Doing Research: Planning, Risk & Reflection

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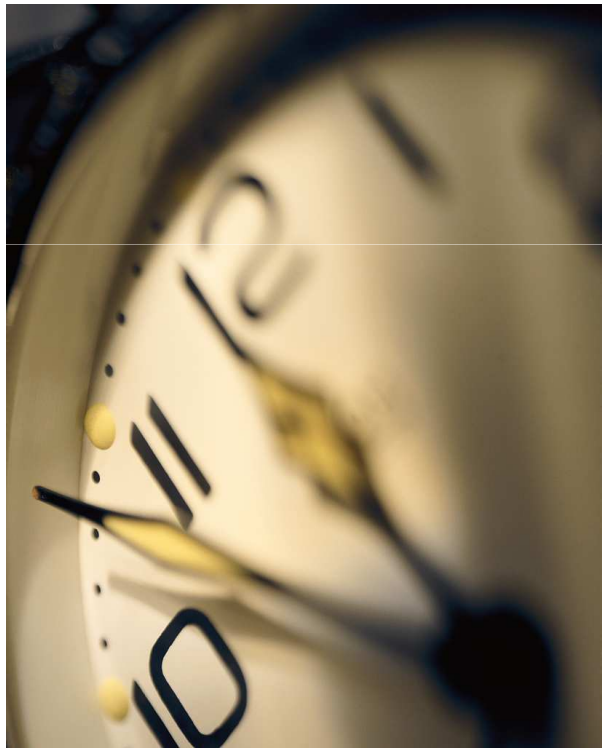
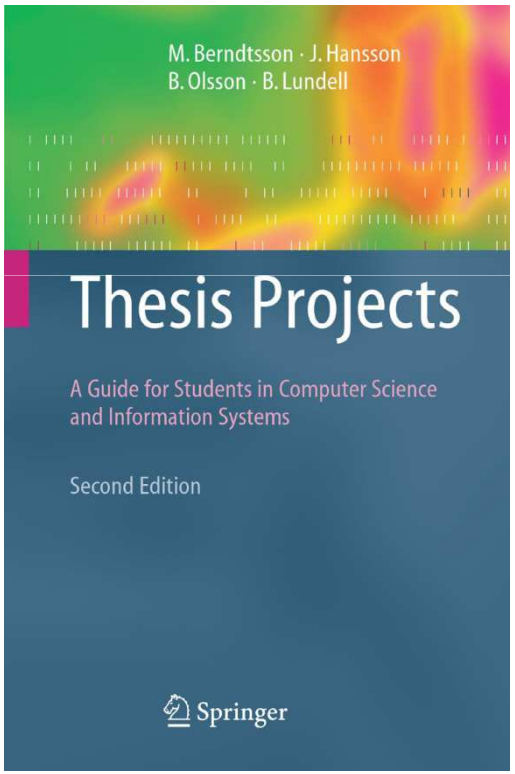
Time Management



- Effective research takes time
  - identify topic
  - collect & read initial material
  - prepare initial plan
  - assess useful analysis pointers and knowledge gaps
  - identify useful leads to new material
  - collect & assess new material
  - update plan & repeat
- Be realistic about likely access to resources, the time required and the time available.

Research skills



- Research skills are often developed haphazardly
  - Lack of clear goals
  - Lack of structured approach
  - Poor time management
  - No lessons learned, no new techniques considered
- Methodology & self-reflection
  - Thinking about how we research and how we can improve our research skills
  - Recording research experience for self-reflection - how to do things differently?
  - Reading about research and planning

Initial Planning

Think
S.M.A.R.T.

- Aim - a broad statement of the problem you intend to solve or what you intend to achieve.
- Objectives - derived from the broader aim, but more specific and measurable. They set the realistic targets to achieve during the project.
  - **S**pecific - Clear about what will be achieved
  - **M**easurable - Possible to quantify results and measure when achieved
  - **A**chievable - *Can* be achieved
  - **R**ealistic - Attainable with available resources
  - **T**imed - Attainable within a specified timescale

Initial Planning

- Strategy and/or methodology
  - Achieving the objectives – consider possible methods, assess the pros and cons of each.
- Issues to be addressed
  - List important issues and say how they will be addressed
- Scope and boundaries
  - Clearly indicate what will and will not be covered
- Critical success factors
  - List factors on which the success or value of the project depends

Risk Assessment 1

"We've considered every potential risk except the risks of avoiding all risks."

- All projects carry a degree of risk.
- A risk analysis will help predict risks that could prevent you from delivering on time.
- It will also help you to manage the risks should they occur.
- A risk analysis addresses the following questions:
  - What could possibly go wrong?
  - What is the likelihood of it happening?
  - How will it affect the project?
  - What can be done about it?

Risk Assessment 2

- Identifying Risks
  - Impact of your other work commitments
  - Obtaining access to key materials
  - Obtaining access to key people
  - Problems with methodology
  - Equipment/technical failure
  - Illness etc.

Analysing Risks

Risk	Probability	Severity	Score (P x S)	Action to prevent or manage risk
Other work Commits.	5	3	15	Plan deadlines around project, make arrangements to change shifts etc.
Access to materials	3	4	12	Check with library availability of/access to materials
Access to people	2	1	2	Carry out interviews or consultations early in the process
Method	4	4	16	Consult regularly on progress with supervisor
Technical	2	4	8	Check availability of/access to alternative equipment
Illness etc	1	4	4	Ensure work involving travel etc. carried out early in schedule. Understand rules on extensions

Risk Assessment 3

- Key to consider risks specific to your project
- Preventing & managing risks
  - A risk analysis is always done at the start of a project, the aim is to prevent risks occurring.
  - If a risk does occur, you will need to have planned to manage it to minimise its impact on the project.
- Review as you go
  - Look for early warning signs that indicate a risk is about to occur
  - Deal with the risk early – don't let it get out of hand.
- A risk that has occurred will not go away by itself - avoid the 'ostrich syndrome'

Using Research Material

- An effective research strategy is a key element in writing a killer essay or dissertation
  - A couple of textbook chapters & 4-5 articles is rarely adequate research.
  - Solid academic-level writing is rarely derived from non-academic sources
- More reading means more ideas
  - A particularly fruitful area is academic disagreement.
- Verifying your material is sensible.
  - Don't treat material in books or journal articles (or Wikipedia) as absolute truth
  - Authors make mistakes, or may have a particular controversial viewpoint
  - Textbooks & journal articles go out of date – always look for the latest material

Searching for material

- Where to start?
  - Course reading materials & textbooks
    - Footnotes, bibliographies
    - Identifying key materials
  - Large scale search e.g.
    - Google Scholar - general web based search

    BUT also
    - ZETOC - British Library's Electronic Table of Contents
    - ACM Digital Library
    - Lecture Notes in Computer Science
    - See MetaLib for other resources

What are we looking for?

- Material relevant to the research to be undertaken.
- Ideas beyond those found in the basic course reading.
- Cutting edge material and critical analysis.
- Material that inspires our own critical thinking.
- Material for, and against, our own point of view.

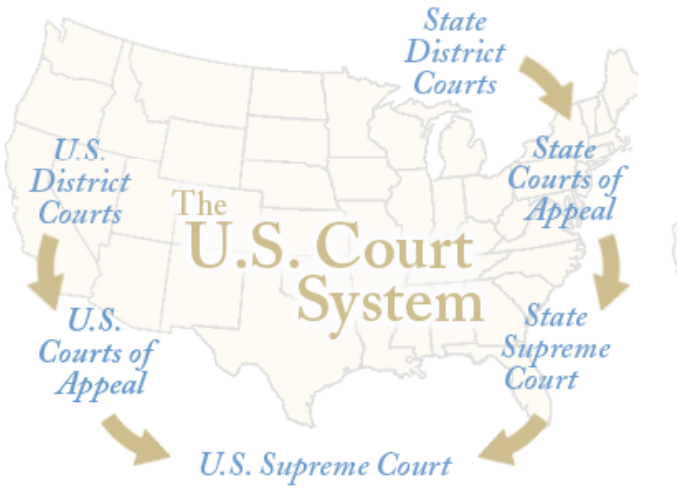
Caveat Researcher

- The Internet
  - Lots of information e.g. Google Scholar, Wikipedia
- Often information is difficult to put in context or assess for value.
  - Who wrote the material?
  - What are their credentials?
  - Who is publishing the material?
  - Do they have a particular agenda?
  - Is the information reliable?
- In order to use such information effectively, we may have to research the sources.

Narrowing the search

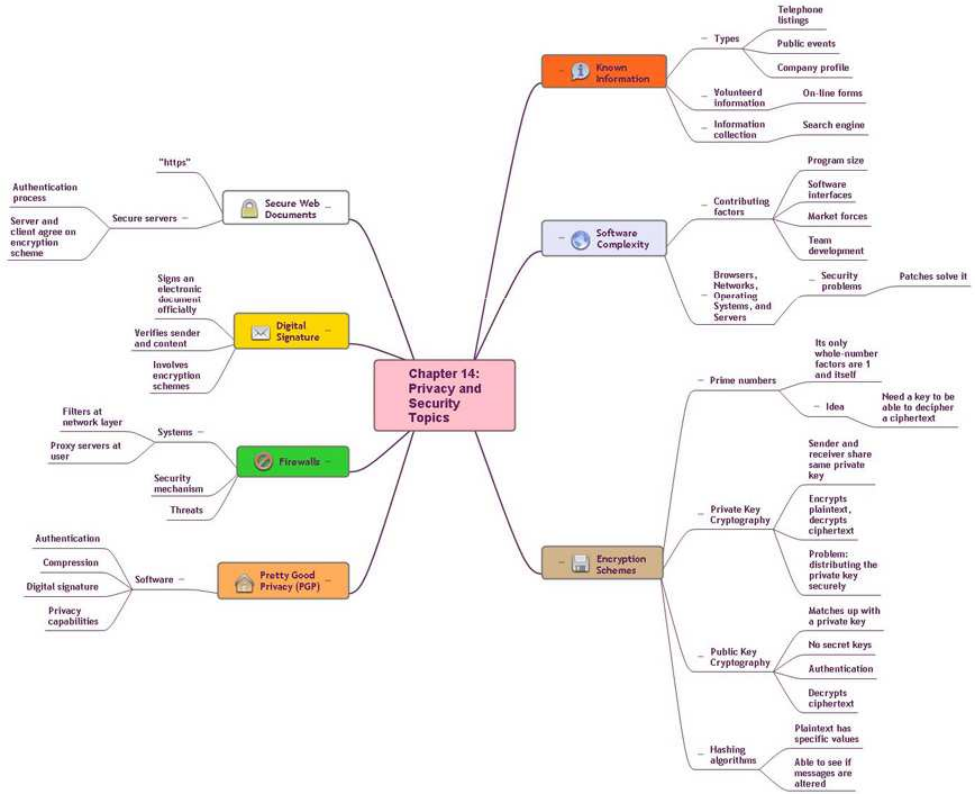
- Narrowing the search
  - General relevance material
  - Useful argument & counter-argument (analysis)
  - Comparative material as appropriate
  - Author positioning (context)
  - Author theme development
  - Major points, minor points
  - Main cites, secondary cites

Know your background



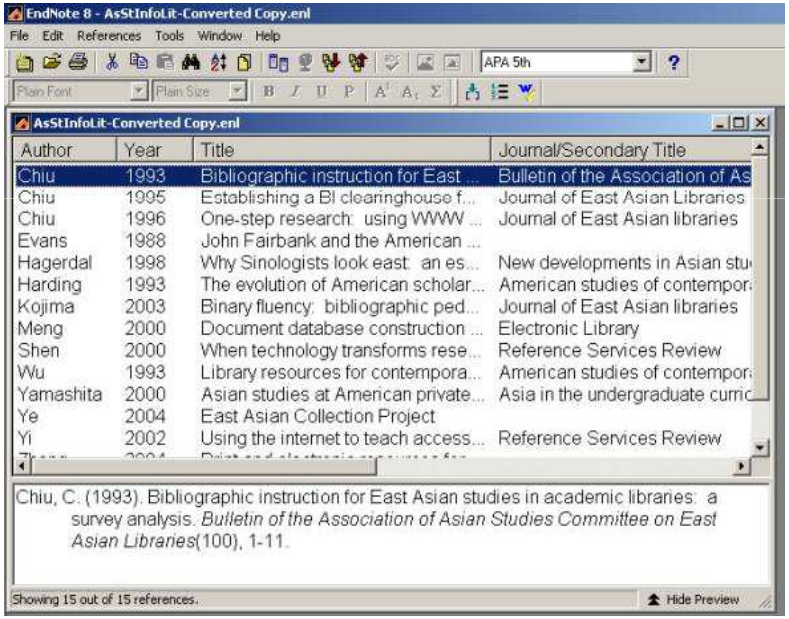
- Writing effectively about a topic may require acquisition of extra and broader background knowledge
- It may not be central to your analysis, but it helps
  - to put your work (and its importance) into context in the field
  - to prevent unfortunate errors in your work
- An example from the Law School – What is 'US Law'?
- Do you have any examples from CompSci?

Taking notes



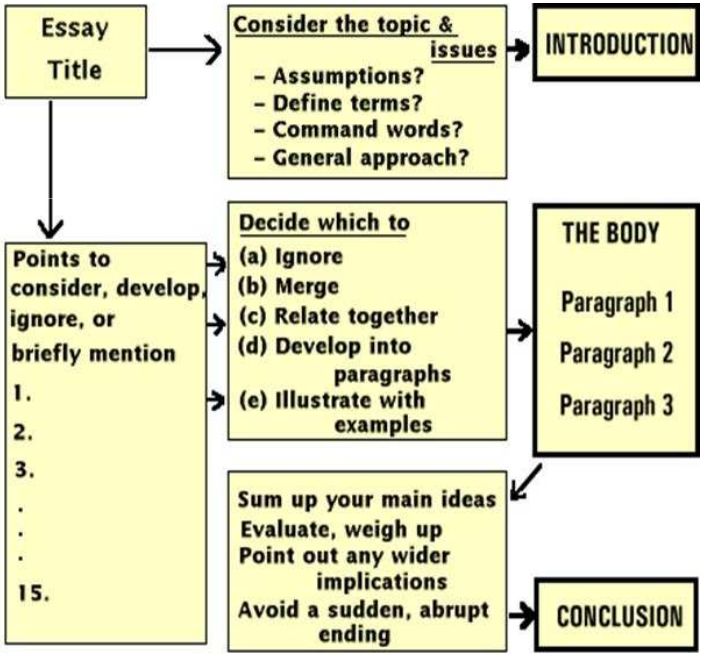
- There are many ways of taking notes – e.g. spider diagrams, concept or ‘mind maps’.
- It’s often useful to organize notes around a set of key questions or thematic headings.
- These can then be developed into, or used to structure, an essay or dissertation plan.
- Different forms of note taking suit different people, choose a style you’re comfortable with.

Collecting references



- While reading make a note of where you've found important ideas or obtained quotes etc.
- This will allow you to reference properly, and create a bibliography.
- There is commercial software that can help with this task – the University provides some support for, and training in, Endnote
  - Free version - Endnote Web
  - Pay version - Endnote X2
  - See also BibTex

Writing Plan



- During your research phase it is useful to construct a writing plan.
  - Various methods of doing this - choose the method that suits you.
- It should eventually provide you with a clear structure for your essay.
  - If you cannot navigate a clear path through your material and argument, how will a reader/examiner?
- Your plan should not be ‘set in stone’ too early.
  - Your reading may suggest a better way to demonstrate your argument, or even a new set of arguments.
- However, at some stage you will have to crystallise that argument into an essay.