

Colin de la Higuera, 2010

Ethics and strategy in research



Nantes





Preliminary remarks

- This is about research, mainly
- Biases: British, computer science, university
- If your boss says otherwise, (s)he is right



What the talk is about

- **Ethics**: why we should be doing things
- **Strategy**: long term questions
- Presentation will be using 10 commandments style
- **Tactical issues** will also be discussed.
Tactical slides will be marked with symbol:





Goals of the talk

- To see research as long term activities
- To introduce some practical ideas you can do something about

- Some more links here

<http://pagesperso.lina.univ-nantes.fr/~cdlh/methodo/>

1 Thou shall have good reputation



- Scientists have to trust
- Hence they hunt down all forms of cheating
- We need each other
- Others will need you



Some issues

- Peer review is necessary
- Check http://www.scipub.org/scipub/c4p.php?j_id=JCS for an alternative...
- <http://www.anti-plagiarism.org/> for a black list...



Your paper has been accepted to GESTS International Transactions.
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Publication date: June 30, 2010.
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Journal of Computer Science
Monthly Publication



2009 Volume 1
Number of issue 3
ISSN: 1549-3
Format: 8 1/2"

Scope

- :: Concurrent, parallel and distributed computing
- :: Artificial intelligence
- :: Image and voice processing
- :: Quality software and metrics

(Available paper submission) 5th ICCIT2010(Seoul, Korea): Call for Papers, Committee Members, Workshops, Invited Sessions

Plagiarism

- And Auto-plagiarism
- Why is this an issue?
 - Spend too much time reviewing
 - Community loses confidence in what is published
 - Multiplies the number of publications
- 20.000 scientific publications per day!

Cheating with experimental results



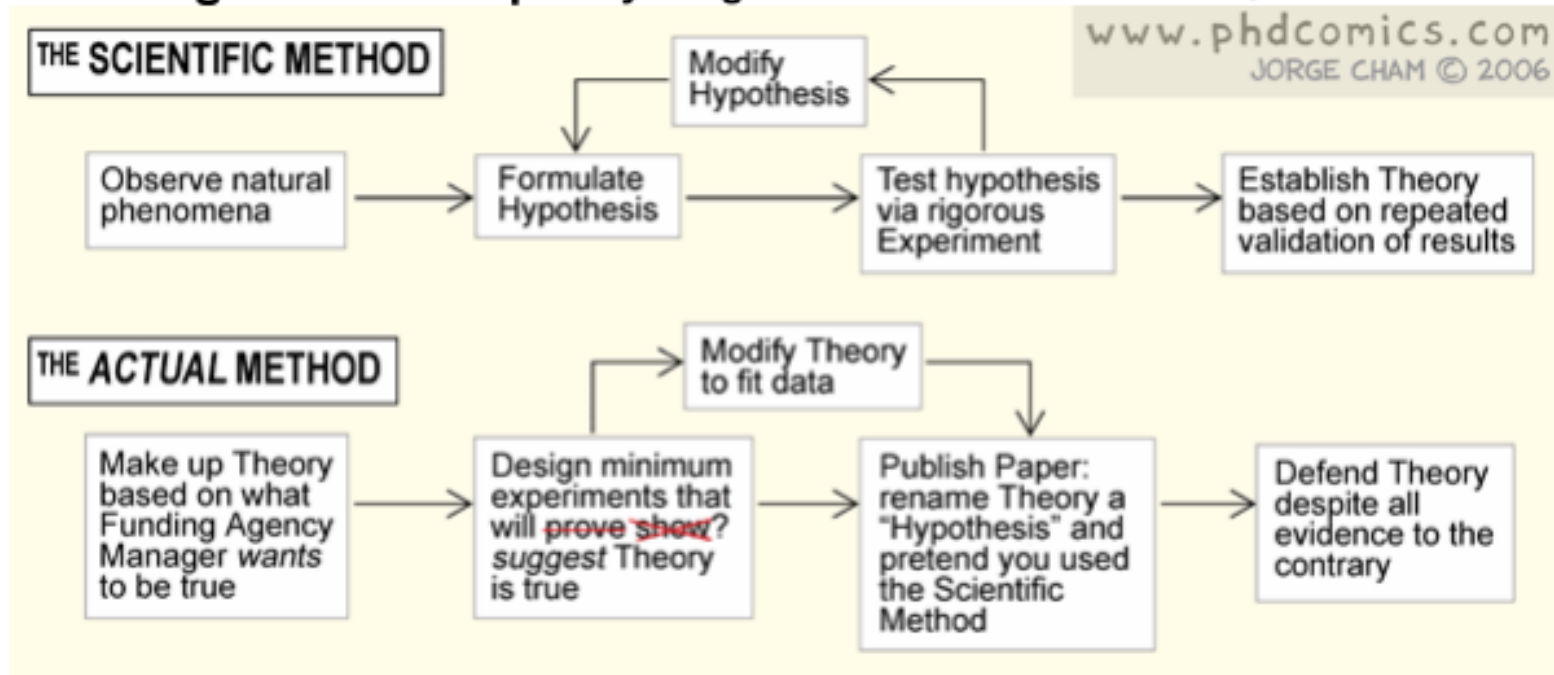
- Computer science is (in part) an experimental science
- But we have one strong particularity:
 - It is (relatively) too easy to experiment
- Is generating zillions of datasets until one fits the theory OK?



<http://www.phdcomics.com>

Piled Higher and Deeper by Jorge Cham

www.phdcomics.com



title: "The Actual Method" - originally published 9/16/2006



Rule

- Two **different** families of experiments
- Experimental experiments
 - Goal is to discover, to investigate, to test hypotheses
- Validation experiments
 - Goal is to PROVE that the theory/idea/algorithm/setting is correct

2 Thou shall publish to be read



- H-index
- What story do the publications tell?
- The important thing is the idea, not the article
- You can publish around the same idea various times, but make this clear



About bibliometry

- Why do we need it?
 - Because of evaluation issues
 - Because there are too many journals and conferences
 - 5518 (802/4468) in computer science for 2008, see Arnetminer

<http://arnetminer.org/ranking/conference>

Bibliometry and computer science



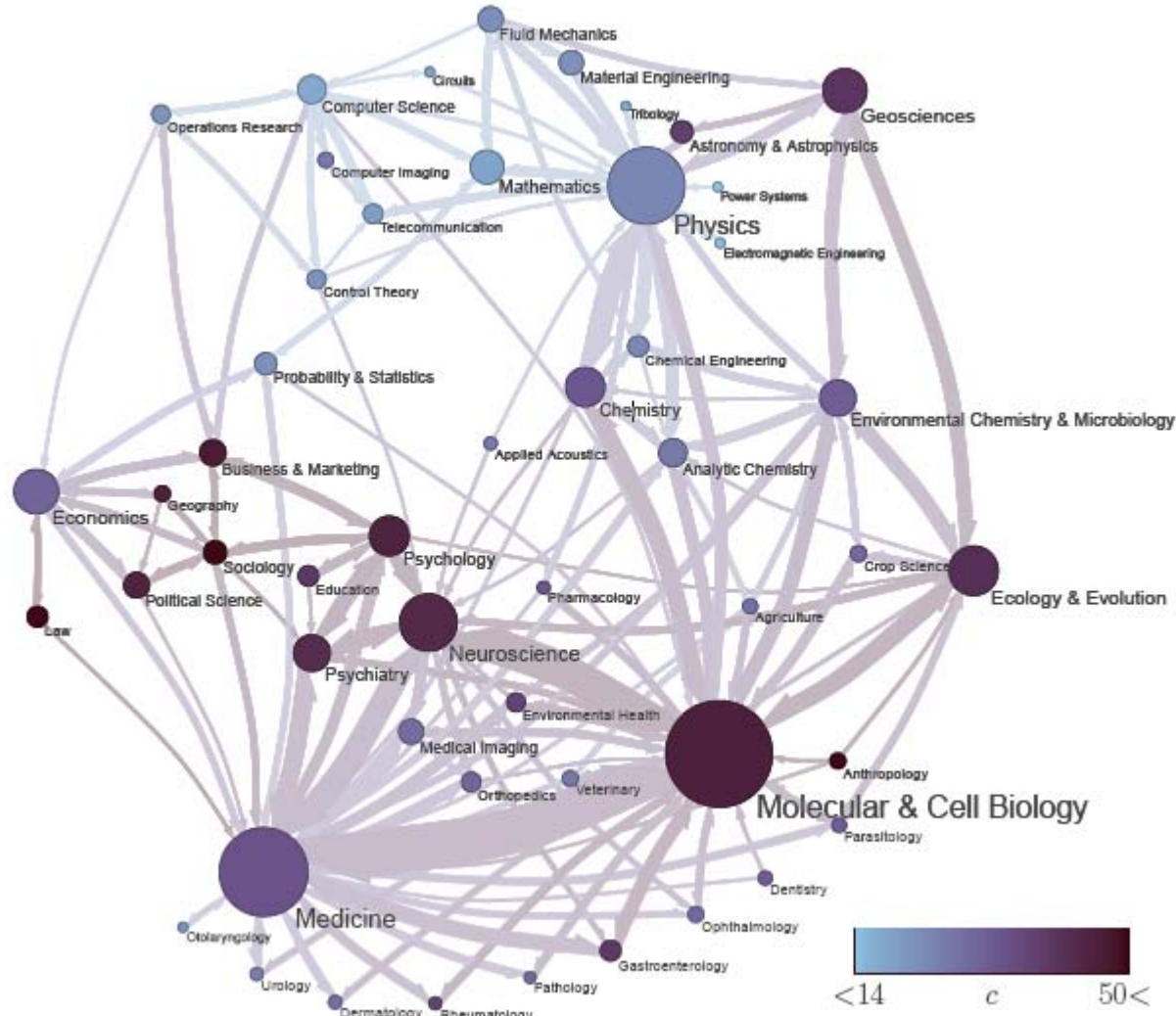
- Not to our advantage

Porque a quien tiene se le dará y le sobrarará; pero a quien no tiene, aun lo que tiene se le quitará.

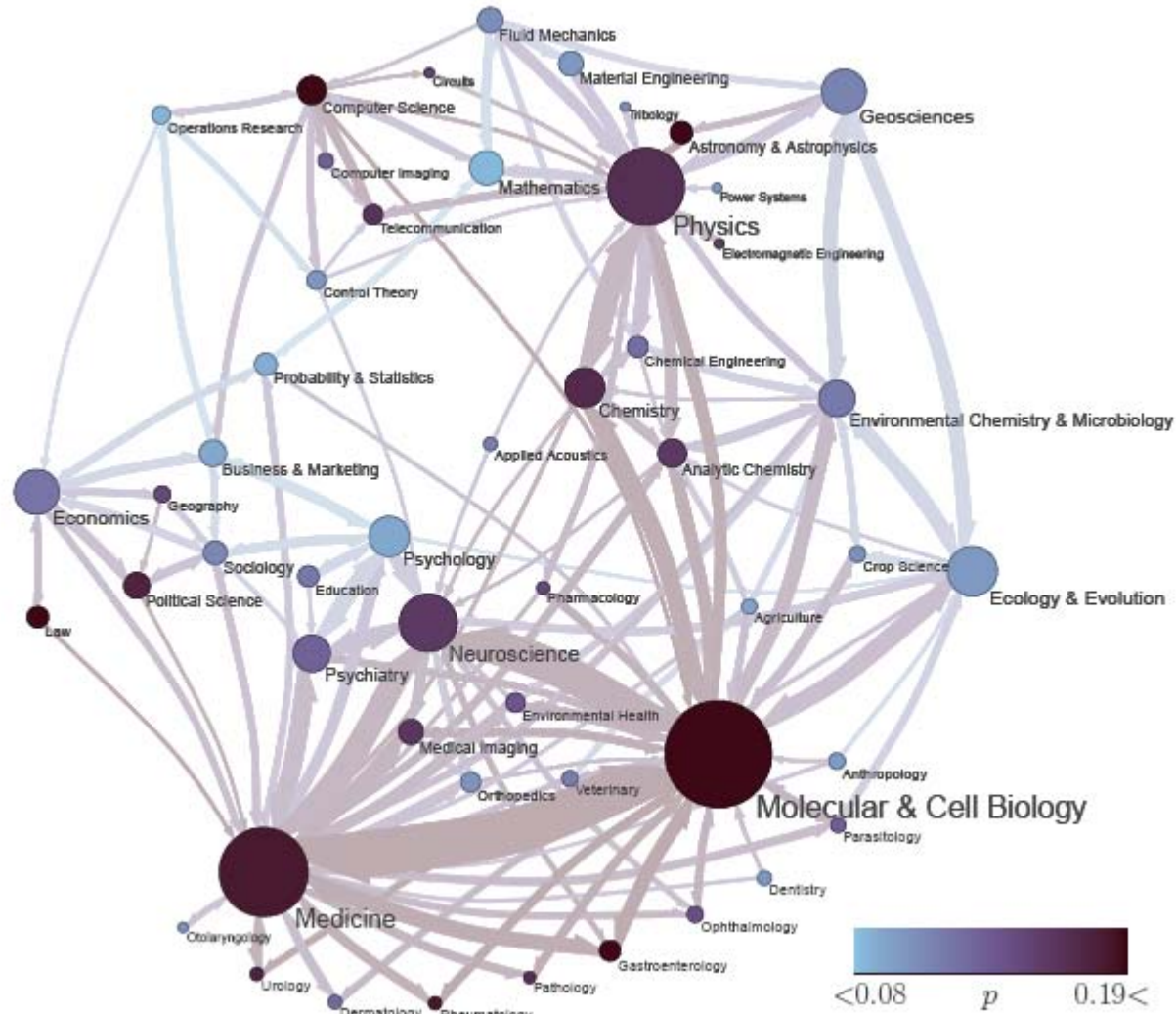
Mateo 13-12

Differences in Impact Factor Across Fields and Over Time

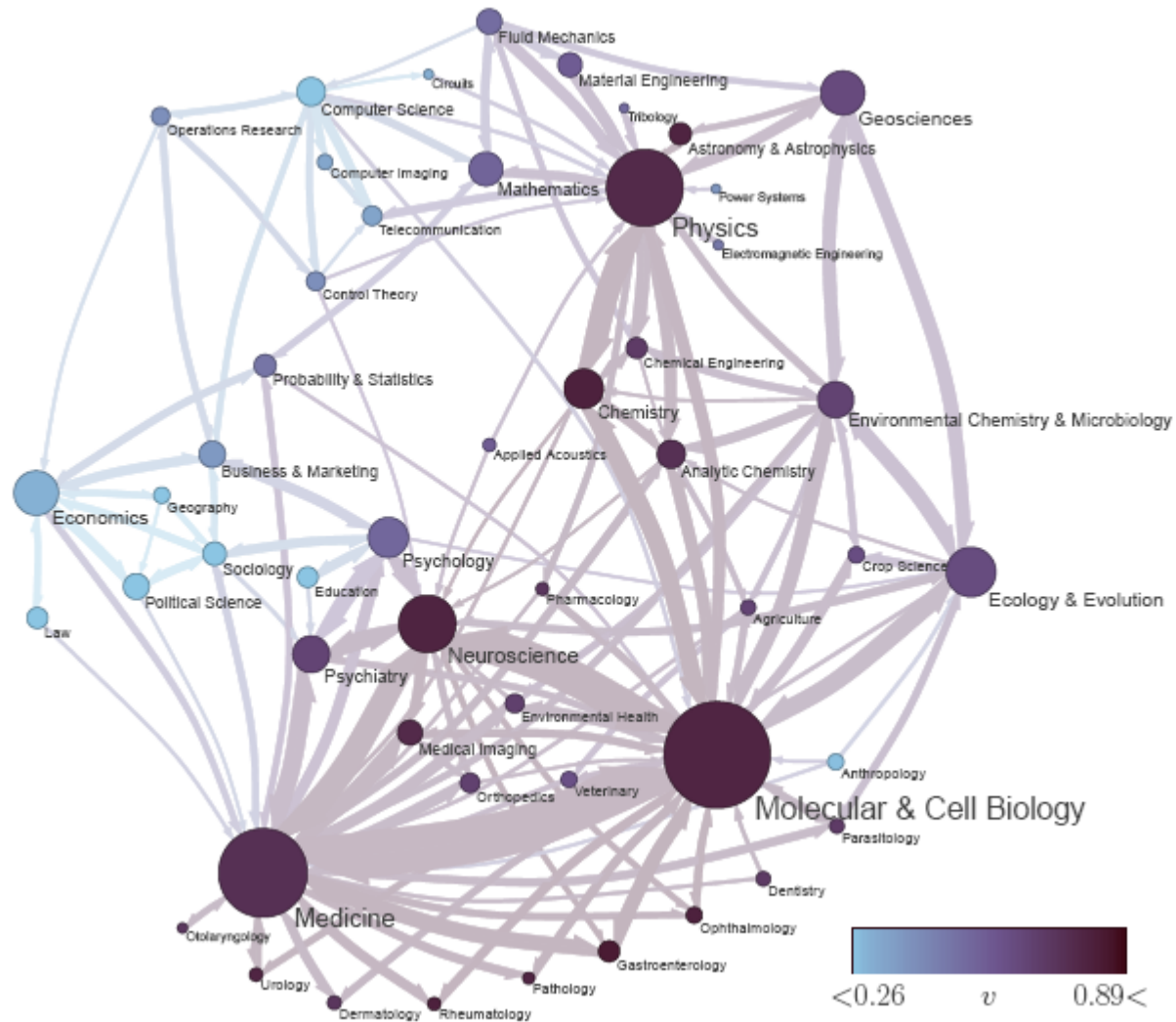
Benjamin M. Althouse, Jevin D. West, Theodore Bergstrom and Carl T. Bergstrom



Average number of items cited per paper



Fraction of citations to papers published in the two previous calendar years.



Fraction of citations to papers published in JCR-listed journals.

Cdh, Marseille 2010

How should one publish?



- Go for the best possible journal/conference
- Make sure it is a place where people will understand your work
- If it is good work, **repeat** the message
 - But do not auto-plagiarize!
 - Go to workshops, give talks, make further experiments, more work

Danger!

- Are we not, by doing so, flooding the community with unnecessary incremental papers?
- **No.** This is to be done if you have good work to show
- **Yes.** But the other danger is that your really good result will be unseen and rediscovered 3 years later by someone who will promote it

Ethical slide about publishing



If you publish various times the same result (for the reasons above) make this clear in your CV

Journals

[1] C. de la Higuera. NP is equal to P. *Journal of very fashionable ideas* 3(2), 111–112, 2007.

...

[6] C. de la Higuera. De l'égalité entre P et NP. *Journées francophones des fondamentaux de l'informatique fondamentale*. Presses Universitaires de Saint-Etienne. *French version of [1]*.

...

Conference proceedings

[12] C. de la Higuera. Why P and NP are just one class. 23rd STUF. Monte Carlo. LNEW 4444, p. 47-36. *Short version of [1]*.

[14] C. de la Higuera. P and NP are just one class: why? Alicante, Spain. WOTI 1, p. 4-11, 2011. *New version of [1]*.



3 Thou shall look ahead

- Complexity of a research career
 - Unwritten rules
 - Many immediate pay-offs
- Going for the immediate pay-offs is not the right approach
- (AI inspired) you need an objective function

The objective function



- Why should we worry about these things?
- What is our ultimate goal?
- Why is it important to have such a function?
 - Research is not like football or singing: the pay-off is very far away
 - Just going for very short term gains is not a good idea

Some possible objective functions (1)



- Getting a position
 - Getting my next *sexenio*
 - Getting my *habilitacion*
 - Getting more money
-
- Not long term concerns, just short term
 - They should be regarded as **intermediate rewards**, not as **goals achieved**

Some possible objective functions (2)



- Building a better world?
- If you say so
- There is actually more for ethical issues concerning the research we do
 - Proving impossibility results
 - Publishing freely

Some possible objective functions (3)



- Earning more and more money?
- You don't usually do this for money. There are easier ways.

Some possible objective functions (4)



- To be happy?
- That is (supposed to be) everyone's goal, but then everyone is happy for different reasons
- And at different moments of one's life/career the reasons will change

Some possible objective functions (5)



- To have an easy comfortable life: earn a decent living, not have to do many hours, have lot of holidays, no responsibilities, no stress, not have to move to another city, be sure to keep your job all your life...
- That was the case in research 10 years ago
- You have come too late

Some possible objective functions (6)



- To be an important person?
- Easier tracks exist: take the right responsibilities, go to meetings, join a political party,...

To be “big” in research

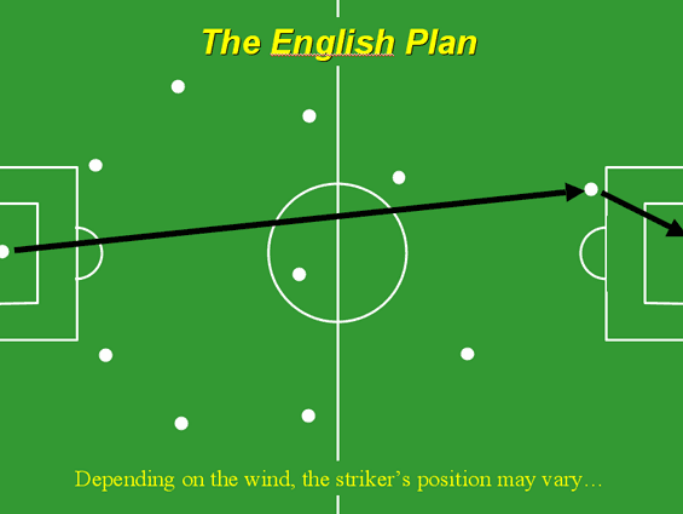


- Why should this be an interesting goal?
- Meet interesting people
- Discuss interesting questions
- Have the feeling that you are a step ahead
- Also ambition, egocentrism, power, money, free travel, ...

Can this be a dream or a goal?



- It is quite normal to believe that those guys at the top are so much more brilliant than you are
- But it doesn't pay off
- What does is to be ambitious



Depending on the wind, the striker's position may vary...

And now?



- What happens after the PhD? What do jobs depend of?
- You will need :
 - To show that you can teach
 - To show that you can be a good colleague
 - To be part of a community
- Question: why would anyone want to recruit you?



4 Thou shall be ambitious

- One advantage with an ambitious person is that we know why she works
- Ambition can be to relate with excellence
- Ambition can be shared: individual ambition/team ambition

Football analogy



- Ambition isn't about playing like Messi.
- It's about playing with Messi

Why?



- Some of the actions we take today have a very long term pay-off
- If we don't consider our career in 10 years time, there are things we will "leave for later"
- Always

5 Thou shall work your English



- Have to be able to write
- And speak. You should be able to ask questions and be good company (in English)
- International cooperation is a crucial aspect of academia, today. You need to be an asset for your team



What is a good researcher?

- It used to be someone who could produce good research results
- Today, it is becoming also someone who can communicate this research
- No one will communicate the research for you



Issues about English

- There is a real problem, with good and bad arguments on both sides
- Research is about profound thinking. Is it possible to think complex concepts in another language?
- If it were only about communication (reading and writing a paper), this would not be a problem



Advice

- You have to be as fluent as possible
- Watch movies
- Go to countries where you will have to speak English
- Help the foreign visitors that come

6 Thou shall be part of a community



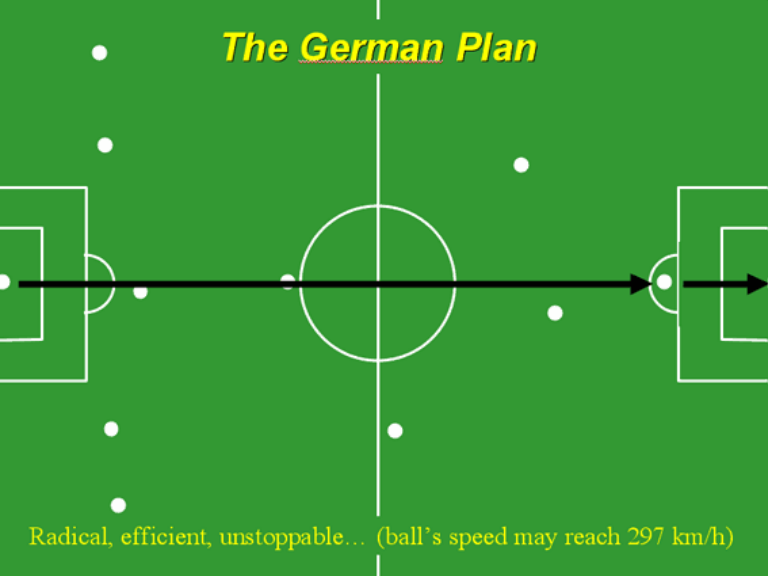
- Each field is organised in its specific way
- Being part of a community means
 - knowing what happens
 - getting advice
 - reading papers
 - participating



Some questions

- Why?
 - Get hold of information
 - Find mentors
 - Get collaborators
- When?
 - As soon as possible (either during the PhD or immediately after)
- How?

The German Plan



Radical, efficient, unstoppable... (ball's speed may reach 297 km/h)

Help



- There is always need for help
- Webpages
- Conference organisation

Networking



- Networking is about building your **network**
- This is not a side effect to research. This **is** a research activity
- Networking should not replace good research

How to Be a Good Graduate Student
by Marie desJardins

http://www.physlink.com/Education/grad_how2_community.cfm

What qualities do we need?



- Ser simpatico
- Tener buena reputacion
- Ser de trato agradable
- Speak languages

And if we don't have these qualities?



- Then work on them. They are not something you are necessarily born with
- You build them by making a **conscious** effort

The snowball effect



- If you introduce yourself to one person, he will introduce you to 2
- If someone quotes your work, that will give you extra citations
- If someone uses your algorithm, two other people will

7 Thou shall look after your network



- Tomorrow, you may have to approach a new team
- You will need colleagues:
 - letters
 - getting the information
 - members in committees



This means

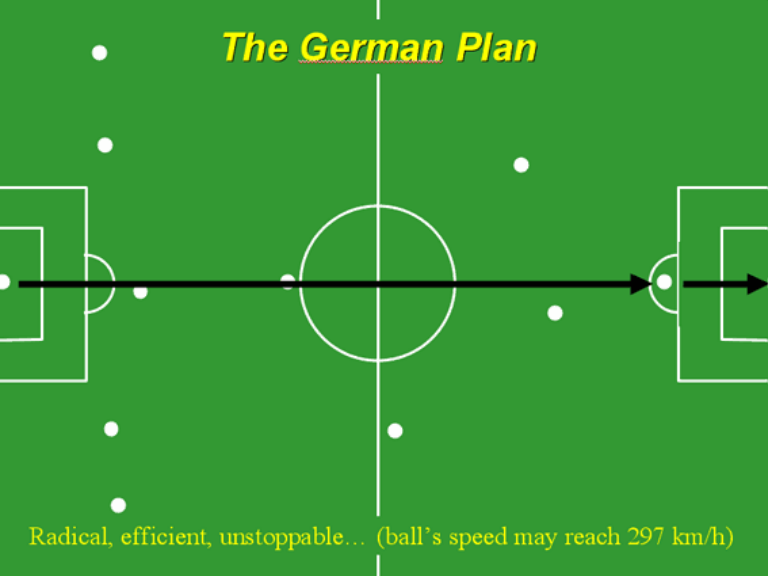
- Organise your contacts
- Follow up on your discussions
- Send papers
- Maintain a webpage

8 Thou shall prepare your talks



- Oral presentation
- Poster

- Do not improvise! When you have an audience, do not waste it



Radical, efficient, unstoppable... (ball's speed may reach 297 km/h)

To do before your talk



- Long before
 - Find out how long (without questions)
 - Check you have what you need
 - What does the audience know? What does it expect? Who is talking before you?
 - Get the slides checked
 - Rehearse as much as necessary

The Brazilian Plan

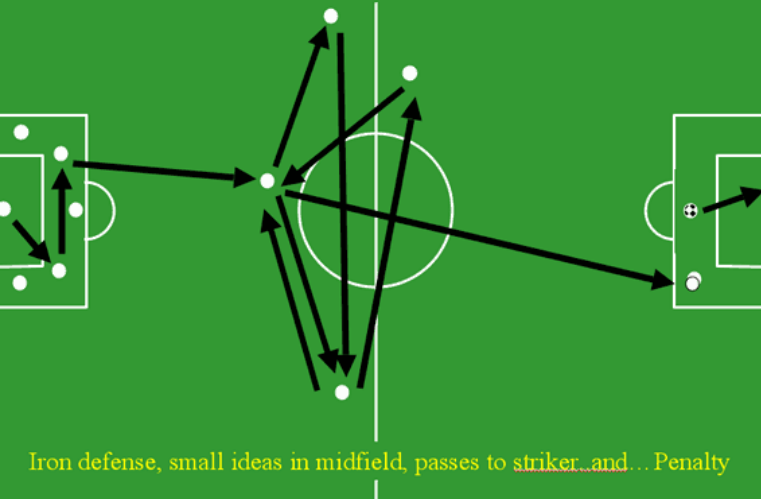


Before



- Check the hardware :
 - Memory key
 - Copy of the slides on a server
 - Do these slides open

The Italian Plan



Just before



- Double check the time you are given
- Check you have everything you need:
water, handkerchief, laser, watch
- Put your watch on

Language and its consequences (1)



- Spanish: speak clearly, find your rhythm.
Be interesting
- Cannot be dull:
 - Think about teaching
 - Acting class should be compulsory in graduate school

Language and its consequences (2)

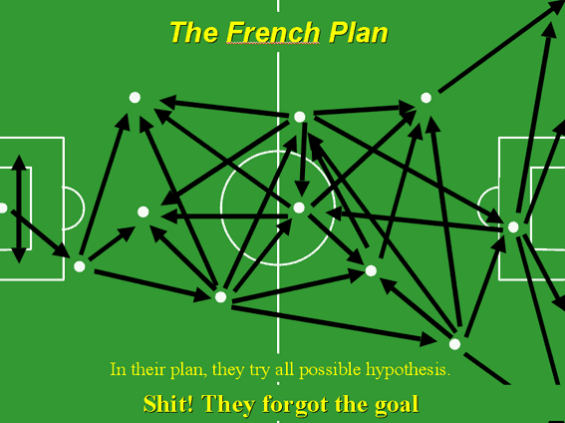


- English: short and simple sentences
- Do not read
- Warn (out of politeness) if you think you could have a problem with questions

The length: are we allowed more or less time?



- There is a duration. Stick to it
- Better less than more
- Use extra slides to be able to make your talk longer and short cuts to make it shorter
- No general rhythm. For some speakers 1 slide=3mn, for others 1 slide=1mn



The slides

- Who are they for?
- What are they for?
- Who is supposed to understand?
- What is the audience supposed to understand?



Look at the others

- Why did you like that talk?
- What tricks did the speaker use?
- What did his slides look like?
- What font was he using?

www.videolectures.net



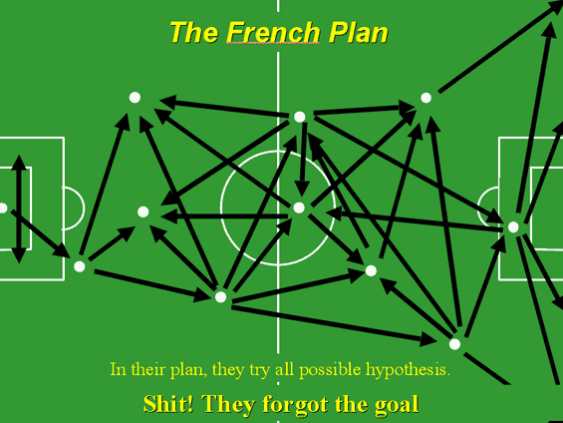
The questions: do we want them? How do we do to get them?

- Best is to have the questions we want
- But do not ask a friend to ask the questions...
- Prepare some extra slides for the most probable questions

9 Thou shall do your best to get your paper accepted



- Have I done everything for my paper to be published?
- How can I hope for a comprehensive reviewer? (fair review)



What are most common reasons for rejecting a paper? Jos A. E. Spaan,

- http://videlectures.net/medicon07_spaan_wam/
- Financing depends today at least at much about management.



What does an editor do?



- He has to find reviewers
 - From the abstract and the reference list
- You should give hints as to what sort of reviewers should want to read the paper
- Eliminate "bad luck" factor



Check list

- A good title?
- The abstract
- Use a speller
- A related work section
- The bibliography...

10 Thou shall not forget that the 9 other commandments are no good without good work



- You don't become a successful researcher by speaking good English, networking,...
- But you don't either by ignoring these questions!

Thank you!



Questions?



Appendix A

Referees Overview Guidelines



- Please keep these points in mind while preparing detailed comments. They are only for the reviewers in evaluating the manuscript.



A. Reader Interest

1. Is the paper of current interest to a reasonable segment of the readership?
2. Within its particular field of specialization, is the topic of the paper considered important?
3. To what extent is material in the paper likely to be used by other researchers and practitioners?



B. Content

1. Is the paper technically sound?
2. How would you describe the technical depth of the paper?
3. Does the paper make a contribution to the state-of-the-art in its field?
4. Does the paper make adequate reference to earlier contributions? *[If not, list some specific references.]*

C. Presentation



1. Does the title adequately reflect content of manuscript?
2. Is the abstract an appropriate and adequate digest of the work presented?
3. Are the keywords well chosen?
4. Does the introduction clearly state the background and motivation in terms of being understandable to the non-specialist?
5. Is the paper well organised?
6. Relative to its technical content, is the length of the paper appropriate?
7. Is the English satisfactory?
8. How readable is the paper for a computer scientist, mathematician or engineer who is not a specialist in this particular field?
9. Disregarding technical content, how do you rate the quality of the presentation? Clarity of exposition is the hallmark of a first-rate paper.
10. Is there unnecessary duplication of material in text, figures, tables?



Appendix B



How to Be a Good Graduate Student
by Marie desJardins

http://www.physlink.com/Education/grad_how_2_community.cfm





One of the most important things a graduate student should do is to become established as **part of the research community**. Your advisor can help with this process by funding conference travel, encouraging you to publish research results early, collaborating on joint publications, introducing you to colleagues, and promoting your work.



- In turn, you can make yourself more visible by participating in conferences and workshops, publishing papers on your work, and meeting and maintaining contact with colleagues.



Attending Conferences

- Attending conferences and workshops is valuable whether you present a paper or not. Some of the reasons to do so are:
 - You'll meet people and have a chance to discuss your ideas and to hear theirs.
 - You'll get a good sense of what the current state of research is, and will learn more about how to write conference papers and give talks (sometimes by counterexample).
 - You'll probably realize that your ideas are more significant, relatively speaking, than you thought. A common reaction is "I could write a better paper than this!"



Publishing Papers

- Publishing your ideas is important for several reasons: *it gives you a source of feedback* from people who read your papers; *it establishes you as a member of the research community* (useful for getting a job down the line); and *it forces you to clarify your ideas* and to fit them in the context of the current state of research in your field.



Networking

- One of the most important skills you should be learning in graduate school is how to ``network.'' Breaking into the research community requires attending conferences, meeting established researchers, and making yourself known. Networking **is** a learned skill, so you shouldn't expect to be an expert at it immediately; but it is also a skill that you can, and should, learn in order to be a successful member of the research community.



Just going to conferences and standing in the corner isn't enough. Especially if you're not normally an outgoing person, **you have to make a conscious effort to meet and build relationships with other researchers.** Presenting papers is a good way to do this, since people will often approach you to discuss your presentation. Introducing yourself to people whose presentations you found interesting, and **asking a relevant question** or describing related research you're doing, is also a good way to meet people.



You should talk about your research interests every chance you get. (But be sure to spend some time listening, too: you'll learn more this way, and people will feel that your conversations are a two-way street.) Have summaries of your work of various lengths and levels of detail mentally prepared, so that you can answer the inevitable "So what are you working on?" intelligently and clearly. If someone expresses an interest in your work, **follow up!** Send them e-mail talking about new ideas or asking questions; send them drafts of papers; ask them for drafts of their papers and send them comments. (If you do this, they'll be sure to remember you!) **Bring business cards with your e-mail address** to conferences to help new acquaintances jog their memory.



Maintain the relationships you form via e-mail, and by re-establishing contact at each workshop or conference you attend. If you work at it, and use your initial acquaintances to meet new people, you'll find that **your ``network''** grows rapidly.



Sometimes these contacts will grow into opportunities to do **collaborative research**. Seize these opportunities: you will meet more people, often become exposed to new methods of doing research or new subfields within your research area, and the responsibility you feel towards your collaborator may give you more of an incentive to stay motivated and keep accomplishing something.



Other professional activities can bring you into the research network as well: **volunteer** for program committees, **send** your resume to a book review editor, **offer** to give seminars at other universities, write conference and workshop papers and send them to people you've met or would like to meet, or organize a workshop on your subfield at a larger conference. Mentoring junior graduate students and undergraduates is a **good investment in the long run** (besides providing them a valuable service and making you feel useful and knowledgeable).



Finding specific **mentors** can be very useful. Especially if you feel that you are isolated at your institution, having a colleague at another institution who can give you advice, feedback on drafts of papers, and suggestions for research directions can be extremely valuable.