Information Technology

FIT5190 Introduction to IT Research Methods

Lecture 4
Communication of Research – Publication and Oral Presentations

Slides prepared by

David Green, Frada Burstein, Jacques Steyn, Geoff Webb, Chung-Hsing Yeh

Overview

- This lecture addresses how to communicate the research results to the research community, including both **written communication** (publishing) and **oral communication** (giving presentations).

- In addition to writing a research proposal and a thesis, the lecture addresses writing journal and conference papers.

- The lecture also includes presenting at conferences and seminars.

Communicating research - publication
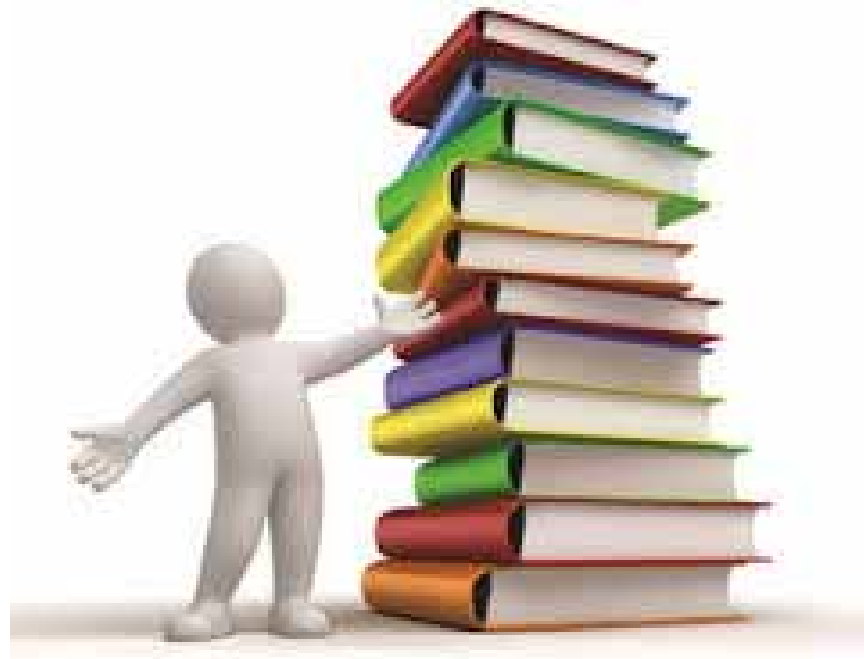
Learning objectives - publication

- Understand
  - common kinds of research output and scientific writing
  - the main components of scientific papers
  - the need for good English writing style (clarity and conciseness)
  - the journal paper review process

- Be able to
  - correctly structure scientific writing
  - critically assess basics aspects of scientific writing

Why is Marco Polo famous?

- Was he the first European to visit China?
  No!

- Was he the first person to write about it?
  Yes!

- The moral?
  Publish or perish!

Mosaic of Marco Polo (1254-1324) displayed in the Palazzo Doria-Tursi in Genoa, Italy.

Publish or perish

- Publish your work as you go!!

- Where to publish?

  - Location, location, location!!!!

  - All good researchers have been rejected by a̶l̶l̶ a few
    the best journals

- What to publish?
  - Quality, not quantity
  - Karl Friedrich Gauss (1777-1855): "Few, but ripe"
 - Get feedback
  - Polish!

Getting research published

"If a project does not result in a high quality journal publication then you may as well climb a high mountain and shout your results into the wind"

Source: http://www.chamex.com/adventure/ski-mont-blanc

It is all about publication

- The goal of conducting research is publication.

- No research will make impact if no one knows about it.
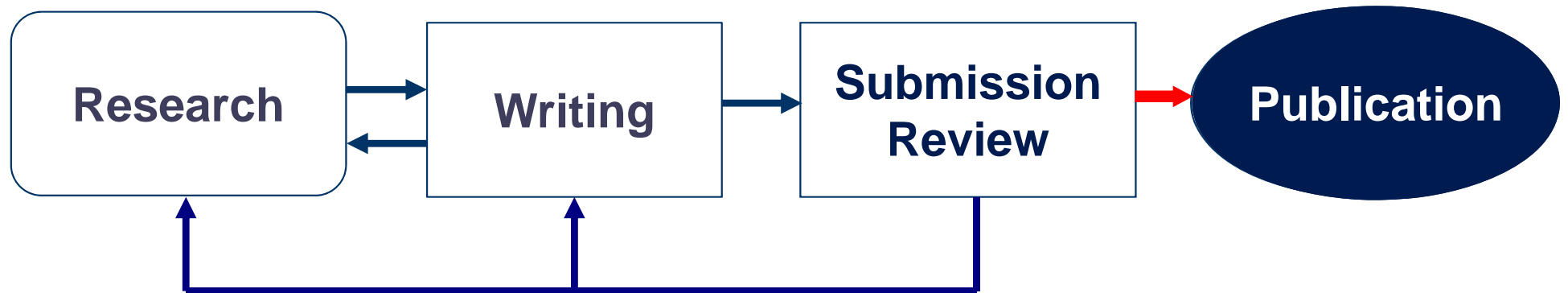
Some types of research output

- Written
  - Proposal
  - Report
  - Paper (article, manuscript)
  - Thesis

- Oral
  - Seminar presentation
  - Conference presentation
  - Thesis defense/examination

Common kinds of scientific writing

- Proposals
  - Submissions (argue a case)
  - Research proposals (e.g. thesis proposal)
  - Grant applications (apply for funding)
  - Position paper (set out a case, points for discussion)

- Research papers (articles)
  - Publish research results in journals and/or conferences
  - Reviews (overview and interpret research in a field)
  - Reports (set out project findings, e.g. consultancy)

- Popular articles (e.g. newspapers)
  - Explain research ideas to the public

- Books and monographs
  - Substantial accounts of entire fields

Writing style (for all research communication)

- Two key things that set the tone
  - English
  - Referencing

- English
  - Spelling & grammar checks
  - Proofreading

English writing style

- **Personal pronouns**

  - I have found that ……..

  - We believe that ……..

  - The findings of this project are ………

- **Default**

  - Don't use personal pronouns for your project, especially first person singular

    - I, me, my

English writing style (continued)

- Active vs. Passive voice

  - Use active where possible

    - "The project will investigate fast internet protocols" rather than "Fast internet protocols will be investigated."

Writing style - tone

- Formal and concise

  - Distance from subject matter

    - Suggests objectivity

  - Professional and serious

- Personal and informal

  - Journalistic

  - Entertaining

More on writing style

- Coherence of the manuscript

  - Ideas tied together logically

  - Repetition of variable names

  - Use consistent terms & acronyms

  - Connecting sentences & paragraphs

- Simple sentences

- Polish, polish, polish

- "**Less is more.**"　　　　– Ludwig Mies van der Rohe

  - Concise and to the point

Writing research proposals

- Usually the first research communication you will write

- You are writing a research proposal for
    - Supervisors
    - Scholarship committee
    - Confirmation panel
    - Other colleagues

- Keep writing them throughout your career

    - Journal and conference papers

        - Discipline dependent

    - Grant applications

Standard elements of a proposal

- Title
- Abstract
- Introduction
- Literature review
- The topic, problem, questions
- Theoretical framework
- Research method
- Expected outcomes/contributions
- Timeline to completion
- References

Other possible elements

- Resources required
  - Funding sources
  - Travel, accommodation
  - Equipment
  - Personnel
- Ethics strategy
- Risks and mitigation strategy
- Novelty
- Significance

The thesis

- Often the largest piece of writing you do

- Structure depends on method

- Size depends on method

- Be guided by your supervisor

- Look at theses in departmental libraries

Thesis survival tips

- Start writing as soon as the proposal is accepted.

  – Start with the Literature Review

- Keep writing.

  – Must be a daily activity

    - even a couple of sentences or paragraphs a day

- Use a bibliographic tool such as Endnote.

- Use a proof-reader.

How do you get to that journal paper?
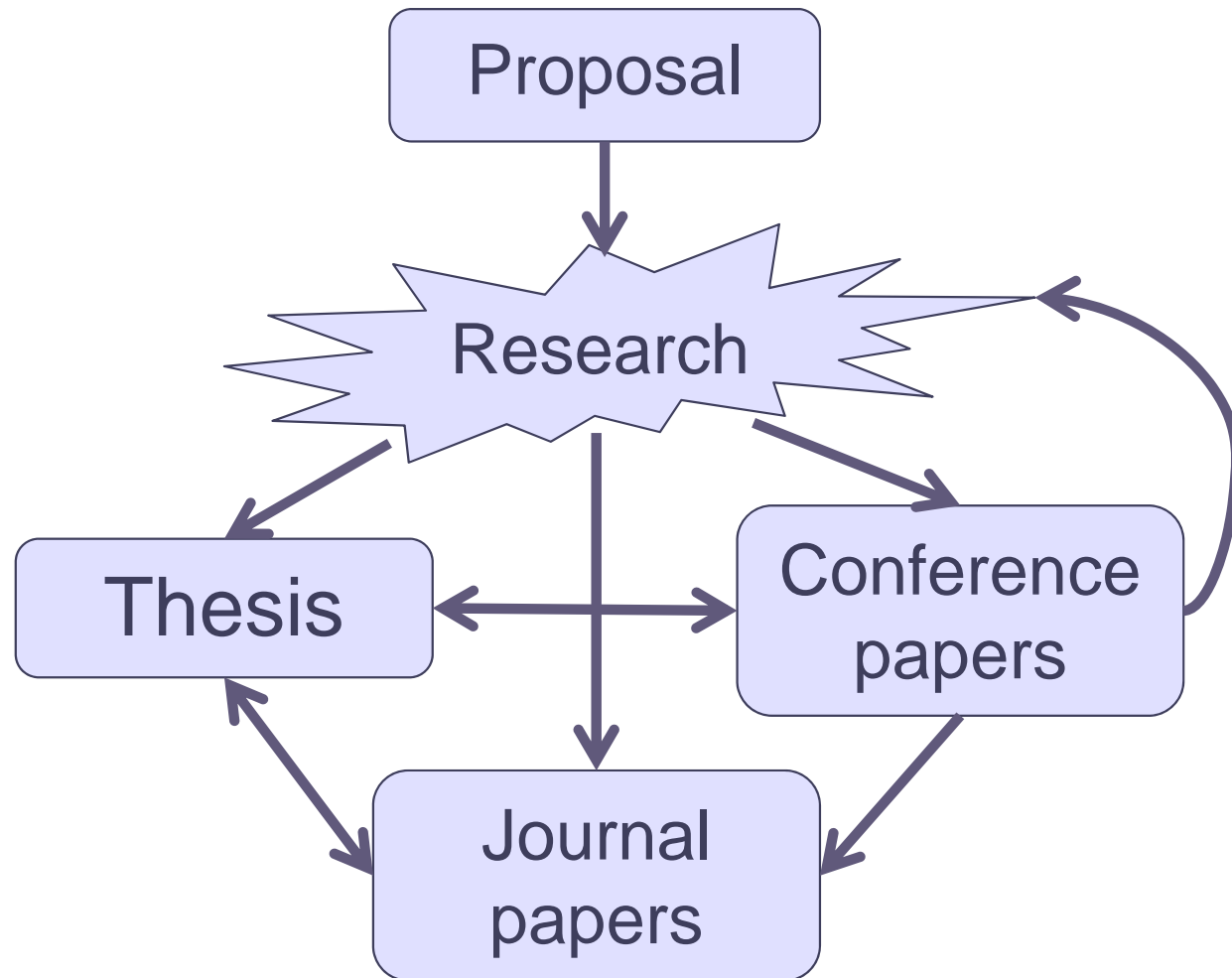
Writing a paper

- Size determined by journal or conference

  – Journal typically 8,000 words

  – Conference typically 4,000 words

A micro writing plan

1. Title?

2. Purpose?

3. Authors?

4. Audience?

5. Method?

6. Publication Outlet?

7. Theoretical Contribution?

8. Practical Contribution?

A micro writing plan 1

1. Title

   – What is the title of the paper?

2. Purpose

   – Why am I writing this?

   – How does this fit into my development plan?

3. Authors

   – Who are the authors?

   – What is their intended contribution?

   – Have a written agreement

A micro writing plan 2

4. Audience

   – Who do you want to read it?

   – Professional vs Academic?

5. Method

   – What am planning to use?

6. Publication Outlet

   – Which conference or journal?

   – What level (A*, A, B, C, unranked)?

So, where?

- **Conferences**
  - Choose a community & consistently engage

- **Journals**
  - Match method
  - Match to project quality
  - Match journals' editorial policy

- **Be careful with choice**
  - Don't waste
  - Don't over reach

A micro writing plan 3

- Theoretical Contribution?

    – You must make a clear and useful contribution to knowledge.

- Practical Contribution?

    – Optional

    – Important for applied IT fields.

Alternative writing plan

1. What is the story and who is the audience?

2. What is the originality?

3. What is the significance?

4. How best to communicate the story and significance to the intended audience?
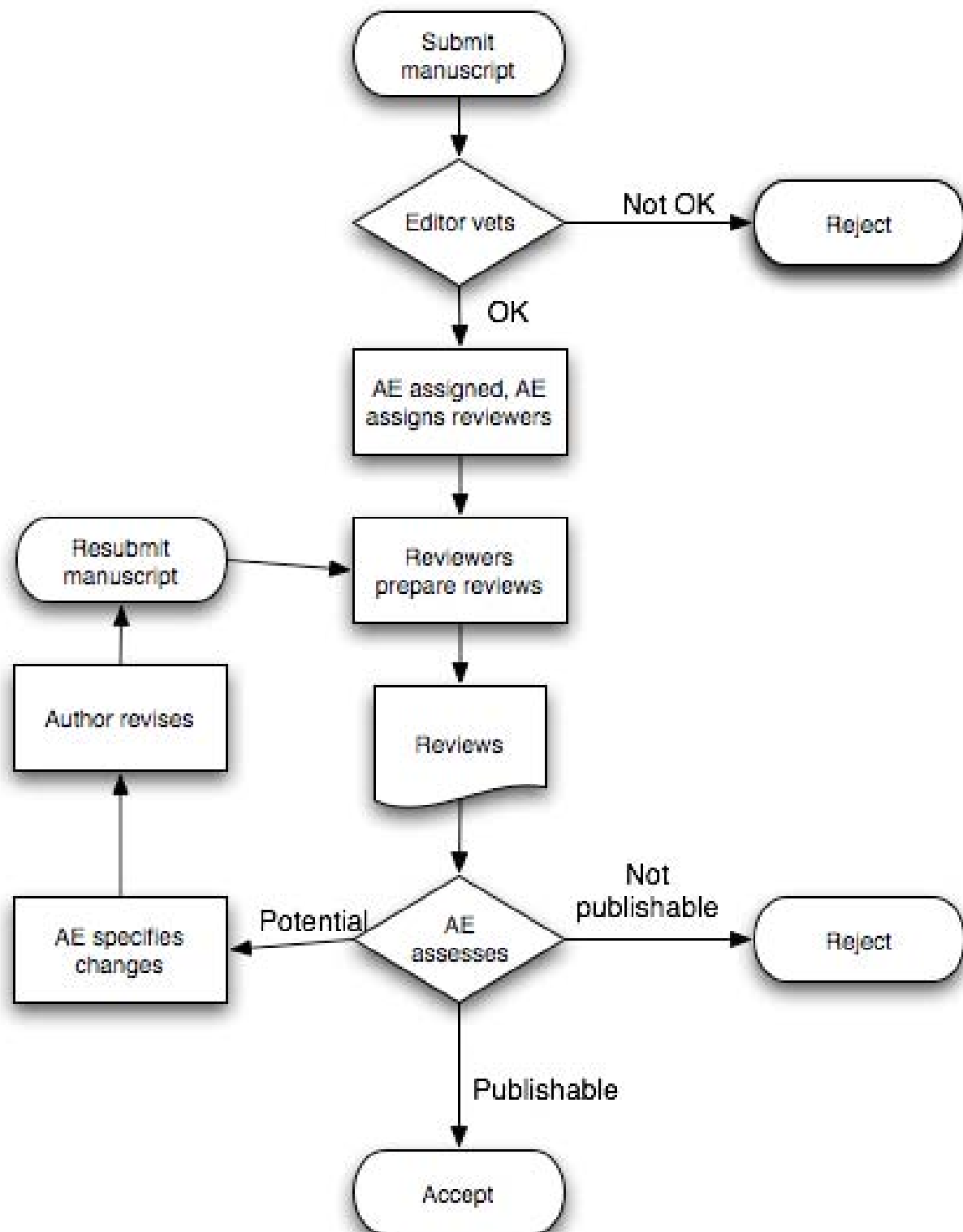
Typical structure of a scientific paper

- Title
- Abstract
- Introduction
- Background & Rationale
  - Literature review (relevant past research)
  - The research problem, question (or hypothesis) and motivation
- Method
- Results
- Discussion
- Conclusion
- Acknowledgements
- References
- Appendices

Who are you writing for?

- Editors

- Reviewers (referees)

- And if accepted, researchers

# Journal paper (manuscript) review (refereeing) process

Submit manuscript → Editor vets → Not OK → Reject

Editor vets → OK → AE assigned, AE assigns reviewers → Reviewers prepare reviews → Reviews → AE assesses

AE assesses → Not publishable → Reject

AE assesses → Publishable → Accept

AE assesses → Potential → AE specifies changes → Author revises → Resubmit manuscript → Reviewers prepare reviews

Journal paper reviewing

- Smith, A.J. (1990). The task of the referee. *IEEE Computer, 23 (4), 65-73.*

- What is the purpose of the paper?

- Is the paper appropriate?

- Is the goal significant?

- Is the method or approach valid?

- Is the actual execution of the research valid?

- Are the correct conclusions drawn from the results?

- Is the presentation satisfactory?

- What did you learn?

Publication stages of a typical journal
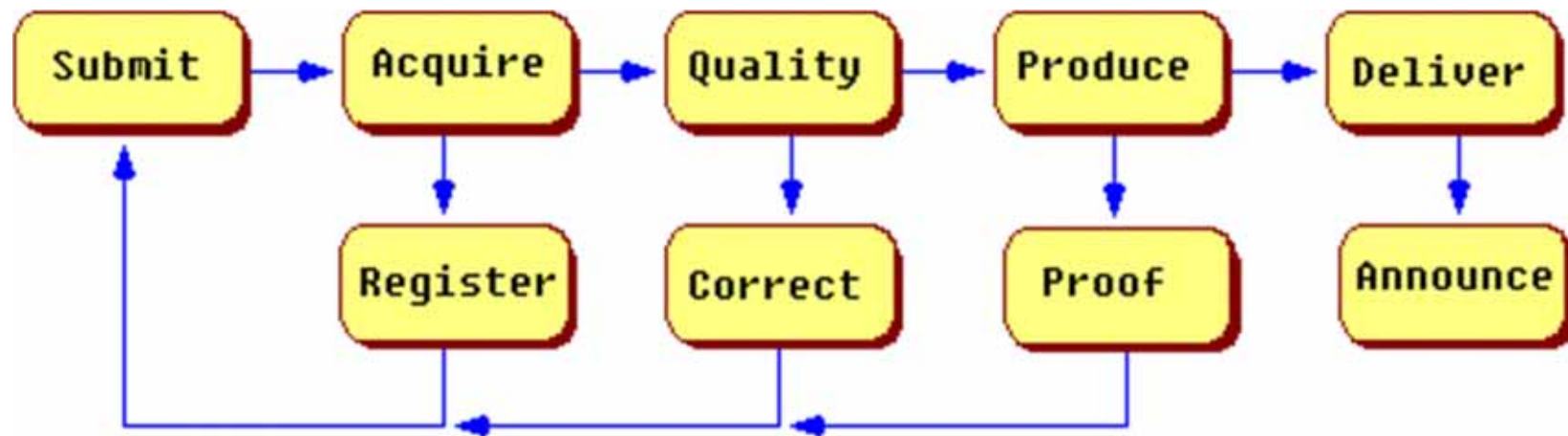
- There are quality checks at every stage:
  - Editors check for submission requirements
  - Referees check scientific validity and rigour
  - Editors check author's responses
  - Copy editors check for typos, formatting errors
  - Authors check proofs

Publication stages of a typical journal
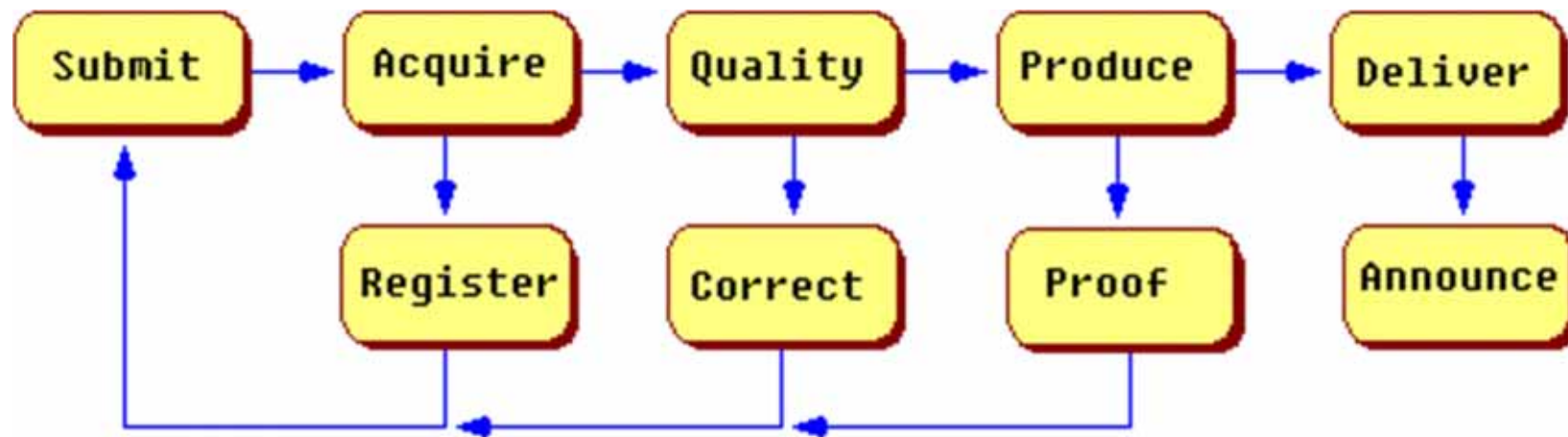
1. Submission
   - Reviewing (check quality of content)
   - Editorial
   - Correction

2. Typesetting
   - Proofs (check formatting)
   - Copy editing
   - Publication

34

Increase your global impact

How many people will see your paper?

Conference	100
Journal	1000
Web	10000+

Online publishing

- Instant world-wide availability

- Hypermedia features of the Web

- Eliminating distribution costs

- Low production costs

  - No need to print "hard copy"

- Potential world-wide audience

- "Niche"/special interest publishing is viable

Other kinds of research outputs

- Software

- Patents

- Datasets

- Online websites & portals

- Creative works and exhibitions

- Translations

- Popular reports and articles
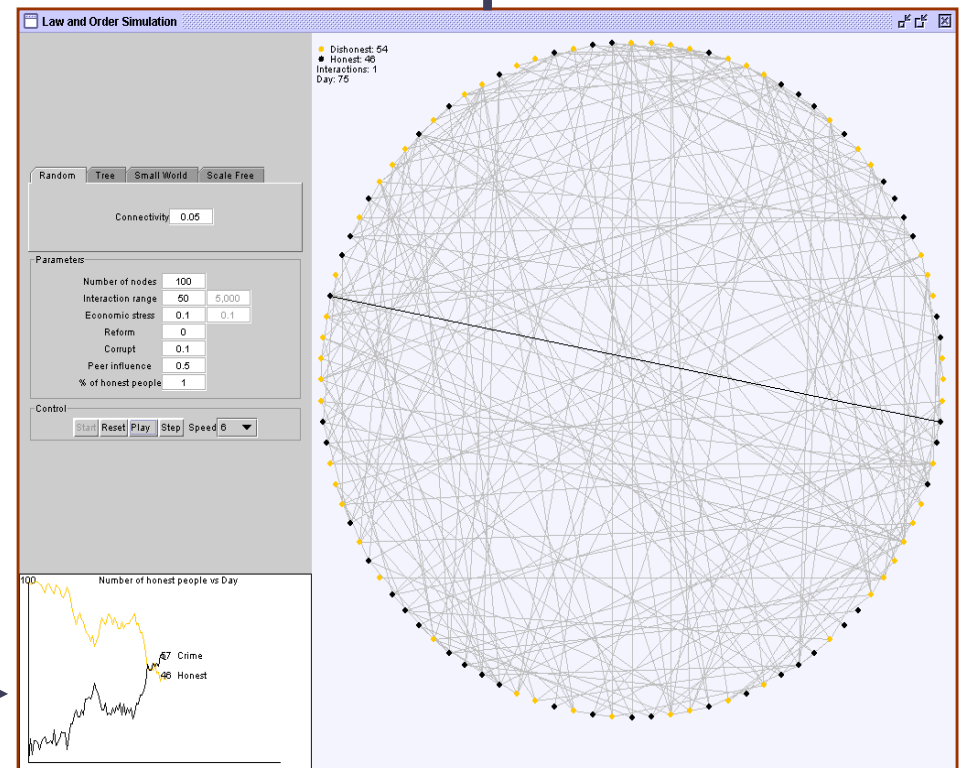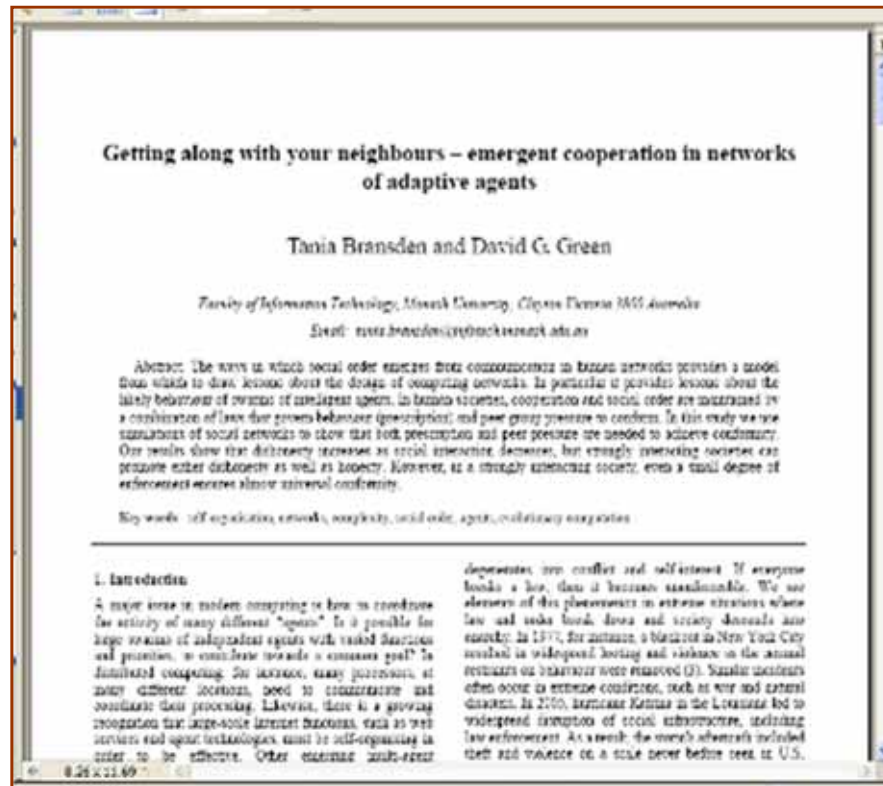
- Media documentaries

- Reports to government

Example - Monash Virtual Laboratory

http://vlab.infotech.monash.edu.au/

1. Users can check results for themselves

2. Links articles with models

3. Increases impact of research

VLAB combines papers & demos
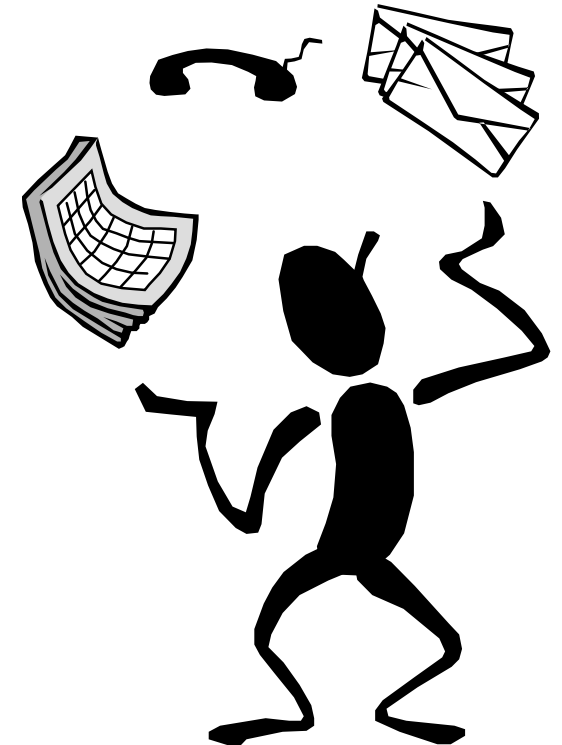
Some words of warning

- Be aware of these issues:

  – Contracts

  – Copyright and permissions

  – Defamation and libel

  – Liability

  – Plagiarism

Finally, the cynical view ….

- No one reads your research papers until you make a mistake

- For every discovery there is an equal and opposite criticism

- To steal from one person is plagiarism; to steal from many is research!

Readings and resources - publication

- Gopen, G.D., J.A. Swan (1990). The Science of Scientific Writing. *American Scientist* 78, 550-558.
  - http://www.americanscientist.org/issues/feature/the-science-of-scientific-writing/9
- Procter, M. (2007). *Advice on Academic Writing*. University of Toronto. http://www.utoronto.ca/writing/advise.html
- Tischler, M.E. (2007). *Scientific Writing Booklet*. University of Arizona
  - http://www.biochem.arizona.edu/marc/Sci-Writing.pdf
- Purdue University Writing Lab (1999).
  - http://owl.english.purdue.edu/
- Monash University Library: Citing, referencing and plagiarism:
  - Quiz: http://lib.monash.edu/tutorials/citing/citing-quiz/quiz.html
  - Tutorial: http://lib.monash.edu/tutorials/citing/

Communicating research – oral presentations

Learning objectives – oral presentations

- Understand

  – the nature and purpose of oral presentations

  – the main features of a good presentation

- Be capable of

  – preparing a slide show for a presentation

Presenting your research

- Conference/seminar presentations important for many reasons

  - Getting your research noticed

  - Building collaborations

  - Jobs

- Write a plan

  - What is the purpose of the talk?

  - Who is the audience?

  - What is the "take home message"?

Presentation 101

- Introduction -> Body -> Conclusion

- Simple slides

- White space

- Simple & clear graphics

- 10/20/30 rule

    – 10 slides

    – 20 minutes

    – 30 points

What is the aim (objective) of your talk?

- To convince people to read your article?

- To convince a selection panel to give you a job?

- To convince a panel that a project is viable?

- To win people over to a point of view?

- To make people aware of an issue?

- To inform people about a topic?

> Have your aim clearly in mind
>
> Ensure your talk is appropriate

Know your audience

- Who are they?

- What do they already know?

- What do they want to know?

- What do you want them to know?

The worst thing you can do!

Slide #1

The Role of Translocation and Selection in the Emergence of Genetic Clusters and Modules

David Newth*
CSIRO Centre for Complex Systems Science
CSIRO Marine and Atmospheric Research
GPO Box 284
Canberra, ACT 2601
Australia
david.newth@csiro.au

David G. Green
Faculty of Information Technology
Monash University
Clayton, VIC 3800
Australia
david.green@infotech.monash.edu.au

Abstract Biomolecular studies point increasingly to the importance of modularity in the organization of the genome. Processes such as the maintenance of metabolism are controlled by suites of genes that act as distinct, self-contained units, or *modules*. One effect is to promote stability of inherited characters. Despite the obvious importance of genetic modules, the mechanisms by which they form and persist are not understood. One clue is that functionally related genes tend to cluster together. Here we show that genetic translocation, recombination, and natural selection play a central role in this process. We distill the question of emerging genetic modularity into three simulation experiments that show: (1) a tendency, under natural selection, for essential genes to co-locate on the same chromosome and to settle in fixed loci; (2) that genes associated with a particular function tend to form functional clusters; and (3) that genes within a functional cluster tend to become arranged in transcription order. The results also imply that high proportions of junk DNA are essential to the process.

NEVER use the text of your paper as slides!

49

3Ps – a formula for a good talk

PREPARATION

PRESENTATION

PRACTICE

PREPARATION

- Prepare your opening speech
  - You will be nervous at the start
  - Work out exactly what words to say
  - Write it down as speaker's notes

- Prepare your closing speech
  - Close with the "take home message"
  - Make notes and slides to get it right

- Allow time to set up at the venue
  - Check everything is working

- Make up handouts (if needed)

PRESENTATION

- Consistency - use uniform style throughout

- Fill the middle with colourful slides!
  - Make sure they present a logical story
  - Your talk consists in describing them!
  - Use "bells and whistles" sparingly for emphasis
    - Overuse distracts from the talk
    - Text, images & speech together help audience

- Use white space
  - Crowded slides are hard to read

PRACTICE – practice, practice, practice

- Do trial runs
  - Make sure you can stick to time
  - Rehearse your opening and closing speech

- Make sure your presentation works
  - Check on the set up available
  - Have a backup plan in case of trouble

Opening a talk

- Have it prepared
  - Know exactly what you want to say
  - You will be nervous
  - Talk from notes if need be

- State the central question or issue
  - Keep it brief
  - Explain the background/motivation

- Give a brief overview of your talk
  - Not necessarily a list of headings

Closing a talk

- Have it prepared
    - Know exactly what you want to say
    - If need be write it down

- State the "take home message"
    - What is your main result/point?
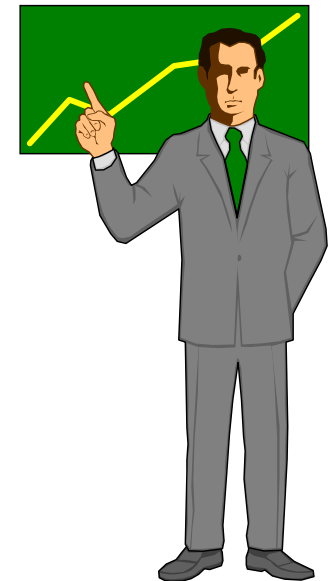
Concluding slide

- State the main point clearly

- Keep it short, sweet and memorable

- Pictures help

The body of a talk

- Present ideas in logical order

  – e.g. follow steps in your study

- A picture is worth a thousand words

  – Use photos/diagrams to convey points

  – Describe the slides

- Avoid unnecessary detail –

  – Aim for understanding

 – The audience can read details later

The body of a talk (continued)

- ## Make it colourful
  - Use colour, but avoid going overboard
  - Use special effects (sparingly, for emphasis)

- ## Avoid too many words
  - Use pictures where possible
  - Avoid simply reading the text

- ## Slide layout
  - Make slides clear and simple
  - Use consistent style, colour
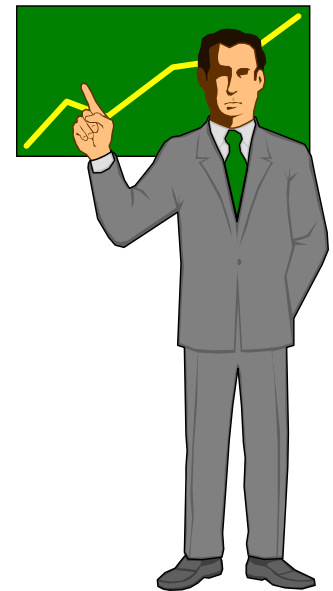
Presenting a talk

- ## Speak loudly and clearly
  - Use pauses for effect

- ## Be aware of your body language
  - Use hand movements for emphasis
  - Avoid moving around too much
  - But don't be a statue

- ## Be aware of your audience
  - Talk to your audience
  - Are they getting restless
  - Ask rhetorical questions
  - Include jokes or asides to grab their attention
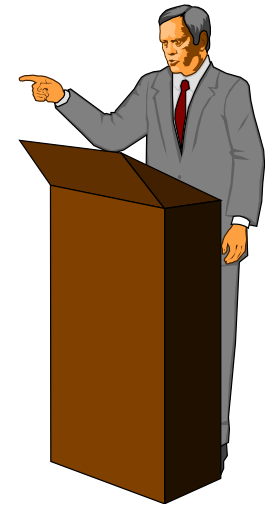
Be prepared

- **Murphy's law: 'If anything can go wrong it will'."**

- What would you do if ....

  - The projector fails?
  - Slide projector tosses all your slides into the air?
  - Your demonstration fails 5 minutes before the lecture?
  - The time for your talk is cut in half?
  - You are asked to give a talk at short notice?
  - The file containing your talk cannot be read?

- ALL of the above have happened to me!
  - Have alternative plans
  - e.g. handouts, different formats

Conclusion

- Know who you're writing for or talking to

- Attend to basics

  - English & referencing

- Three Ps

  - Polish, polish, polish

  - Preparation, presentation, practice

  - Practice, practice, practice

Some useful resources

- Library reading ....
  - Peyton Jones, S. L., Hughes, J. & Launchbury, J. (1993). *How to give a good research talk*, ACM SIGPLAN Notices, vol.28, no.11, Nov, pp. 9-12.
  - Michael De Robertis (2002). How Not To Give a Scientific Talk. Canadian Astronomical Society.
  - http://www.casca.ca/ecass/issues/2002-js/features/dirobertis/talk.html
  - Philip Roos (2004). *Giving Scientific Talks.* University of Maryland.
  - http://www.physics.umd.edu/courses/Phys375/RoosSpring04/Giving_ Scientific_Talks.html
  - Susan McConnell (2004). *Tips for Preparing and Giving an Effective Scientific Presentation using Powerpoint*. Stanford University.
  - http://www.fw.msu.edu/orgs/gso/documents/GSOWorkshopDocsSp20 06/PresentationTipsinPowerPoint.ppt

Help

- **Library**
  - Learning skills advisors
  - Language & Learning
    - www.monash.edu.au/lls/llonline/writing/index.xml
- **Monash Research Graduate School**
  - exPERT onlines resources
  - http://www.mrgs.monash.edu.au/seminars/
- **Monash Postgraduate Association**
  - http://mpa.monash.edu.au/index.htm