Scientific writing clinic: the language

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The jungle and you

It is a friendly jungle... but do you speak the language?

Overview

Based on course given by Dr. Heather Murray, in the 2001/2002 academic year at University of Bern.

This lecture is about the language we employ in writing research papers.

- Scientific writing style
- Active vs passive voice
- Referring to tables and figures
- Contrast and comparison
- Model research paper

Scientific writing style

Research paper are written in formal English point!

- Informal to formal vocabulary shift
  - 1) Avoid contractions: use ”will not” no ”won’t”
  - 2) Use more appropriate formal negative forms:
    - 2.a) not ... any $\Longrightarrow$ no
    - 2.b) not ... much $\Longrightarrow$ little
    - 2.c) not ... many $\Longrightarrow$ few
    - The analysis didn’t yield any new results.$\Longrightarrow$ The analysis yielded no new results.
  - 3) Limit the use of expressions like ”and so forth” and ”etc.”
  - 4) Avoid addressing the reader directly as ”you”
  - 4.a) You can see the results in table 1. $\Longrightarrow$ The results can be seen in table 1.
  - 5) Limit the use of direct questions
  - 5.a) What can be done to increase the resolution? $\Longrightarrow$ There is need to consider how to increase the resolution.
  - 6) Place adverbs within the verb
    - 6.a) There are actually a number of reasons for performing ...
    - 6.b) It may possibly prove to be ...
    - 6.c) The model does not normally has dry bias.

Active vs passive voice

We present the results in table 1. $\Longrightarrow$ The results are presented in table 1.

- passive voice: the doer of the action is not mentioned
- passive voice is used often when the focus is on an action or its results
- passive voice is often seen in the methods section

Referring to tables and figures

- The processing parameters are shown/presented in table 1.
- From table 3 it can be seen that the dry bias is only in the summer months.
- The main findings of the sensitivity experiment are given in table 1 and 2.
- Table 5 support the findings by Marel et al (2001).
- On figure 5 is shown the diurnal cycle of IWV.
- The wet IWV bias seen in the radiosonde IWV (figure 3) is only for 2005.

Balance the text and figures/tables in a paper. Too many figures/tables are to be avoided. If you still want to mention results, which are on a figure not shown in the paper it is simple use: ”A dry IWV bias is found in April 2003 (not shown).” This makes a good impression and suggests that you have a figure but decided not to include it.

Singposts and link words

Connect ideas or prepositions:

- first, ... $\Longrightarrow$ furthermore, ... $\Longrightarrow$ finally, ...
- one, ... $\Longrightarrow$ two, ... $\Longrightarrow$ three, ...
- firstly, ... $\Longrightarrow$ secondly, ... $\Longrightarrow$ thirdly, ...
- to begin with $\Longrightarrow$ in the second place, ... moreover, ... $\Longrightarrow$ to conclude, ...
- first of all, ... $\Longrightarrow$ next, ... then, ... $\Longrightarrow$ lastly, ...

Singposts and link words: cause and effect

Connect ideas or prepositions:

- pattern 1: because, since, due to the fact that, owing to, due to, because of, the reason for
- pattern 2: one effect of, one result of, one consequence of, results in, lead to
- pattern 3: therefore, thus, hence, consequently, as a consequence, as a result, as a result of which
- pattern 4: so ... that, such ... that

Contrast and comparison

COMPARISON (SIMILARITY)	CONTRAST
Similarly,	On the one hand.. on the other (hand)
Likewise,	In contrast, By contrast
Just as ...so	However,
	Conversely,
X is similar (to) Y in size	
the same as	even though
both X and Y	whereas
X as well as Y	while
X is comparable to Y with respect to/as to	although
X is comparable to Y with regardto	
as ... as	
X is like Y	X is different (from) Y
	X is unlike Y
X resembles Y	
	X differs (from) Y

figure from Heather Murrey's lecture notes, 2001/2002

Qualification of comparison

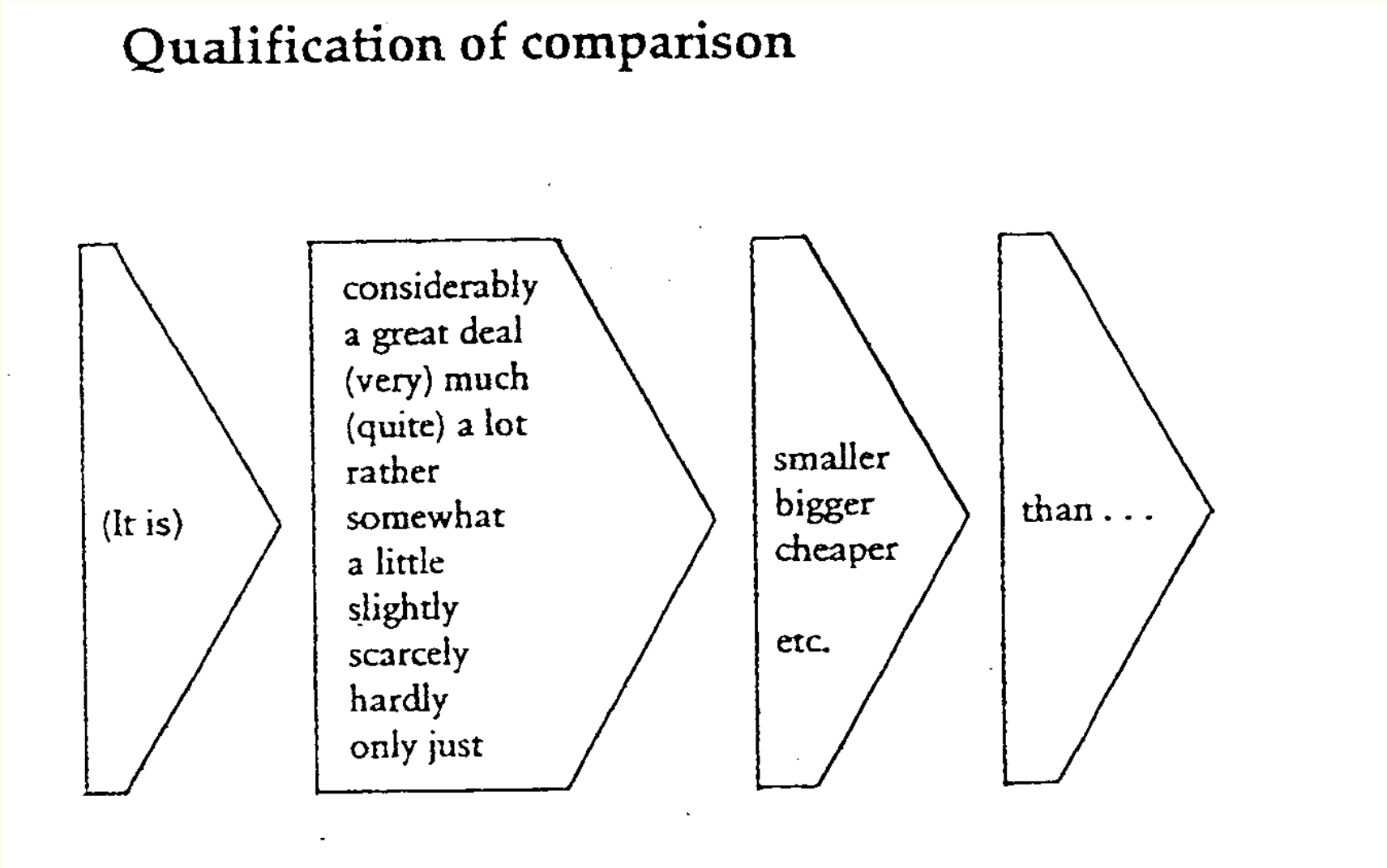

figure from Heather Murrey's lecture notes, 2001/2002

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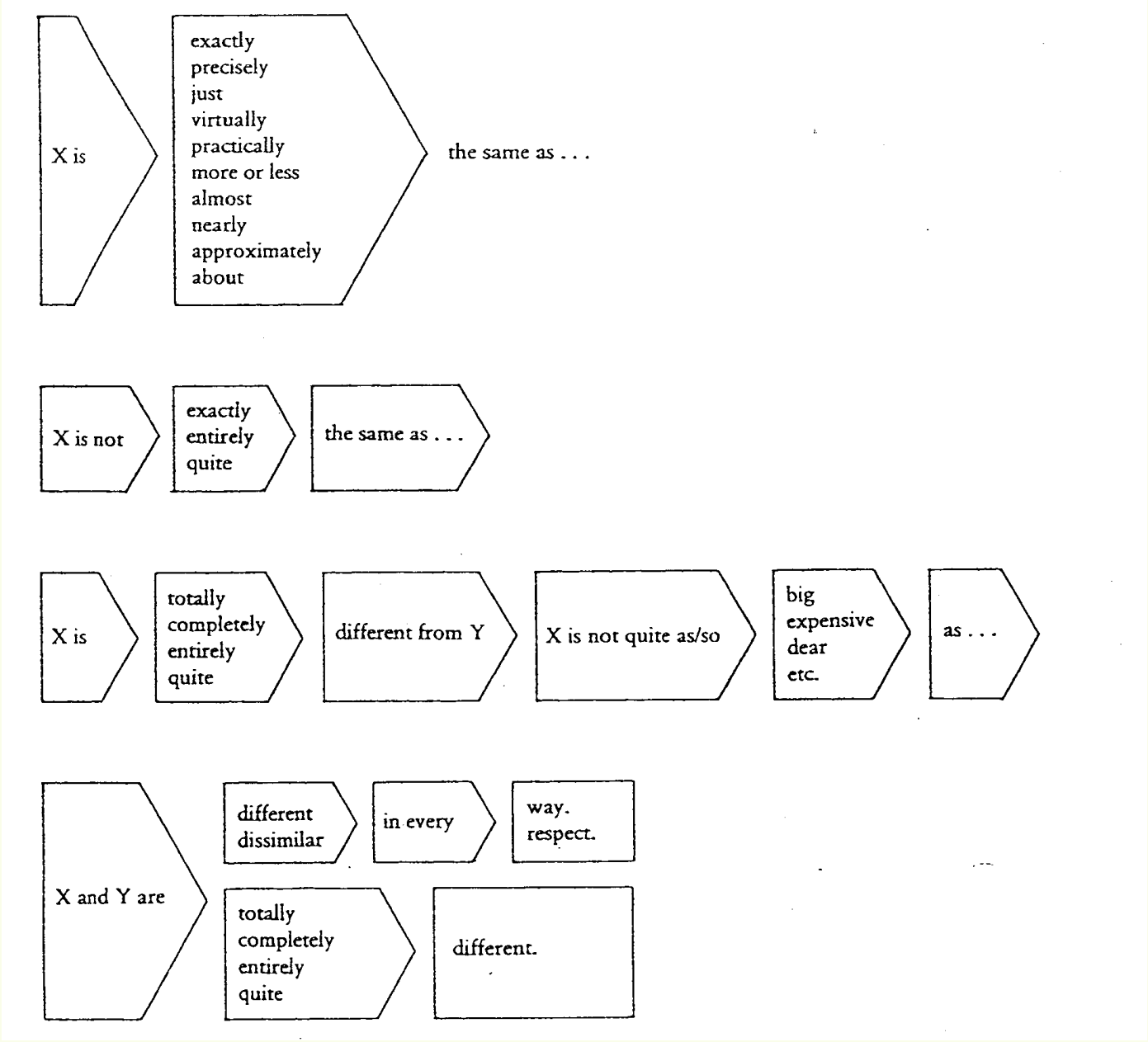
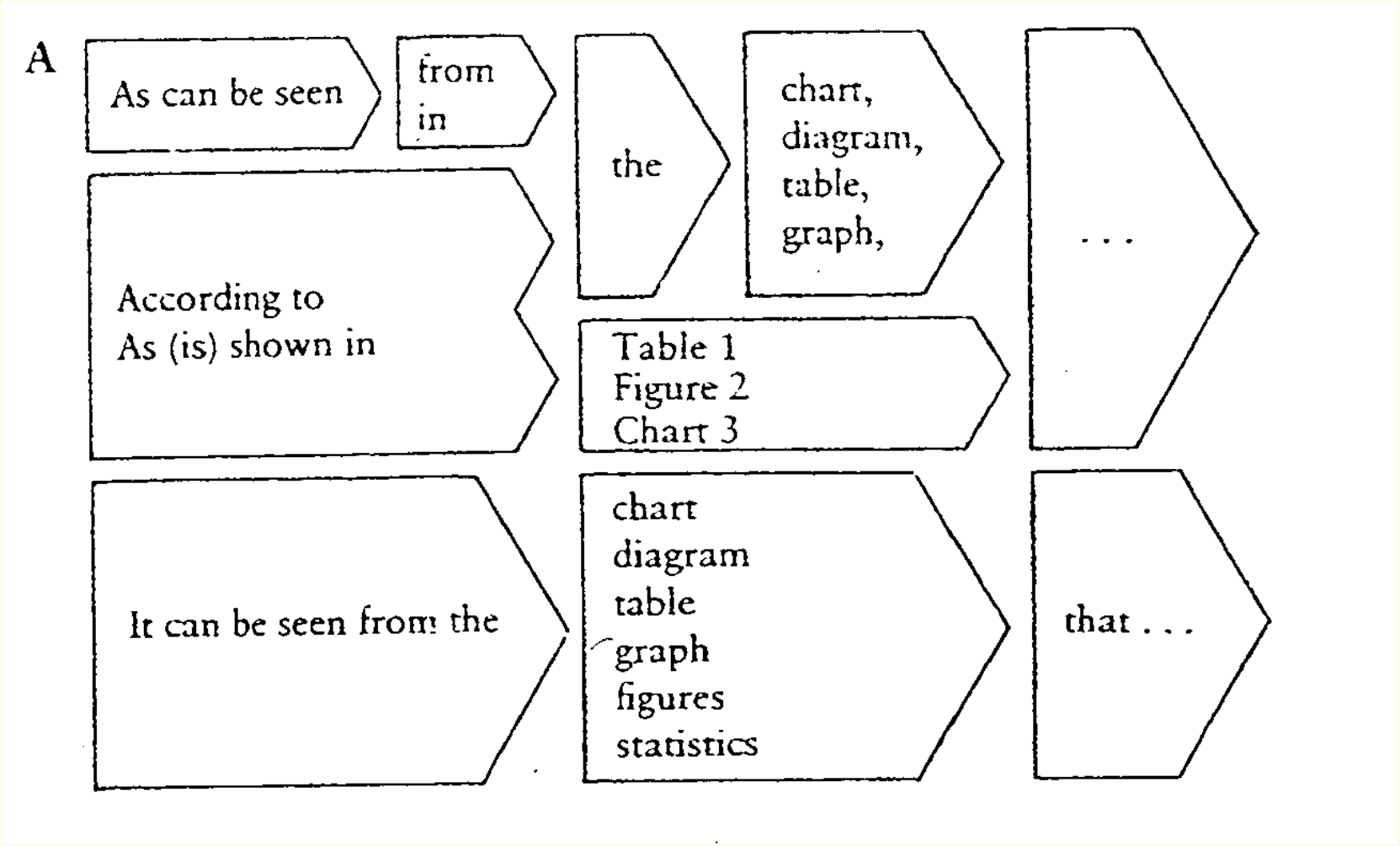


figure from Heather Murrey's lecture notes, 2001/2002

Describing changes and difference



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Describing changes and difference

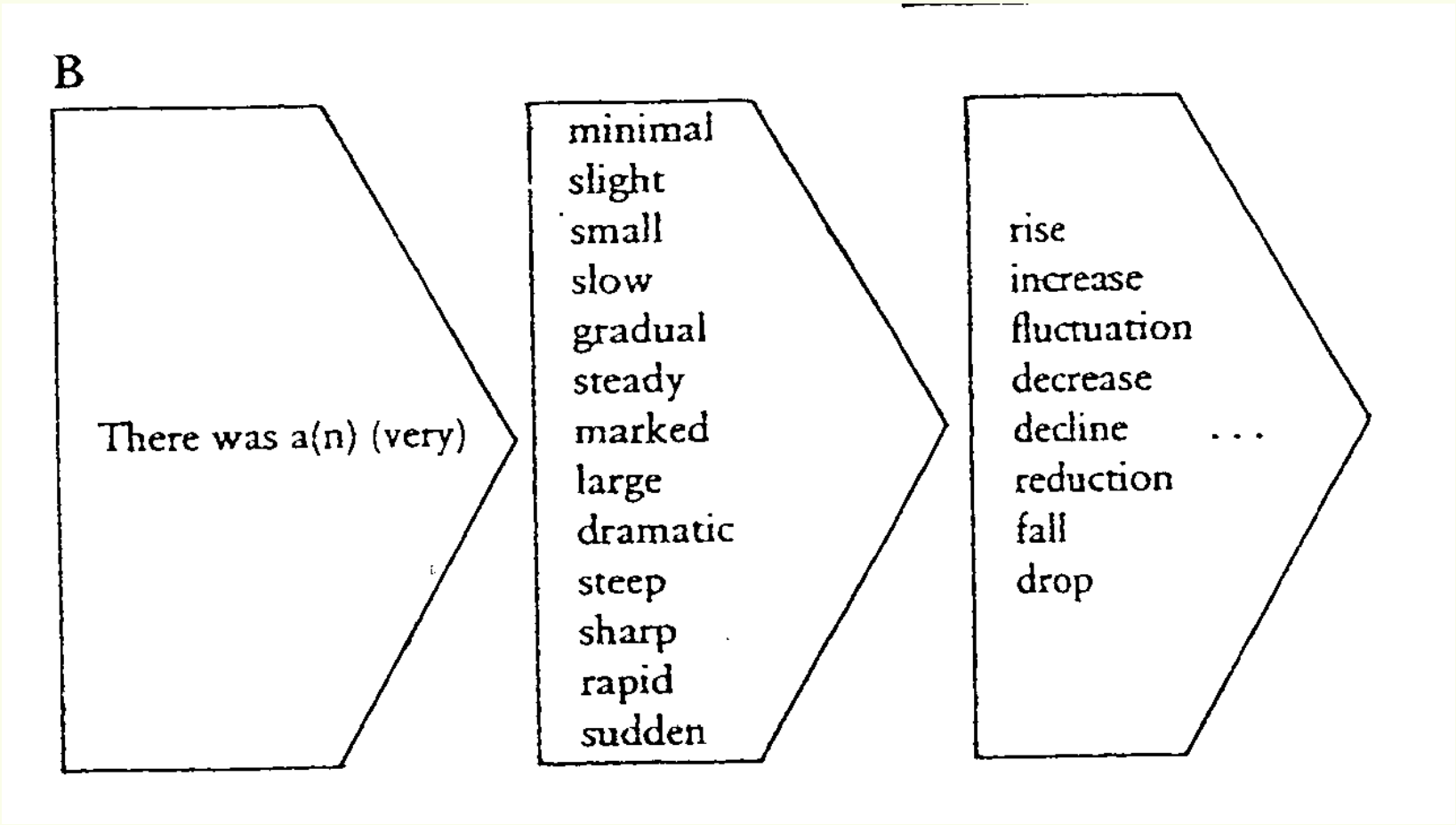

figure from Heather Murrey's lecture notes, 2001/2002

Describing changes and difference

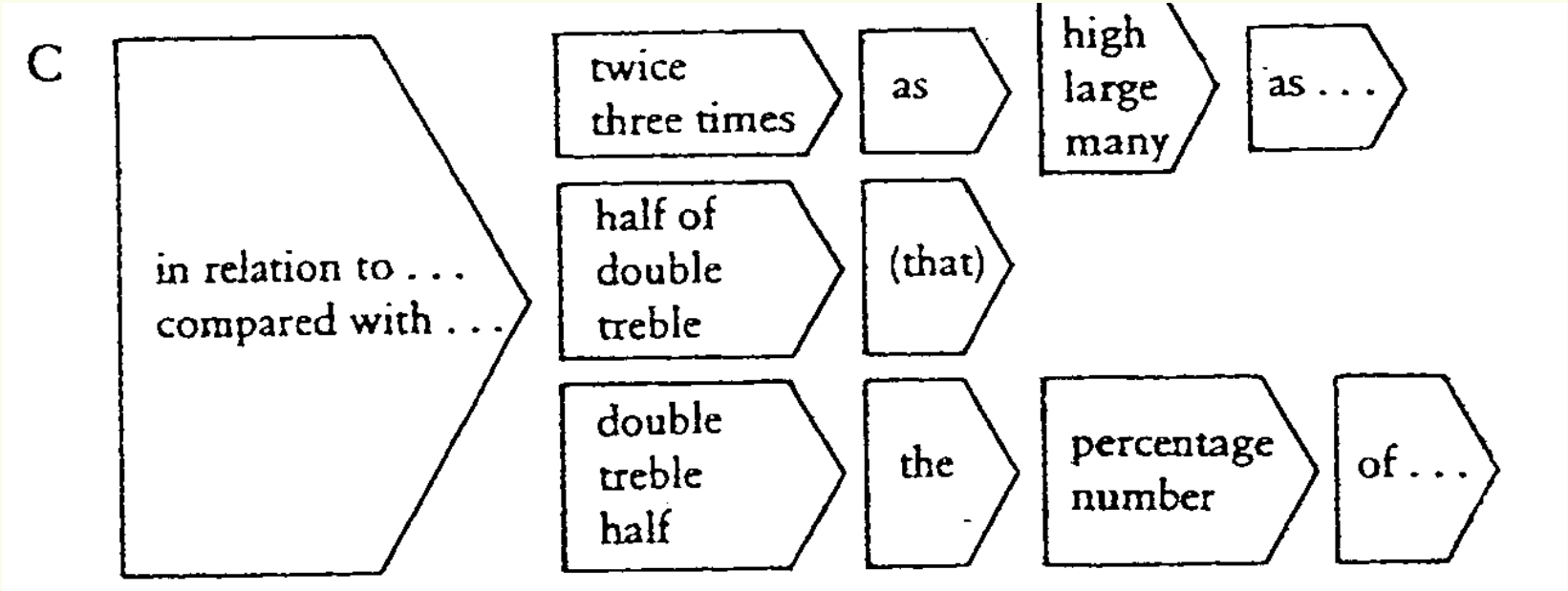

figure from Heather Murrey's lecture notes, 2001/2002

Describing changes and difference*

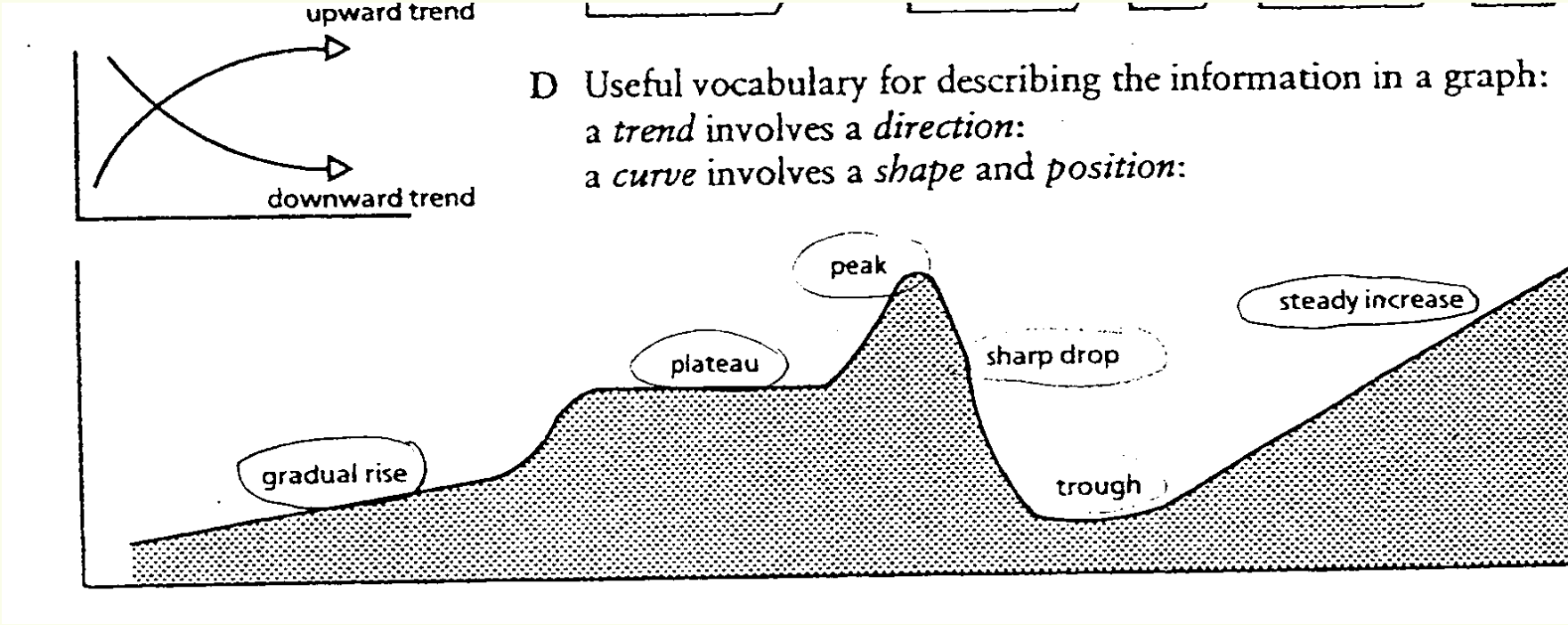

figure from Heather Murrey's lecture notes, 2001/2002

Model research paper

Trends and variability in column-integrated atmospheric water vapor by Kevin E. Trenberth, John Fasullo and Lesley Smith, in Climate Dynamics, 2005

An analysis and evaluation has been performed of global datasets on column-integrated water vapor (precipitable water). For years before 1996, the Ross and Elliott radiosonde dataset is used for validation of European Centre for Medium-range Weather Forecasts (ECMWF) reanalyses ERA-40. Only the Special Sensor Microwave Imager (SSM/I) dataset from Remote Sensing Systems (RSS) has credible means, variability and trends for the oceans but it is available only for the post-1988 period. Major problems are found in the means, variability and trends from 1988-2001 for both reanalyses from National Centers for Environmental Prediction (NCEP) and the ERA-40 reanalysis over the oceans, and for the NASA water vapor (NVAP) dataset more generally. NCEP and ERA-40 values are reasonable over land where constrained by radiosondes. Accordingly, users of these data should take great care in accepting results as real. The problems highlight the need for reprocessing of data, as has been done by RSS, and reanalyses that adequately take account of the changing observing system.

Precipitable water variability for 1988-2001 is dominated by the evolution of ENSO and especially the structures that occurred during and following the 1997-98 El Nino event. The evidence from SSM/I for the global ocean suggests that recent trends in precipitable water are generally positive and, for 1988 through 2003, average 0.40 ± 0.09 mm decade-1 or $1.3 \pm 0.3\%$ decade-1 for the ocean as a whole, where the error bars are 95% confidence intervals. Over the oceans, the precipitable water variability relates very strongly to changes in SSTs, both in terms of spatial structure of trends and temporal variability (with a regression coefficient for 30°N-30°S of 7.8% K-1) and is consistent with the assumption of fairly constant relative humidity. In the tropics, the trends are also influenced by changes in rainfall, which in turn are closely associated with the mean flow and convergence of moisture by the trade winds. The main region where positive trends are not very evident is over Europe, in spite of large and positive trends over the North Atlantic since 1988. A much longer time series is probably required to obtain stable patterns of trends over the oceans, although the main variability could probably be deduced from past SST and associated

The end

The experiance shows:

- each journal has different requirements for citing papers and formatting text and figures
- 23 750 journals, may be 20-30 are suitable for your paper but this is still a lot
- the good news is most of journals have a LaTex style files, which is a great help use them
- if you do not know LaTex learn it NOW
- learn English, improve English, invest in your English

I was very fortunate to have those lectures at the very early stage of my career.

Thank you Dr. Heather Murray for your teaching!
With this lecture I am passing it on.

Enjoy writing your research papers!
There is a non zero chance I will read them ;-)
And even more ;-)

You are the new species in my jungle. Lets enjoy our communication ;-)

References

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