ENGLISH FOR SCIENCE AND TECHNOLOGY

Research Paper (I)
Scientific and Technical Genres

- **Written genres**
  - Abstract
  - Scientific / research paper
  - Scientific / research report
  - Posters
  - Theses, textbooks, instructions, leaflets, standards, etc.

- **Oral genres**
  - Presentations
  - Conferences / videoconferences
  - Lectures
  - Dissertations
Academic texts

- **macrogenre**
  - Research article
  - Research report
  - Abstracts
  - Book reviews
  - Textbooks
  - Lectures, etc...
Conventions

- Pragmatic level
  - A shared **communicative function**.

- Textual level
  - A similar **macrostructure**, i.e. format or organizational outline.

- Linguistic level
  - A similar **discursive mode** of developing the macrostructure (narrative, descriptive, imperative, optative) and similar **discourse techniques** aimed at satisfying the discourse expectations of the recipient.
  - A common **lexical and syntactic arrangement** of the material and a common set of functional units and formal features.
Pragmatic level

- a written and published report describing original results
- Alcaraz (2000): “trasladar a los foros profesionales, por medio de una revista especializada, los resultados de una investigación”. 
Textual level

- **Macrostructure**, i.e. format or organizational outline.
  - Primary structure: sections (e.g. in a research paper: `introduction`, `method`, `results`, `discussion`)
  - Secondary structure: moves or sections’ parts
Linguistic level

- **Similar discoursive mode: main aspects:**
  - Weigh evidence
  - Draw conclusions

- **Fundamental characteristics of science**
  - uncertainty
  - doubt
  - skepticism
Stubbs (1986): all sentences encode a point of view and that academic texts are no different in containing the author's presence. Scientists inevitably indicate their attitude in their writings. Academic writing cannot be considered as a series of impersonal statements of facts which add up to the truth.
To express opinion is to make a claim and to make a claim is to try to impose one’s opinion.

- Present claims/findings/opinions pending acceptance by the international scientific community.
- To deny claims presented by others
- Humble servants of scientific community
Positive and negative politeness

Strategies used to

- Reduce the strength of their arguments
- Reduce the risk of opposition
- Minimize the threat-to-face
- Signal distance
- Avoid categorical statements
Positive politeness: solidarity

First person pronominals
- We now show...
- We therefore conclude...

References to human aspects of work
- They still need to work harder in order to improve the model, but, with luck, they will be successful

Adjectives and adverbs to dilute claims in the scientific community
- Happily for researchers, our community has reached a high degree of refinement in this area...

Complicity
- I accept most of his statements, except when he tacitly expresses that...

Surprise: adjectives, adverbs
- Unexpectedly we have found that....
- The consequences of the rather obvious assumptions...
- ...from a fortious discovery made in 1988.
Negative politeness

- To mark a claim as being provisional, pending acceptance in the literature, acceptance by the community (Myers 1989: 13)
  - Impersonal style
  - Pessimism
  - Apologizing
  - Hegding
Negative politeness

- Impersonal style
  - Passives
    - One bacterial clone was isolated from tissues...
    - No significant variations were found...
  - Impersonal verbs
    - There is a tendency to underscore...
  - Indefinite pronouns
    - Ideally one would accomplish this swap by completely...
  - Generalization
    - Many protein chemists are still trying to understand...
  - Nominalization
    - The discovery of...
Negative politeness

- **Show pessimism**
  - Many difficulties still have to be resolved...
  - Unfortunately, the experimental evidence...

- **Apologizing**
  - I know it’s not customary to set out facts in such a straightforward way...
Negative politeness

- Hedges:
  - Interactive elements that serve as a bridge between the propositional information in the text and the writer’s factual interpretation.
  - Linguistic resource: “words or phrases, whose job is to make things fuzzy or less fuzzy” (Lakoff)
Taxonomy

- **Shields**
- **Approximators**
- **Expressions to show the author’s personal doubt and direct involvement**
- **Emotionally-charged intensifiers**
- **Compound hedges**
Shields

**Modal verbs expressing possibility:** may, might, could, would, should

- **Adjectival, adverbial and nominal modal phrases**
  - **probability adjectives:** possible, probable, un/likely.
  - **nouns:** assumption, claim, possibility, estimate, suggestion
  - **adverbs:** perhaps, possibly, probably, practically, likely, presumably, virtually, apparently
Shields

Modal lexical verbs (speech act verbs expressing doubt and evaluation):

- seem, appear, to happen (semi-auxiliaries),
- believe, assume, suggest, estimate, tend, think, argue, indicate, propose, speculate
- **Intensifiers**: extremely difficult, dishearteningly weak, of particular importance, particularly encouraging, unexpectedly, surprisingly
Approximators

- \textit{Of quantity, degree, frequency and time:}
  - approximately, roughly, about, often, occasionally, generally, usually, somewhat, somehow, a lot of, quite

- \textbf{Adaptors:} sort of, kind of
Expressions (introductory phrases)

- Expressions to show the author’s personal doubt and direct involvement.
  - I believe, to our knowledge, it is our view that, we feel that, as far as I/we know...
Emotionally-charged intensifiers

- (comment words used to protect the author’s reactions)
  - extremely difficult/interesting
  - dishearteningly weak
  - of particular importance
  - particularly encouraging
  - Unexpectedly
  - Surprisingly
Compound hedges

- **Double**
  - **Modal + semi auxiliary or epistemic:**
    - *It would appear,*
    - *It may suggest that,*
    - *It would indicate that*
  - **Semi auxiliary + adverb or adjective:**
    - *it seems reasonable, probable; it seems likely that*

- **Treble**
  - *It seems reasonable to assume that*
  - *It would seem somewhat unlikely that*
  - *It may appear somewhat speculative that*

- **Quadruple**
  - *It would seem somewhat unlikely that*
o **NEUTRAL**: verbs used to say what the writer describes in factual terms,
  - demonstrates, refers to, and discusses, and verbs used to explain his/her methodology. describe, show, reveal, study, demonstrate, note, point out, indicate, report, observe, assume, take into consideration, examine, go on to say that, state, believe (unless this is a strong belief), mention, etc.

o **TENTATIVE**: verbs used to say what the writer suggests or speculates on (without being absolutely certain).
  - suggest, speculate, intimate, hypothesise, moot, imply, propose, recommend, posit the view that, question the view that, postulate, etc.

o **STRONG**: verbs used to say what the writer makes strong arguments and claims.
  - argue, claim, emphasise, contend, maintain, assert, theorize, support the view that, deny, negate, refute, reject, challenge, strongly believe that, counter the view/argument that, etc.