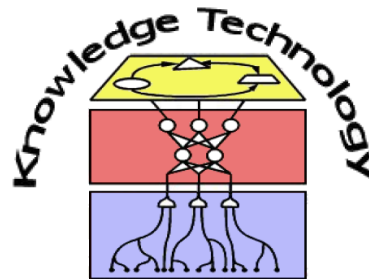


Research Methods

Publishing and Funding

Dr. Sven Magg, Prof. Dr. Stefan Wermter



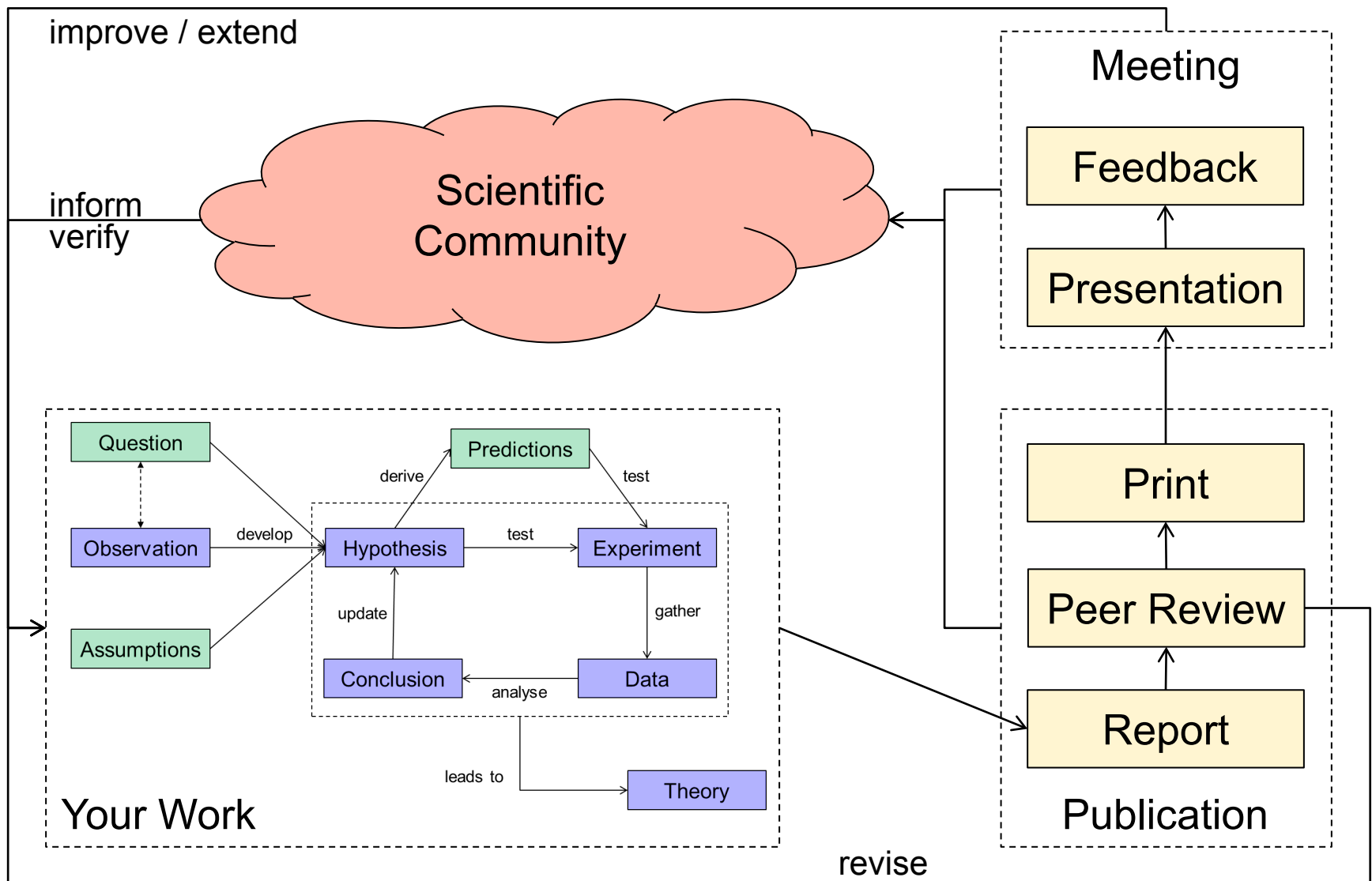
<http://www.informatik.uni-hamburg.de/WTM/>

Plan for today!



1. How to publish results?
2. Peer-Review Process
3. Where to publish?
4. Funding your research

The scientific world



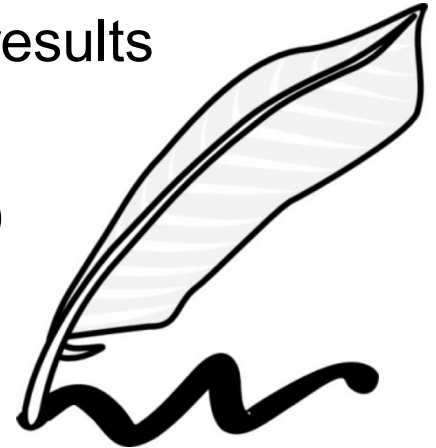
Publishing Results

■ General process:

1. Identify a target for your publication
2. Write the document following the target's **specifications**
3. Submit the draft and wait for peer-review results
4. Improve paper with **feedback**
5. Submit final version (camera-ready paper)

■ Common extensions to this process:

- sometimes several **iterations** of 3. and 4.
- possibly required to give **presentation** before publication



Peer Review Process

- One of the cornerstones of the scientific process!

- **Why peer-review?**

- Self-regulation of the scientific endeavour
- Maintenance of quality standards
- Evaluation of the work by experts

- **Two general phases of peer-review**

- Pre-Publication: To decide on publication
 - Iterative process to ensure high quality
- Post-Publication: Feedback to published work
 - Letters to the editor, open peer commentary



Elements of Peer-Review

■ Referees

- usually **invited** by editors/programme chairs
 - on demand, after reception of paper
 - as part of a panel/committee of reviewers
- Typically independent
- supposed to inform editors about possible **conflict of interest**
- Responsibilities:
 - Identifying errors and scientific/conceptual weaknesses
 - write **critical feedback/commentary**
 - give an evaluation or rating (accept, improve, reject)

Elements of Peer-Review

■ Editor

- Organises the peer-review process
- Recruits referees
- Acts as **relay** between author and referee
- **Decides** on outcome, following evaluation by referees
 - Consensus not necessarily required
 - Evaluations used to make an informed decision
- Several strategies to resolve **disagreement**
 - Recruit additional referees
 - Invite author's response to criticism
 - Enable author and referee to debate criticisms

Elements of Peer-Review

- Peer review styles
 - **Anonymous review**
 - Single or double blind
 - Referees usually unknown to author and each other
 - Author only receives **anonymised** feedback/comments
 - **Open peer review**
 - various degrees of disclosure
 - **open peer commentary** published with paper
 - Letters to the editors
- Sometimes iterative process between author and referee

Criticisms of Peer-Review

■ Problems with evaluations, bias and suppression

- Peer-review is time consuming, often leading to **low quality**, inconsistent reviews
- **Confirmation biases**: reviewers tend to be more critical of ideas that contradict their own views and vice versa
- Established scientists used as high-level referees, biasing the results towards **established mainstream ideas**

■ Problems with editors/publishers

- Publishing is a very **lucrative business** that may affect quality
- “Gatekeeper” problem, unaccountability

Criticisms of Peer-Review

- **There may be criticisms, but the process works, right?**

John Bohannon (2013) "Who's Afraid of Peer Review?", Science, Vol. 342 no. 6154 pp. 60-65

- Spoof paper sent to 304 open-access journals
- Fictitious authors and institutions, flawed experiment design, faulty results and conclusions
- **157 accepted, 98 rejections**
- 60% rejected/accepted with no sign of peer-review
- Of 106 that performed review, 70% ultimately accepted
- 36 generated review comments recognising scientific problems
- Elsevier and Sage among publishers

Who publishes?

■ Universities

- Technical reports
- Dissertations (BSc, MSc, PhD,)

■ Scientific Meetings

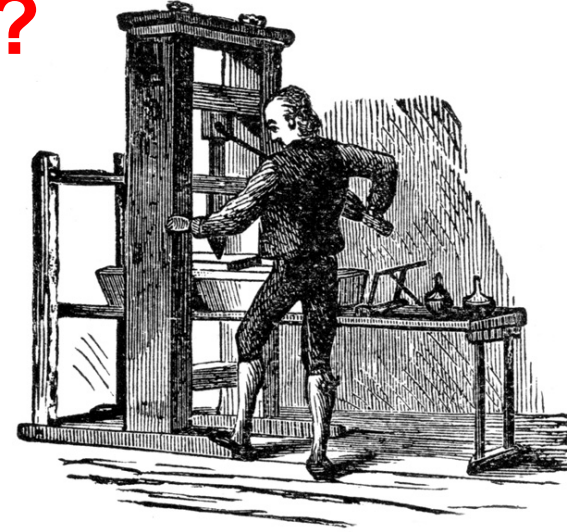
- Workshops, Tutorials, Symposia, Conferences

■ Journals

- Open-access
- Subscription-based

■ General Publishers

- Journals, Books, Edited books/collections, ...



Identifying a Target

- **Different levels of impact and reliability**
 - **Dissertations**
 - BSc/MSc theses not carrying same **scientific weight** as PhD
 - Results often also published as peer-reviewed publications
 - **Technical Reports**
 - Local peer review at universities
 - Varying levels of scientific content and scrutiny, often technical
 - **Workshop proceedings**
 - Workshops are **small meetings** with often specific focus
 - Often invite work in progress to foster early scientific exchange
 - Called tutorial if majority of talks are given by experts
 - Mostly one-step peer review process
 - **Presentation** through poster or talk

Identifying a Target

- **Conferences and Symposia**

- Larger meetings covering several topics
- Single- or multi-track
- Mostly one-step peer review process
- Presentation through poster or talk

- **Journals**

- Series of article collections on specific topics
- Formal and strict, often iterative peer-review process
- Sometimes special issues on selected topics
- No presentations required but often long time to publication
- Impact can be compared by impact factor listed in “Journal Citation Reports” (JCR)

Identifying a Target

- **Books or edited collections**
 - Long revision process
 - Key publication type in many disciplines
- **Select a target that ...**
 - ... is **most suitable** for your results
 - finished results or work-in-progress?
 - novelty and **significance of contribution?**
 - ... has the highest impact
 - You want a high visibility and reach a **large audience**
 - You also want good quality feedback
 - ... is **not a scam!** (e.g. WASET)



How to prepare the article?

- **Publisher usually provides**

- **Template** in Word or Latex format
- Specific guidelines on writing style and design

- **Structure of a research paper**

- Introduction and motivation
 - **place your work** in the scientific landscape
 - show why it is a necessary contribution
- Related work
 - Show that you know your specific field
 - Put your work into relation to other work (identify **similarities** and especially **differences**)

How to prepare the article?

■ Structure of a research paper (cont.)

- Experimental setup and results
- Discussion and conclusion
 - What do your results show? Put them into perspective!
 - Be critical and honest! Also mention shortcomings.
 - Summarize the main points to show your novel contribution to knowledge

■ List of authors

- Different rules in different disciplines
- Authors listed in order of contribution to the paper
- Often principal investigator listed at the end
- **All** authors are responsible for content and validity!

How to prepare the article?

- Some general hints:
 - Make sure you have followed the [guidelines](#)
 - Scientific integrity! (Citations, plagiarism)
 - Don't underestimate the impact of the [visual appearance](#)
 - Get somebody to proof-read your paper
 - Only submit really [novel content](#) (avoid “salami slicing”)
 - First authorship counts!
 - The more authors, the less weight your contribution carries
 - Be a good [story writer](#)
 - Often a good trade-off between impact and quantity needed
 - Many publications but of high quality (i.e. journal articles)

What to do with feedback?

- You have submitted and now got the evaluation comments, what now?
 - **The paper was rejected**
 - You can resubmit to a (lower level) target
 - Better: Take feedback into account and then resubmit
 - **The paper was accepted (for a scientific meeting)**
 - Next step is to prepare camera-ready version
 - Your choice whether to [include feedback](#)
 - At least use feedback for preparation of talk and Q&A
 - **The paper was accepted (for a journal)**
 - You already went through some iterations of feedback and rebuttals/improvement
 - Congratulations!

Camera-Ready Version

- **How is a camera-ready version different?**
 - Final corrections and proof-reading
 - Some publishers ask for sources (e.g. Latex code, graphs)
 - No additional peer-review

- **Does that mean I can change the paper substantially?**
 - Sometimes there are changes that go beyond spell checking
 - There is some room for interpretation of “improvement”
 - If there are better results, you can include them

Research positions

- Work on PhD level is offered by...
 - ... **universities**
 - Often mixture between teaching, research, and administration
 - Possible topics dependent on department / professor
 - ... **research projects**
 - Majority of position dedicated to research on a given topic
 - Embedded into project structure and schedule with (clear) aim
 - Usually collaboration work with many others
 - ... **structured PhD programmes**
 - often collaborations between universities / countries
 - Research + skill development (personal, transferable, career,...)
 - Topics dependent on host institution & programme

Once you have your PhD....

and you want to stay in research:

■ **Universities**

- permanent positions (faculty, tenure or tenure-track) or
- temporary positions (postdoc position)
 - teaching and administrative obligations, acquisition of external funding, setting up a research groups, etc.

■ **Within a research project**

- temporary postdoc position
 - More focus on research and research organisation

■ **Research Institutes**

- temporary or permanent
- often more industrial focus and industry collaborations

Where to find funding?

- There is a plethora of funding bodies...
 - **...with different aims and foci, e.g.**
 - research (basic research, blue-skies science), education
 - technology transfer between research and industry
 - product development, SME and start-up support
 - **... on different geographical / hierarchical levels**
 - European Commission (e.g. Horizon2020)
 - Developing collaboration and networking between EC countries
 - National (e.g. DFG, BMBF, BMI, DAAD)
 - Develop technology, education, industry, etc. on national level
 - Regional/Local (e.g. “Hamburger Wirtschaftsförderung”, EFRE)
 - ... specific, independent funding bodies

Where to find funding

- **Funding bodies publish “calls”**
 - Each call has a **specific purpose and theme**
 - Different target groups (who is eligible to apply?)
 - May have fixed or rolling deadlines

- **What target groups are there?**
 - Collaborations (Universities, SMEs, Industrial partners)
 - SMEs and Start-Ups
 - Individuals

- **Target group = beneficiary**

Example: Horizon2020 ICT

- H2020-ICT-2014-1: Topic Robotics
 - **Aims:** Industrial Leadership
 - Develop a new generation of industrial and service robots
 - enabling robotic systems to operate in dynamic real-world environments, reaching measurable improvements of abilities such as autonomy and adaptability and interacting in safe ways with humans.
 - **Eligible** are groups of 3 legal entities or more from 3 different member states
 - Three different “Actions”:
 - RTD: advance abilities relevant for industrial and service robotics
 - Innovation: Technology transfer - Robotics use cases
 - Pre-commercial procurement in robotics

Funding Proposals

- Requirements vary strongly
- **Typical contents**
 - Goal and concepts
 - State of the art
 - Implementation (Including work plan and work packages)
 - Description of partners (expertise)
 - Finance plan and justification
 - Impact
- **1-stage and 2-stage processes**
 - 2-stage: Abstract and detailed proposal
- **There always is strong competition!**

What have we learned?



1. Peer-review is a powerful, **self-correcting mechanism** but is no guarantee for high quality
2. When you have results, find the **best target** to maximise impact for the contribution you make
3. A published paper can't be corrected anymore without people noticing!
4. **You are part of the scientific correction mechanism!**
5. Finding funding for research is one of the main tasks of every post-doctoral researcher
6. Each funding source supports only specific research