

## A team-based approach to HDR supervision

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## My background

- PhD at Melbourne Uni (1992), Department of Statistics. One of two PhD students in the department.
- I saw my main supervisor three times in three years.
- In 1994 I moved to Mathematics at Monash where the PhD students in Statistics never interacted as a group.

## My background

- In 1998 I moved to Econometrics & Business Statistics where there were about 30 PhD students. They never interacted as a group.
- By 2004, I had 7 PhD students and was spending a large amount of time helping each of them with the same issues.
- I talked to PhD students in laboratory disciplines where they all worked in teams helping each other.

## The forecasting research team

- Begun to save me time and to encourage interaction between students.
- We share ideas, feel part of a group with similar objectives, discuss research planning issues and technical problems.
- We meet as a group once every two weeks. I meet with each person individually on the alternate weeks.

## Forecasting research team



## The apprenticeship model

I see HDR students as “apprentice researchers”.

**My aim: help them become fully independent researchers before they leave.**

- settling in a new country
- framing the research problem
- searching the literature
- writing papers
- giving seminars
- meeting other researchers
- computer programming
- mathematical typesetting
- attending conferences
- producing a thesis.

## Early stages

### Before they arrive...

- Begin working on a research proposal.
- Discuss sitting the IELTS test, satisfying the university regulations, and so on.

### Settling in

- Assign an existing student to help with finding accommodation, learning where the nearest shops and other facilities are, meeting people of the same ethnic background, sorting out computer accounts and library access, and so on.

## Early stages



## Group meeting topics

- how to give a good research seminar
- explaining your research to people in other fields
- new software tools
- debugging computer programs
- using L<sup>A</sup>T<sub>E</sub>X for writing papers and a thesis
- how to subscribe to RSS feeds for journals
- writing a referee report
- writing a response to referee reports
- using some of the new search tools in research
- tools for managing backing up

## Blog

Some of the topics discussed in our group are summarized on my blog:

[www.robjhyndman.com/researchtips](http://www.robjhyndman.com/researchtips)

- On most days, the site receives about 300 unique visitors
- Largely as a result of this website, I receive many requests from potential overseas students wanting to come to Monash.

## Research blog

- Repository of information for research team
- Topics discussed in team meetings are written up for the website
- Using blog software so subscribers can receive automatic updates
- Some entries have received over 1000 hits each.
- Essentially an online book on doing research in statistics and econometrics, but always evolving and up-to-date.

## Research library

- Students wanted long-term loans of some books.
- Others wanted to check a reference, but did not want to go to the library.
- So I've developed an extensive library of books of use to my students.
- Online borrowing system on [www.robjhyndman.com/borrowed](http://www.robjhyndman.com/borrowed)

## Team teaching

- Students teach the group specific skills or topics in which they have expertise.
- Builds confidence and experience in a team environment.
- **Examples:**
  - debugging tools in the R computer language
  - using animated graphics in seminar presentations
  - statistical tests for comparing forecast models.
  - remote access of computers.

## Conferences

- Attending international conferences a vital component of research life.
- All my students are expected to attend the *International Symposium on Forecasting* at least once.
- Every year for the last seven years, the Monash contingent has been the largest from any university at the ISF.
- Students often continue lengthy correspondence with other researchers they have met at ISFs.
- Department funds first trip, students obtain grants for subsequent trips.

## Conferences



## Conferences



## Seminar preparation

- Before a student presents a seminar or conference paper, they give their talk to the group and obtain feedback.
- Sometimes this leads to lively debate about what is appropriate, and how best to express the key ideas.
- By the time a student gives the conference paper or seminar, the talk has been well-practised and the flaws addressed.

## Writing issues

- Of the 27 HDR students and post-docs I have supervised, only four are native English speakers.
- We cover English grammar and other writing issues in team meetings.
  - Common confusions: affect/effect, later/latter, stationary/stationery, discreet/discrete
  - Definite articles, singular/plurals.
  - Words to avoid: "Obviously", "Note that", ...
- Structuring a paper
- Writing a good abstract and introduction.
- I employ a copyeditor to help the students with their English.



## Writing issues

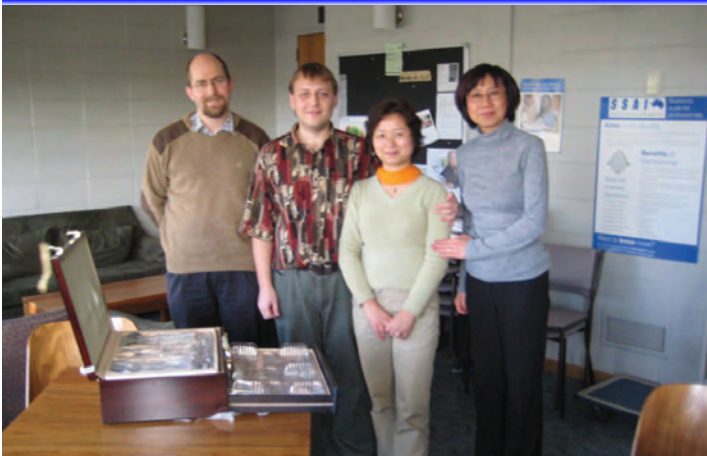
### Activities

- 1 Rewrite the abstract of a published paper so that it is clear.
- 2 Critique published papers — practicing referee reports.
- 3 Identify features of good papers.
- 4 Keep a productivity diary.

## Social interaction



## Social interaction



## Social interaction



## Building a research group

- Consider forming a group between 2 or 3 supervisors working on similar topics.
- Try to guide students towards topics that fit within a defined field.
- Encourage research students to give talks to the group on their project.
- Provide great facilities.
- Group meetings covering broader issues
- Get visiting scholars to address research group meetings and encourage questions.
- Involve post-docs and other research associates and assistants.

## Difficulties

- Psychiatric problems
- Depression
- Cultural expectations
- Family expectations
- Weak students
- Beware of surrogate parenting
- Personality clash
- Losing contact

## Reasonable expectations

### A supervisor can expect a PhD student to

- turn up to appointments, prepared for them;
- write regularly and share the draft material;
- tell the truth about work done and not done;
- keep in touch — socially, practically and academically;
- do the research tasks that have been mutually agreed and scheduled.

## Reasonable expectations

### A student can expect a supervisor to provide

- regular supervision. At least fortnightly one-on-one meetings. More in the first year.
- written feedback on draft material.
- guidance on the value of proposed directions and methodology
- guidance through the existing literature in the area.

*(Adapted from Delamont, Atkinson and Parry, 2004)*

## Survey of examiners

### Results of a study involving interviews with 30 experienced examiners

- Expect students to pass.
- Have formed a view about the quality of the thesis by the end of Chapter 2.
- Are very, very reluctant to fail a student with most experiencing considerable distress if they do so.
- Poor thesis equates with sloppiness.
- Are fiercely independent in their views.
- Have an inclusive view about the writing of ESL students.
- Have surprisingly 'catholic' approaches to methodology.
- Are influenced by papers published by students, especially in science.

## Producing the thesis

- Write early and often
- Produce a table of contents at end of first year, and revise it periodically. Think about the flow of ideas. Tell a story.
- Literature review should not be encyclopedic. Keep it focussed on the relevant literature. Papers that are only cited in one chapter can be discussed in that chapter.
- Get students using bibliography system early. e.g., EndNote, BibTeX, Zotero or Mendeley, with indexing of printed papers.
- Make successful theses available (but avoid the outstanding!).

## Producing the thesis

- Make sure they have backups in more than one location.
- Try to publish sections as they are completed as working papers and submit to journals. Allows early feedback, simplifies examination, easy to convert to chapters, builds confidence.
- Discuss writing issues with group of research students. They can help each other improve, and it saves repeating yourself.
- Watch tenses, forward referencing, definitions.
- English editing is always required. I pay someone to do it.

## Producing the thesis

- Finishing a thesis takes about twice the time a student estimates.
- Discuss potential examiners with students. Ask if there is anyone they do not want.
- Choose examiners who are sympathetic and not picky. Personally known is best. Must know what an Australian PhD is. Older and wiser is usually better.
- Read what the examiners have written, and make sure you cite them favourably.
- Informally approach the examiners.

## Final word

- Research teams are better for students and supervisors.
- Think of students as apprentice researchers and teach them all aspects of being a researcher.
- Be the researcher you want your students to become.