and emergencies) and two concerning organisations and acronyms. This type of breakdown could of course be organised in different ways. It proceeds from the French term because this will be less familiar to the English-speaking teacher than the English term. Each type of specific course could and should give rise to this type of lexical aid for the teacher.

I have tried in this second part to give an idea of the task facing an Aviation English teacher in lexical terms. However, knowledge must not only be acquired but also updated as new systems and new aircraft are produced. This can be done, and is done, by reading Aviation magazines, and it is not the least part of the job.

In my third part, I should like to propose the setting-up of a training programme for newer or aspiring Aviation English teachers. The ideal body for such a task, I would suggest, would be an association of Aviation English Teachers, but it will be no easy project to decide upon, and will no doubt require a great deal of discussion. Given the remarks made in the first part of this paper I consider that even those who have an academic specialisation in an Aviation English field would benefit from such a course.

I do not intend to go into the possible organisation of such a course which could be on

several levels. I should simply like to outline what such a course might contain. Here are five suggestions :

1. Practical experience : workshop visits, worksite visits
2. Flight procedure experience : simulators being overused already, use of the Microsoft computer programme seems indicated
3. Video description : use of existing video training material in French and in English (equipment, systems)
4. Bilingual lexical study (for reasons outlined above)
5. Examples of teaching exercises and techniques

I should like to make two brief comments on points 3 and 5. Concerning the use of video material for Aviation English training, I can quote an experience which seemed to me fruitful. In 1990, I used, with the permission of the Air France Orly video library, two films in tandem for making sure that teachers were familiar with the terminology of the lower part of the aircraft's fuselage and ancillary airport equipment. The videograms were the following an Airbus A31O film in English which described recommended practice for the walkaround inspection by ramp mechanics on departure. We then studied a film made at Orly by the DK division for the same purpose, slightly different of course, and in French. The three-hour session enabled Aviation English trainers with good French to review their knowledge in both languages and certainly to learn new things - if only that the GPU is the groupe de parc in French.

Concerning point 5, I can quote a classic pairwork exercise that I have used recently, and which seemed to interest the participants (mainly mechanics) at the type of course mentioned above (Intermediate). I used information published in the British Press about two recent structural incidents : Kruegerflap problems on Qantas 747-400's and engine-pylon cracks on British Airways' 767's. (See document 4). The brief was to read your own piece of information, then explain it to your partner, who would in turn explain it to another group or the whole group. Those concerned expressed surprise that such information should find its way into print, which may suggest that policy in France is not always to welcome untimely publication of airline mishaps.

To sum up, the Aviation English trainer must cope with considerable language and linguistic problems over a vast area of specialised knowledge. Many of us have acquired that knowledge firsthand but I suggest that the time has come to make a concerted effort to help the younger generation. You will note, by the way, that I have restricted myself in this paper only to linguistic problems and have not mentioned the material problems which have made teachers' lives unenviable in recent years. But that is another chapter.

Pares cum paribus, that's what JULIUS CAESAR might have suggested.

Question :

DOCUMENT 1

"Pouvez-vous indiquer deux ou trois termes anglais que vous utilisez couramment dans votre travail même quand vous parlez français ?"

(List reproduced in order given.)

Group 1	**Group 2**	**Group 3**
scrapper (une pièce) (?)	serviceable, unserviceable	
shot penning, flap penning(= peening)	overhaul	bleed valve
meshes (grosseur de grains de sablage)	check	cross bleed
ASAP	repair	pin
spindle	spare	galley
fore flap	trim	doubler
carter (?)	wiring diagram	shim
outlet	bleed	filler
inlet	pylon valve	station
Karman (?)	pilot valve	trim
trouble	ignition	snubber
fault	breaker	plug
fan dish	manifold	socket
NGV	Airworthiness Directive	warning
gear-box	Ground idle	flush

facilities
material
blades
listing
file
software
printer
part number
failure report
scramble
tag
Air Waybill
part number
serial number
serviceable
switch
wiring diagram
overhaul manual
shop manual
TNSM (Task Number Shop Manual)
vanes
blades

flight idle
overheat
antiskid
main base
central agency
torque
spinner
boroscope
Main Engine Control
flange
screw
nut
housing
shaft
ring
torquemetre
dynamometre
cell
crack
torque tube
oil
fuel

cockpit
blower
check
high stage
(I8)

HPT
LPT
OGV
bleed
high stage
trim
shroud
surbook (?)
check
spoiler
weight and balance
job card
open item
p.s.i.
(5I)

heater
(38)

Total number of different terms : 101
Date of collection : I990
English level of donors : Intermediate
Type of donor : repair, maintenance, admin staff Air France,
Direction du matériel Orly, Roissy
Number of donors : 29

DOCUMENT 2	Question	domain
Aviation Terminology Quiz n°1	1. Some of us laugh at French Aviation gastronomy :what is une escalope and le saumon ?	slang
	2. The key to a modern jet engine's power is its by-pass ratio : what's that ? Where do you find an ailette ? What's the NGV ?	engines
	3. What are these organisations : IATA, ICAO, SNPL (French), DGAC (French), the AMADEUS project ?	organisations
	4. Landings can be made VFR or IFR, and the aircraft's poor-weather landing capacities depend on its category. Can you explain ?	systems
	5. CAP 413 is the British ATC's bible for RT phraseology. How does it recommend saying yes, hurry, emergency ?	RT
	6. Can you give two words from a Flight Attendant's basic vocabulary that come from ships ?	cabin crew

7. A ramp mechanic should know what the tow-bar shear pin and engine torching are, because they mean trouble. Do you know ?	ramp mechanic
8. Is an airport erotic or sporty ? Well, in French there's a <u>suceuse</u> and a <u>biroute</u>, which must be erotic fantasies (and dollies...). The <u>raquette</u> sounds right for a game. What are they in English ?	airport
9. What does the pilot have to file in the event of a near collision ?	flight crew
10. What is the MEC ? What is a yaw damper ? And a stickshaker ?	aircraft devices
11. What are the big T instruments and what is replacing them ?	avionics
12. What is the opposite of a backing wind ? What is windshear ?	meteorology
13. Name the four forces operating on an aircraft.	aerodynamics

DOCUMENT 3

Outline of a French-English data bank of Essential Aviation-English-Teaching Terms

(example restricted to 3 terms per heading)

Aviation	English
1. Maintenance workforce	
un ajusteur	= a fitter
un magasinier	
un mécanicien	
2. Maintenance procedures	
une grande visite	
le temps d' immobilisation	
inspection aux courants de Foucault	
3. Worktools	
un outil à sertir	
une clef dynamomètrique	
un pied coulissant	
4. Operational verbs	
verrouiller	
mettre à la terre, à la masse	
desserrer	
5. Workshop machines	
une fraiseuse	
une rectifieuse, meuleuse	
un banc d' essai	
6. Aircraft apparatus	
une sonde pitot	
un amortisseur de lacet	
les inverseurs de poussée	
7. Small repair parts	
le fil à freiner	
un joint d' étanchéité	
une bague de serrage	
8. Larger repair parts	
un vérin	
le nid d'abeille	
une goupille de sécurité	

9. Airframe parts
un couple
une lisse
la cloison étanche pressurisée

10. Control surfaces
un bec
un volet
le bord d' attaque

11. Engines
une ailette
une aube
une nacelle

12. Aerodynamics
la poussée
la trainée
la portance

13. Flight Movements
le lacet
le tangage
le roulis

14. Navigation
le cap
la dérive
un point de cheminement

15. Airports
l'aire de trafic
le seuil
la boucle (bretelle en -)

16. Airport vehicles
le tracteur
le camion citerne
le camion de commissariat

17. ATC/RT
remonter la piste
remettre les gaz
l'autonomie de carburant

18. Emergencies
un message d' urgence
l'autonomie de carburant
un pirate de l' air

19. Airline organisation
un chef d' escale
un chef de cabine
le coefficient de remplissage

20. Acronyms/Slang
OACI
DGAC
PNC
une escalope

DOCUMENT 4

Pairwork : Explain these examples of "teething problems"

1. BRITISH AIRWAYS' 767 PYLONS

Inspections have detected serious hairline cracks on B.A. 767 pylons. The B.A. aircraft are powered by Rolls-Royce RB2II-54H engines which are heavier and more powerful than those used on American owned 767's.

Strict checks were imposed every 100 flight hours, with special inspections every 25 flight hours of 3 "control" aircraft.

Boeing repairs involved addition of 750mm x 500mm x 3mm steel external doublers.

Certification of a new pylon with a stiffer steel box structure and thicker webs is expected for October 1991

a doubler : un renfort (de tôle)

stiff : dur, raide

a web : une nervure

2. QANTAS 747-400 KRUEGER FLAP FAILURES

Frequent failures of 747-44 flap failures in the first half of 1991 are probably due to the following causes : firstly, insufficient tolerance between pylon and flap, secondly, flap and bonding failures between composite surfaces and honeycomb structures.

Qantas alone has repaired or replaced a total of 9 Krueger flaps on its 747-400 fleet.

Boeing recommends inspection and adjustment of clearances after a period in service.

bonding : collage, soudage, métallisation

honeycomb : nid d' abeille

a tolerance, **clearance** : une tolérance, écart

fleet : la flotte

TEACHING BEGINNERS TO READ MAINTENANCE DOCUMENTS

David JONES
Training Department
Sogerma-Socea
(groupe Aérospatiale)

OUTLINE

The "skills grid" adopted by the company judges student autonomy in three basic skills. After an experimental course for Surface Treatment workers, a full-scale course (65 hours) was set up for 50 beginners and 40 false- beginners. Teaching these people simply to read raised problems of programme, choice of documents, student participation and evaluation. Initial results suggest 100 hours constitute a minimum to teach basic vocabulary, grammar and syntax skills to beginners.

PRESENTATION

Sogerma-Socea is a subsidiary of the Aérospatiale group. On its Bordeaux- Mérignac site it carries out repairs, customisation and maintenance on a variety of civil and military aircraft. Some 200-300 people need to be able to read aircraft and component manufacturers' maintenance manuals. These documents are in English, though the quality varies greatly from AECMA Simplified English (Airbus A320 procedural documents) to the production of native speakers (Lockheed C130).

For many years the company attempted to train production personnel to a high standard in general English before tackling technical documents. This approach, though producing a small number of autonomous technicians, proved long and expensive, and did not help the many people who were already faced with having to work from English documents. In

1989 it was decided to attempt to train beginners in reading skills only. After an experimental course of 20 hours with students of varying levels from the Surface Treatment shop, a full-scale 65-hour course was set up for 90 beginners and elementary-level students.

PROGRAMME

Analysis of a series of maintenance documents provided the following, fairly predictable, minimum programme:

a) Verbs:
- present tense (affirmative/negative but not interrogative forms)
- imperatives and infinitives
- past participle and passive voice
- modal auxiliaires and equivalents
- the -ING form

b) Articles

c) Pronouns

d) Adjectives:
- demonstratives
- comparatives and superlatives
- formation of adjectives

e) Formation of adverbs

f) Formation of plurals

g) Syntax:

- word order
- position of adjectives
- noun groups

To a large extent this programme could be rewritten as follows:

- the functions of S
- the functions of -ED
- the functions of -ING etc.

It was decided to adopt an analytical approach to the teaching, using the endings of words to identify their function in the sentence. Since it was not possible to invest in major new teaching equipment, we used students' aircraft maintenance documents, unsimplified, to teach the course, and invented our own exercises and games. Classes were taught after hours and were limited to one two-hour class per week.

DIFFICULTIES

As the course progressed several difficulties emerged. In a course which did not develop production skills there was a high risk of student passivity.

From the teacher's point of view, there was a limited number of types of exercise for classwork and homework. Since we were not teaching students to speak, exercises were limited to cloze texts, word squares, crosswords and vocabulary games, scrambled or incomplete sentences, question-and-answer, pairing of synonyms - with an obvious danger of monotony from repetition. On the other hand, there was the danger that the class would turn into one long translation exercise. To counteract this potential problem, an effort was made to confine teacher input to the start of each class, with a high proportion of course work being carried out by students in twos or threes, and informal contact with the teacher going around the group. Students were encouraged to use bilingual technical dictionaries rather than turn to the teacher for every vocabulary problem.

From the students' point of view there were other difficulties to be surmounted. Although they rapidly learned to identify word functions from their endings, the mass of technical vocabulary, not all of which was uniformly useful, caused difficulties for many students. Syntax, in particular the position of adjectives and the comprehension of noun groups, were still causing problems at the end of the course, because of students' instinctively word-based, rather than phrase-based approach. The "elimination" method went some way to alleviating this difficulty. (The elimination method encourages students to tackle noun groups in stages:

1. Determine the beginning and the end of the noun group by eliminating words which are recognised as verbs, conjunctions, articles etc.
2. Use the last word in each group to find out what the sentence means.

3. Work backwards from the last word to add the detail.)

Confusion also arose over similarity of spelling, e.g. WHICH/WITH, BELOW/BESIDE/BEHIND. The absence of pronunciation work certainly contributed to poor memorisation of these basic forms.

Evaluation

At the end of the course, all the participants were orally tested. Sixteen of the false beginners were classified as "autonomous" and 1 beginner had also reached this level. For the others a second cycle began this month.

Modifications

As a result of our experience, the beginners' course has been modified. The cycle has been expanded to 130 hours, and the frequency of classes is now 2 X 2 hours / week.

The pronunciation of all the vocabulary covered by the course is taught and all the texts used for the course have been recorded on cassette.

A300-600

AIRCRAFT MAINTENANCE MANUAL
FIRE SENSING ELEMENTS - REMOVAL AND INSTALLATION

1. EQUIPMENT AND MATERIALS

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips
B.	Corrosion - Resistant Steel Lockwire
	Dia 0.5 mm (0.020 in..)
Referenced Procedures	
- 71-13-00, P. Block 301	Cowl Doors
- 24-41-00, P. Block 301	AC External Power Control
- 20-21-12, P. Block 1	Tightening Torques
- 71-70-51, P. Block 401	Engine Drain Line
- 26-12-00, P. Block 501	Engine Fire and Overheat Detection

2. PROCEDURE

A. Job Set-Up

(1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(2)Position access platforms.

(3)0pen engine cowl doors (Ref. 71-13-00, P. Block 301).

(4)Open, safety and tag the following circuit breakers.

PANEL	SERVICE	IDEN.	LOCATION
22VU	ENG FIRE DET/ENG 1/LOOP A	1WD	209/A19
22VU	ENG FIRE DET/ENG 2/LOOP A	2WD	209/A24
22VU	ENG FIRE DET/ENG 1/LOOP B	3WD	209/A20
22VU	ENG FIRE DET/ENG 2/LOOP B	4WD	209/A23
22VU	ENG FIRE DET/ENG 1/WARN	5WD	209/A21
22VU	ENG FIRE DET/ENG 2/WARN	6WD	209/A22

(5)Remove harness support so that harness can be stowed on one side.

NOTE : All attachment hardware is re-used.

(6)Remove drain line (right side of engine) (Ref. 71-70-51, P. Block 401).

(7)If necessary remove fire shield (protecting hydraulic and fuel lines, right side of engine).

B. Removal of Support Tube and Sensing Element Assembly from Pylon

NOTE : Removal procedure is identical for each engine.

R **OH A/C 001-050

(Ref. Fig. 401)

(1) Disconnect electrical connectors.

- (1) From Loop A, 23WD (27WD) on ENG1 (ENG2)
- (2) From Loop 9, 22WD (26WD) on ENG1 (ENG2)

(2) Install protective covers on electrical connectors (1) and (2) and

Sogerma-Socea Skills Grid

	READING	WRITING	SPEAKING
BEGINNERS			
NOTIONS			
AUTONOMOUS			
FLUENT			

TERMINAISONS

ANGLAIS	FRANCAIS	EXEMPLES
-S	-s, -x (pluriel) - 3° personne du verbe (il)	windows - fenêtres it retracts - il se rétracte
-ED	-é, -u, -i (participe passé) - temps passé	installed - installé it followed - il a suivi
-ING	-age (nom d'opération) -ant (participe présent) -eur (adjectif)	cleaning - nettoyage following - suivant landing gear - atterrisseur
-LY	-ment (adverbe)	mechanically - mécaniquement
-ER	-eur (nom d'agent) - adjectif comparatif 'plus'	damper- amortisseur higher - plus élevé
-EST	- adj. superlatif 'le plus'	greatest - le plus grand
-OR	-eur (nom d'agent)	actuator - actionneur
-LESS	- adjectif 'sans'	tubeless tyre - pneu sans chambre
-EN	- verbe ré-, é-, a-, dé-	strengthen - renforcer
-OUS	-eux (adjectif)	dangerous - dangereux
-ISH	-âtre (adjectif)	blackish - noirâtre
-IARY	-aire (adjectif)	auxiliary - auxiliaire
-US -DOM -ICS -NESS	- marqueurs de nom	calculus - calcul freedom - liberté mechanics - la mécanique thickness - épaisseur
-FUL -CKY	- marqueurs d'adjectif	powerful - puissant sticky - collant

NOTA

i) Se rappeler que tout nom devient adjectif devant un autre nom

ii) Les terminaisons correspondant aux terminaisons françaises ne sont pas listées

25 - Trailing edge

The structure behind the main wing box is of aluminium alloy construction except for the top panel above the main gear and the bottom panel in front of the main gear. These parts are glass fibre with Nomex core, the top panel being supported by fabricated aluminium alloy beams hinged at their outer ends to the rearward extension of the top main skin, and attached at their inner ends with links at the fuselage.

The trailing edge structure extends from the wing rear spar to the trailing edge of the wing outboard of the outer flap, and elsewhere extends to the leading edges of various control surfaces (airbrakes, roll spoilers, ailerons, flaps). Bottom skin access panels extend over the length of the inner and outer flaps and aileron and are attached with quick release fasteners, those at the aileron, the outer flap being hinged. The edge members along the back of these panels carry the seals which rest against the leading edges of the flaps then retracted, and against the aileron.

a) Quels sont les mots qui séparent les noms ?

The **structure** behind the ..... is of ..... except for the ..... above the ..... and the ..... in front of ..... . These **parts** are made of ..... with ..... the ..... being supported by ..... hinged at their ..... to the ..... of the ..... , and attached at their ..... with **links** at the **fuselage**.

Identifier le sujet dans chaque nom composé

The **structure** behind the ..... **box** is of ..... **construction** except for the ..... **panel** above the ..... **gear** and the ..... **panel** in front of ..... **gear**. These **parts** are made of ..... **files** with ..... the ..... being supported by ..... hinged at their ..... to the ..... of the ..... , and attached at their ..... with **links** at the **fuselage**.

S T E P R A I R C R A F T
E S O H A H T I W A L A A
Q U P T T O A B I A R O N
U H D O R A I L P A T G K
I C I Q T A L S E A T S O
P N U P M U P G R Q N U T
M E L I F O G R E F U E L
E R F A R N T O T Y V I L
N W O W I N D O W I O R P
T C U D M H A T R A C K S
R E N N A P S R U I L V E
R A D A R E D A L B S L T ,
L W O L F I N D A S E E S

How many aeronautical terms can you find in this grid ? Words may read horizontally forwards and backwards, vertically up or down, diagonally in any direction.

There are at least forty five words in the grid with aeronautical associations.

DISCUSSION ON THE THEME OF SIMPLIFIED ENGLISH

Philip Shawcross
Jozie Ten Zijthoff (KLM)
Kalevi Vainioranta
(FINNAIR)

Introduction at KLM

Ten or twelve years ago the KLM language department faced a big problem for the technical staff with the introduction of AIRBUS. The technicians were disoriented by the new technologies and since it was materially impossible to translate all the manuals received, an English training program had to be devised for the technical staff. Nevertheless, the level of complexity of most manuals proved to be highly difficult. Passive construction, modals and the recognition of nouns versus adjectives in noun clusters were some of the challenges the Dutch technicians were faced with. It therefore seemed a good idea to commission technical writers, in order to edit all the documents derived from the manufacturers' manuals in Simplified English. At KLM the language staff are aware it will take a number of years before these manuals are all adapted, which is why technicians continue to be taught to read from traditional manuals.

The data base today

The data base is located at Fokker where all entries and readers' suggestions are recorded. Only new additions can guarantee a process for change. Unfortunately, feedback is not what it was five years ago.

FINNAIR'S POLICY

In the general perspective of making money while decreasing the price of tickets, Simplified English was seen as a time saver and as such adopted. FINNAIR leases a number of aircraft from the USA, so there is an obvious need for English. The mechanics are therefore trained to use Simplified English for inspection notes (instead of the "wordy" style native speakers tend to use). Progressively all manuals are to be published in Simplified English. Ultimately, all of the 1,200 mechanics should be trained. Today all the newcomers have some school English, and whereas 25 year old mechanics spoke some German 20 years ago, today English is a prerequisite in order to be hired by the company. The manual writers are being trained to write in S.E.

THE PUBLIC SIMPLIFIED ENGLISH IS ADDRESSED TO

When considering the population of mechanics, it should be noted that although they may be highly qualified in their own field, they are in no way motivated to study such complexities as modal verbs, passives or past participles. Nor do they need to know a wealth of synonyms for the verb START : such as PUT ON, SWITCH ON, TURN ON, SET OFF that can be found in traditional manuals and often become a source of confusion. A participant noted that the British government has considered the problem and revamped its information leaflets addressed to the general public about health insurance, pensions and unemployment benefits. Previously written in unclear "legalese" this information is now

much more accessible.

Another participant came forth with the idea of using the Simplified English dictionary in the French state school system for the middle school pupils who have failed their first years of classic studies and are redirected towards automobile mechanic or computer maintenance training. Learning to read manuals in Simplified English could be highly motivating, pragmatic and enhance the desire to learn.

Future prospects in the field of aviation

At FINNAIR check-in manual writers are trying to improve the incomprehensible IATA manuals that were once written by lawyers. Whereas up to 100,000 words were then used, the writers today will cut down to the 800 most common words, in the hope instructions to ground staff will be better understood in future. (The speaker does not fear that the quality of language learning in general will suffer from the adoption of SE).

The widespread adoption of Simplified English is a slow one. The group promoting its use is pressuring the manufacturers. However, there is less momentum at Airbus today because they tend to believe the teaching-learning set-up as already existent. On the other hand, there are fewer people working in the field than 5 years ago. The chairman noted the transition would last until the year 2000 or 2005 when most of the old generation of aircraft are phased out.

SIMPLIFIED ENGLISH : AIRCRAFT DOCUMENTATION HANDBOOK

Philip SHAWCROSS

INTRODUCTION

"Simplified English" originated in the early 1980's with the European airlines' (AEA) and European airline manufacturers' (ACEMA) determination to establish a standardized and basic form of the English language for use in maintenance documentation. Between 1981 and 1986 working groups analyzed the verbs used in Maintenance Manuals, established a list of recommended verbs, defined the writing rules of Simplified English and produced a SIMPLIFIED ENGLISH DICTIONARY including a word list of approved terms and a GUIDE FOR THE PREPARATION OF AIRCRAFT MAINTENANCE DOCUMENTATION IN THE INTERNATIONAL AEROSPACE MAINTENANCE LANGUAGE.

These rules, and the principles that guide them, began to be applied in the second half of the 1980's to the maintenance documentation of the latest generation of aircraft and some of their equipment. It is a long and gradual process: Simplified English is not frozen and its application, even today is only partial. Obviously, it is absent from all documents produced before 1985.

OBJECTIVES

The purpose of Simplified English is to make life easier for the writers (technical editors) and users (technicians, mechanics) of maintenance documents.

Simplified English is designed to:

1. **standardize and reduce** the number of words used i.e. avoid using more than one word with the same meaning and defining one meaning for each word used;
2. **standardize and simplify** the syntax and grammar used;

in order to make maintenance texts clearer and simpler.

N.B. For the moment at least, Simplified English only applies to certain essential **maintenance** documents like the Aircraft Maintenance Manual, Overhaul Manuals, Component Maintenance Manuals etc. It is not used in engineering, flight, day-to-day or operations documents or in regulations. However there is a tendency to respect the principle of a simpler language even in these texts.

The language and terminology explained in the AIRCRAFT DOCUMENTATION HANDBOOK, and the examples given, are not necessarily in Simplified English. The purpose of this handbook is of course, to help use **existing documentation** (90% of which is not in Simplified English) and not define how it **should** be written !

PRINCIPLES OF SIMPLIFIED ENGLISH

1 Words

The standardization of technical words as they appear in the Simplified English word lists only applies to general technical words. Specific manufacturers' terminology (e.g. Droop Signal Unit, Rotor Active Clearance Control) and manufacturing processes and malfunctions (e.g. milling, reaming, pitting, tapering etc.) are not affected.

One meaning, one word

When several words exist with the same meaning, Simplified English decides which word will be used:

e.g. **notify - advise - inform - <u>tell</u>:**
"tell" should be used.

One word, one meaning:

When a word has several different meanings, only one of these meanings is selected and alternative words are attributed to the other senses of the word.

e.g. extinguish = to stop a fire, to cause to stop burning.
"extinguish" for a light (indicator lights illuminated/extinguished) is expressed by "go off".

One word, one function:

In general, only one part of speech or function is permitted for each word.

e.g. "Heat" is used as a noun: energy as a result of movement of molecules, and not as a verb, **"to heat"** . "To heat" is replaced by "increase the temperature."

"Leak" is used as a noun: a crack or hole which accidentally lets fluid or light go into or come out of something, and not as a verb, **"to leak".** The verb is replaced by "is/are leaks."

So, there is a tendency to reduce the number of verbs permitted and to avoid the use of irregular verbs whenever possible (e.g. split → "divide", lay → "put down").

As a result of the reduction in the number of verbs permitted there are many expressions of the type

MAKE/BECOME + Adjective or Noun:

e.g.
- to straighten → **to make/become straight**
- to analyze → **to make an analysis**
- to check → **to make sure, to do a check**
- to bank → **to make a bank**
- to splice → to make a splice

As an indication, here is an alphabetical list of the verbs used in Simplified English:

ACCEPT	DEFLATE	INCLUDE	REPAIR
ADD	DEFUEL	INFLATE	REPLACE
ADJUST	DECREASE	INSTALL	RETAIN
AGREE	DE-ICE	KEEP	RETRACT
ALIGN	DEPRESSURISE	KILL	RUB
APPLY	DISARM	KNOW	SAFETY
ARM	DISASSEMBLE	LATCH	SCHEDULE
ASSEMBLE	DISCARD	LET	SEAL
ATTACH	DISCONNECT	LISTEN	SEE
BALANCE	DISENGAGE	LOCK	SEND
BE	DIVIDE	LOOSEN	SET
BECOME	DO	LOWER	SHAKE
BEND	DRAIN	LUBRICATE	SHOW
BLEED	DRINK	MACHINE	SMELL
BLOW	ENERGIZE	MEASURE	SOAK
BOND	ERASE	MIX	SOLDER
BREAK	EXAMINE	MOOR	SPEAK
BREATHE	EXTEND	MOVE	START
BURN	EXTINGUISH	MULTIPLY	STAY
CALIBRATE	FEATHER	MUST	STOP

CATCH
CAUSE
CHANGE
CHARGE
CLEAN
CLOSE
COLLECT
COME
COMPARE
COMPLETE
COMPRESS
CONNECT
CONTAIN
CONTINUE
CONTROL
CORRECT
COUNT
CUT
DE-ENERGIZE
DECREASE

FEEL
FILL
FIRE
FLASH
FLOW
FOLLOW
GET
GIVE
GO
GRIND
GROUND
HANG
HAVE
HEAR
HELP
HIT
HOLD
IDENTIFY
IGNORE
IMMERSE

OBEY
OCCUR
OPEN
OPERATE
PAINT
PARK
POINT
POLISH
PRESSURIZE
PULL
PUSH
PUT
READ
RECEIVE
RECOMMEND
REFER TO
REFUEL
REJECT
RELEASE
REMOVE

SUBTRACT
SUPPLY
SUPPORT
TELL
TIGHTEN
TORQUE
TOUCH
TOW
TRANSMIT
TRY
TUNE
TWIST
USE
WEAR
WEIGH
WELD
WIND
WRITE

2 Writing rules: Syntax and Grammar

Simplified English uses the following rules to clarify and simply technical texts:

Compound Expressions ("Noun Clusters")

No group of words, or "noun clusters", with more than 3 nouns together. So, for example:

Cargo Door Lockshaft Proximity Detector ⟶

- The **Proximity Detector on the Lockshaft of the Cargo Door.** When the "noun cluster" is an official technical term, hyphens ("-") can be used to clarify the relation between the words: ⟶
- The **Cargo-Door Lockshaft Proximity-Detector.**

Eliminate abstract notions in favor of descriptions

Avoid constructions introduced by abstract verbs such as: provide - enable - achieve - ensure - accomplish - obtain

- ... that provides rudder pedal adjustment ⟶
- ... **that adjusts the rudder pedals.**

Not too much information in each sentence

"Pressure oil from the pump is delivered to a spring-loaded relief valve, which has a double function as it controls the pressure of oil available for the lubrication of the cabin blower, the pneumatic compressor and the extension drive shaft support and acts

as a pressure reducing valve in the internal lubrication system ⟶

Pressurized oil from the pump is supplied to a spring-loaded relief valve. The valve has two functions. It controls the pressure of oil available to lubricate the cabin blower, the pneumatic compressor and the support of the extension drive-shaft. It is also a pressure-reducing valve in the internal oil system.

Verbs: Tenses permitted:

Only certain forms or verb tenses are permitted:

CONNECT	Infinitive	SEE
	Imperative	
CONNECTS	Present	SEES
CONNECT	Simple	SEE
CONNECTED	Preterite	SAW
CONNECTED	Past Participle	SEEN

These forms can be used with "Will", "Can", "Must", "Is", "Are" etc. e.g.

- **It will disconnect** at 45 p.s.i.
- **you must disarm....**
- **you can set...**

Past Participle:

The past Participle is used primarily to indicate a state, a condition etc. (see Module S) with "is"/"are":

- If the part is damaged...

- **When the slats are extended**

- **The thrust reversers are deployed.**

Passive/Active (see Module P)

Use only the active voice in procedures. In Description and Operation sections, use the active as much as possible. One sentence in ten can be passive.

Wherever possible, a passive form becomes active:

- The gearbox is moved by the engine. ⟶

- **The engine moves the gearbox.**

- Low oil pressure is shown by a warning light ⟶

- A **warning light shows low oil-pressure.**

In procedures, use "you", "we" or the imperative:

- The tanks are drained

- You drain the tanks or - Drain the tanks.

Sentences:

Maximum length: 20 words.

No more than 3 " clauses" (parts of a sentence with a verb) in each sentence:

- A **drop-chord, which retains the lamp assembly when you change the bulb, connects the housing to the frame.**

In this sentence there are 3 clauses:

main clause: "A **drop chord connects the housing to the frame".**

subordinate clause: **"which retains the lamp assembly"**

time clause: **"when you change the bulb."**

Use of tabular layout to make information clear.

A variety of sentence length: succession of long and short sentences.

Paragraphs:

Maximum length: 6 sentences

Avoid one-sentence paragraphs.

Change of paragraph = change of subject

Variation in paragraph length.

Warnings, Cautions:

Warnings and Cautions must be imperatives not theoretical explanations of danger or risk

- Prolonged contact of oil on the skin could result in intoxication through absorption, as this type of engine oil contains additives ⟶

- **Do not let oil stay on your skin for a long time as it can cause injury.**

Punctuation:

Stricter use of punctuation to articulate and clarify documents.

":" **(colon)**: indicates information is to follow e.g.

- **WARNING: MAKE SURE THAT YOU HAVE....**
- **The wing structure includes: two main spars, 26 ribs, machined webs** ...

"-" **(dash)**: to clarify tabulations, lists etc.

- ***The following circuits are affected:***
  - ***APU fuel pump circuit,***
  - ***APU emergency shut-down circuit,***
  - ***APU fire extinguishing circuit.***

"-" **("hyphen)**: the hyphen joins words which are directly associated in a word cluster:

- **wing center-box, threaded-type connection, shut-off valve;**
- **seventy-four, four-to-one, 3-seat unit, back-to-back;**
- **pre-cooler, de-icing, post-flight, anti-skid.**

"( )" **(Parentheses/brackets):** parentheses or brackets are used to:

- refer to references or figures (see figure 1.12)
- isolate additional information in the middle of a sentence;
- give step or item numbers in a procedure.

";" **(semi-colon):** the semi-colon makes a more definite mark than a comma (",") and often indicates groups of items.

Conclusion

This brief and simplified overview of Simplified English is not exhaustive. It is only designed to give a rapid introduction to its principles and application. Simplified English is still at an early stage in its development and implementation. Some of the individual decisions may appear unsatisfactory. However it will help to make much aircraft documentation more rational and easier to use all round the world.

TIPS AND TECHNIQUES FOR USING VIDEO FOR LANGUAGE TRAINING

Joan BELLEC
C.L.A.
Jenny SMITH
Heinemann Books

Using video in the language classroom has always seemed to offer exciting possibilities for language teachers and learners. We intended in our workshop to explore briefly, the various ways comercially produced video tapes could be used effectively. For this demonstration, sequences from PRIME TIME published by Heinemann were shown. We then wanted to demonstrate how, using similar techniques, documentaries chosen for their "aeronautic interest" could be used in our classes. Short extracts from a BBC Documentary " Farnborough Airshow" and a British TV series - HORIZON Air Traffic Control in Britain today, were the basis for our viewing activities.

Why are we so often neglecting to use Video in our classrooms ? Is it because of the overwhelming choice and richness of the images and situations with which we are confronted when dealing with film sequences? What do we actually want our students to do when watching a video sequence? There is, of course, a place within the learning situation for the learner to view a video without asking or demanding any deliberate listening activity or production on his or her part. We, however, wanted to consider how to make full use of the video within a group situation and thus needed to have some sort of framework for the teacher to work within and to elicit responses from the learners before, during and after viewing.

It seemed to us that PRE VIEWING activities were often indispensable . These could take the form of:

- questions anticipating the sequence to be shown.

- a newspaper heading, or short article about the subject

After a first viewing, GENERAL UNDERSTANDING of the sequence could be tested:

- an easy table with 3 to 4 items to fill in
- Yes / No questions
- ticking off various items / activities / people seen in the film

Followed by several viewings for DETAILED UNDERSTANDING geared to specific language items that are to be taught or reinforced. Many different "viewing task techniques" can be used here: EITHER using the video film on its own with the sound off OR using the following written task activities during or after viewing:

- putting in the right order
- matching what people did/ said / looked like / thought etc. . to a selection of words or sentences.
- filling in what people said
- summarising short sequences
- answering comprehension questions
- completing data
- re-creating the sound track using the film only
- using the "freeze" button and commenting on an image in the sequence.

A final step would be the FOLLOW UP activities which, depending on the level of

learners could include:

- re-enacting the sequence . With or without the sound track.
- discussion on the contents
- project work leading on from the topic viewed

Many comercially produced Video courses do have accompanying Workbooks which alleviate the teacher's task of preparing viewing sheets.

Appropriate video films for teachers of Aeronautic English are hard to find. TV Documentaries are a valuable source. As in general English,video in the ESP situation can be a tremendous aid for showing specific words and phrases in authentic contexts. Contexts which are often inaccessible in the classroom and with which our professional trainees are confronted every day. Video, therefore enhances the credibility of our courses and should wherever possible be used to reinforce specific areas of knowledge that are part of the course contents for example ;

for Flight Attendants:

- the Cabin :Service on board, safety equipment, emergency evacuation
- Cultural differences (passenger behaviour, expectations,requests)

and for Pilots:

- the Cockpit environment
- the Turnround inspection and ground handling facilities.
- Accident Reports

Description of planes and certain flying techniques were illustrated in the short sequence from the "FARNBOROUGH SHOW' documentary film produced by the BBC. Familiarisation with these words gives confidence to intermediate learners and appropriate exercises based on the type described previously can help reinforce and encourage production of these technical items. At a more advanced level, discussion provoking video sequences concerning,for example,low level flying or the effects of de-regulation, and in this workshop the problems of air traffic control in busy terminal areas,as illustrated in the re-enacting of an airmiss over South East England,in the HORIZON MAGAZINE DOCUMENTARY are particularly effective.
Again, pre-viewing, while-viewing and after-viewing activities are vital to re-inforce and encourage production of language items.

A system by which we as teachers of Aeronautical English could pool and exchange suitable Video material could be set up. One area, due to lack of time, which we were unable to speak about in the workshop, was the extremely valuable source of in-company training films, used for specific flight training courses other than language courses. I refer to Emergency Evacuation training, Simulator training, and Service on board in the Cabin. These would of course probably be in the language of the country producing it, but these short Video sequences can of course be valuable source for comparing cultural differences. An idea to be worked on during a future forum ?

AVIATION ENGLISH IN ENGLAND

Tony ROOME
Head of International Training, UK Civil Aviation Authority

Some time ago, the UK CAA's International Training Services identified two basic methods by which we could provide the necessary English Language tuition for students coming to the UK for technical training under our direction. The first was to utilise the small ELT units attached to technical training schools; the second to use an English Language school which could specialize in Aviation English - designing the programmes in co-operation with ourselves. The latter option was chosen primarily because it gave us access to the resources of a large organisation, with a large full-time specialist staff dedicated to English Language training, augmented by a number of experienced aviation technical personnel additionally trained in EFL teaching. The school we chose was Anglo-Continental in Bournemouth, a school with a proven record in the aviation field with which we had already worked over a number of years because of its close proximity to our own College of ATC.

Freddy HERRING
Anglo-Continental Educational Group
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Anglo-Continental, founded in 1950, has 41 years' experience of teaching English as a foreign language. We have specialised in professional English for Industry, Commerce and Technology and English for Aviation in particular - for more than 20 of them. But there is no single way of teaching English for Air Traffic Control, and there are no two requirements which are the same. We can do no more, therefore, than describe our own experiences and our own approach.

Our trainees generally fall into two categories: ab-initio students, who require preparation

for practical training; and experienced controllers whose English doesn't meet the vital demands of the job. For both, the first requirement is an adequate command of the language of everyday communication - the ability to understand simple spoken English and to respond effectively and appropriately; to learn to listen, speak, read and write, and to achieve a balance of those skills. So in every case we must define our aims - the systematic presentation and practice of new language and the consolidation of the old; concentration on the fundamental structure which must be mastered; the extension of essential vocabulary and, most of all, the way we use it; and the pronunciation and intonation (not to mention stress) which must be natural to the good controller.

For some, since many of our trainees come from outside Europe, we must think of numeracy and spatial concepts as we teach, and of the functional and situational English which will help during the "technical" phase. The ability to direct an enquirer to the library, for example, can be the first step in effective communication with the pilot. Above all, we have to develop the controller's power to understand and communicate - and to cope when the situation demands more than standard phraseology.

For many, it can be a difficult experience. If they are beginners, with less than the necessary understanding of the essentials of mathematics, science and the way the world goes round, it can also take time. We have twelve grades of achievement in our school, and to advance from an elementary level to a satisfactory intermediate one can take several months. We must therefore build interest and variety into our programmes, and a sense of

purpose and progression so that the prolonged study of a single skill doesn't become tedious. In all our teaching, therefore, we have to balance input with output, centering on the student; vary the methods, the activities and the materials to make the work enjoyable; set hurdles to be overcome and targets to be reached.

We are helped, of course, by the motivation of our students. Those new to aviation are intrigued by it, and fascinated by the seasoned professionals we use to teach them. And experienced controllers, conscious of their shortcomings outside the security of R/T, are usually more than anxious to improve. But every programme must be carefully planned according to the trainees' needs.

There are many other considerations: the educational background of the trainees; the influences of their native tongue and the way in which they have previously been taught; their normal working environments and the priority placed upon their training by their employers; the paucity of teaching materials for Aviation English - now effectively addressed by books like "Airspeak" and "Skytalk" for ATC, but not yet completely. These questions, and others, would justify a conference of their own. With restricted time and space, I would mention only two.

First, who is best qualified to teach? The professional language teacher, or the experienced controller? In most cases, language teachers lack the controller's battle-experience, and have difficulty in making the language 'real'. But language teaching, nowadays, is itself a

highly developed science, and you can't easily teach old aviators new tricks. In our case, we compromise; we use instructors of both types at appropriate stages in our programmes, and train each in the other's art as far as we can.

Secondly, and most important, are our objectives always clear? In many cases, with independent training, licensing and employment policies - and variable adherence to ICAO rules and recommendations - they are not. In designing a programme or planning a lesson, we must know exactly what our purpose is. It is encouraging that, at last, we are talking about the establishment of defined standards in English for ATC.

LIST OF ABBREVIATIONS

ACARS	Aircraft Centralized Acquisition and Reporting System
ACTFL	American Council on the Teaching of Foreign Languages
AEA	Association of European Airlines
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATS	Air Traffic Services
CAA	Civil Aviation Authority
CALL	Computer Assisted Language Learning
CLA	Centre de Linguistique Appliquée
CENA	Centre de Navigation Aérienne (Air Navigation Centre)
CRAPEL	Centre de Recherche et d'Application Pédagogique en Langues
DGAC	Direction Générale de l'Aviation Civile (French Central Civil Aviation Authority)
DRAC	Direction Régionale de l'Aviation Civile (French Regional Civil Aviation Department)
EAO	Enseignement Assisté par Ordinateur (Computer assisted teaching)
EGATS	Eurocontrol Guild of Air Traffic Services
ELT	English Language Teaching
EFL	English as a Foreign Language
ENAC	Ecole Nationale de l'Aviation Civile (National Civil Aviation College)
ESP	English for Specific Purposes
FAA	Federal Aviation Administration

GATCO	Guild of Air Traffic Controllers
IACTFLAP	International Airlines' Council on the Teaching of Foreign Languages to Airline Personnel
IATA	International Air Transport Association
IATEFL	International Association of Teachers of English as a Foreign Language
ICAO	International Civil Aviation Organization
IFALPA	International Federation of Airline Pilots Assocations
IFATCA	International Federation of Air Traffic Controllers
MCF	Management, Communication et Formation (Management, Commmunication and Training)
QRI	Qualification de la radiotéléphonie internationale (French International Radiotelephony Qualification)
RT	Radiotelephony
RTF	Radiotelephony
SFACT	Service de la Formation Aéronautique et du Contrôle Technique (Aeronautic Training and Technical Testing Service)
TEFL	Teaching English as a Foreign Language
TESOL	Teachers of English to Speakers of Other Languages
TOEFL	Test of English as a Foreign Language
TOEIC	Test of English for International Communication

The Forum Report has been in the works for many-a-month and we trust you have not altogether lost hope. On the one hand, the final result has meant encouraging the volunteers to sit down and turn their speeches into publishable matter.

On the other hand, getting the final product has meant phoning, faxing, writing and traveling back and forth between Air-Inter in Paris and the CLA in Besançon to work out such indispensable aspects as the editing, typing, printing and proof reading without which you could not have something pleasing to the eye and thus worth remembering. In addition, the CLA-Air-Inter team attempted to compile notes for as many round-table events as possible, yet did not manage this for some of the most important encounters due to the poor quality of some of the tapes.

We equally scrutinized approximately 40 questionnaires which we found helpful. Our intention was not simply to hear how smoothly things went (although we did do our best "to please the inner man!"), but to know what could be improved for the Future Fifth Forum of Aviation English.

We found some of the points mentioned worthy of interest.

The registration procedures seemed appreciated. Yet we will try to get the names printed on the badges in larger characters next time, so there is no need to bend over and bump into each other in the process of introducing oneself !

CE N'EST QU'UN AU REVOIR, OUR FRIENDS ...

Ann DUFAUX
C.L.A.
Forum Report Editor

A major point that was raised has to do with the abundance of topics dealt with in such a short time span. The implications were that when two or three highly interesting topics were dealt with simultaneously, because of a lack of repeat sessions, people had difficulties in making choices.
Perhaps half day or one day mini regional forums on given themes could clear the way for major events.

We will try to clearly announce the themes of each session at the outset, in order to avoid having people wandering around from room to room. We will also do our best to stick to tighter timing, since late starts affected the whole schedule.

Some of the most appreciated events dealt with Testing, in theory as well as in practice, language requirements, ATC phraseology and the problem of harmonisation in the European context. On the other hand many participants were pleased to keep abreast with contemporary ELT concerns, such as learner autonomy and self-access.

We were very pleased to note the large spectrum of suggestions for the themes of future events. Besides the wish to see the theme of Aviation English Standards maintained, there was a very clear desire to work from theory towards practice. Other participants would like to see how engineering terminology is adopted at all levels, to keep updated on the latest terminology, and to participate in hands on sessions of Simplified English. Some find that workshops dealing with the topic of total reliance on standard R/T and diplomatic means of

correcting ATC's R/T most relevant to their needs. Needs analysis, maintaining levels when professional training is over, syllabus writing, Computer Assisted Aviation English are but a few of the suggested themes. Some found it a shame management did not attend and that trainers should attempt to bridge this gap in future. Lastly, a remark on how well ATC's and linguists work together, so why not more pilots ? This person feels there is room to work on the subject of the non routine in the cockpit and cabin.

How did most people react to the fact we were not in the center of Paris ? A surprisingly high number were quite content (21/40), most understanding the correlation between central location and higher costs and thus the possible ostracizing of a number of participants who pay out of their pockets. On the whole most people were quite happy with the quality of the catering (although one Frenchman was embarrassed the croissants were not up to national standards !). We will try to see to it that the conference rooms are a bit more comfortable : not so hot, seating less squeezed etc..

We hope that in spite of a couple of minor problems you found the Forum worth your while. It was hard work for us, yet we have kept good memories and hope to see you again. Therefore, Au Revoir and à bientôt !

A team of four teachers has researched and analysed the language used by personnel working in the aviation field. This team has been teaching and developing English Language training courses since 1979 for the French Airline AIR INTER

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