Scientific Communication

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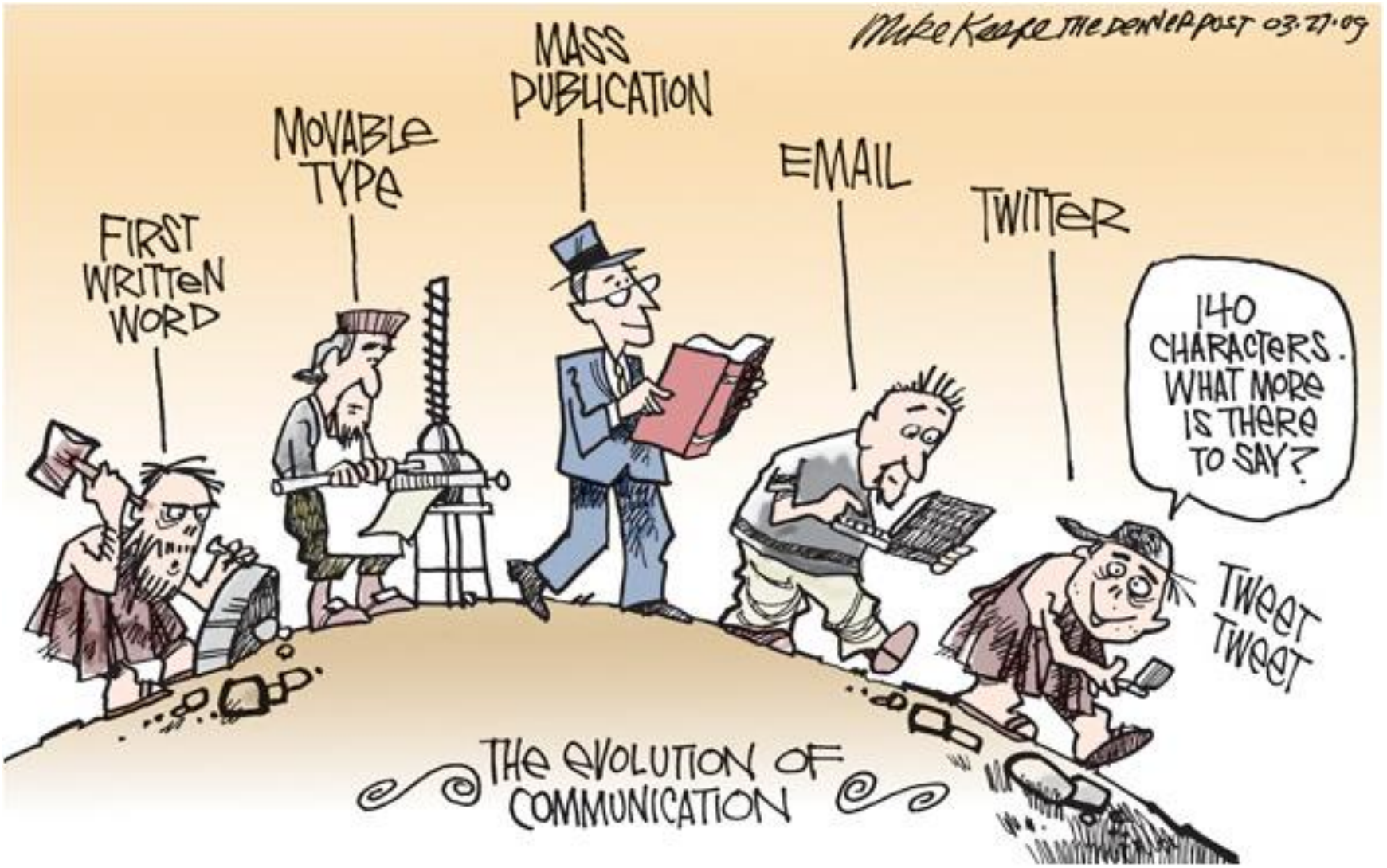


(Denver Post, 2009)

Table of Content

- Communication Skills
- Effective Reading
- Effective Writing
- Getting your work published
- Effective Presenting
- Effective Listening
- In Conclusion

Communication Skills

What is the meaning of “communication”?

Two-way process of reaching mutual understanding,
in which participants not only exchange (encode-decode) information,
news, ideas and feelings but also create and share meaning.

In general, communication is a means of connecting people or places.

In business, it is a key function of management--an organization
cannot operate without communication between levels, departments
and employees.

(google)

What does the term “good communication skills” mean?

- Being able to convey information to others in a simple and unambiguous way
- Distributing messages clearly and concisely, in a way that connects with the audience
- Understanding instructions, acquiring new skills, making requests, asking questions and relaying information with ease.

What is the importance of communication skills in the workplace?

- When there is a breakdown in communications, often efficiency, morale and objectives suffer
- Recruiters do look for candidates who can communicate information, negotiate, confidently deal with others (e.g., clients, colleagues)
- At the workplace, irrespective of the type of work, appreciation will rise when listening carefully, speaking clearly, putting others at ease.

What are the top 10 communication skills?

1. Emotional intelligence (learned over time, rather than obtained)
    - Self-awareness
    - Self-management
    - Social awareness
    - Relationship management
2. Cohesion and clarity (in addition to “saying the right thing”)
    - Purpose of the communication
    - Information you hope to obtain as a result

What are the top 10 communication skills?

3. Friendliness (right tone)

   - Personalizing messages - when with fellow colleagues
   - Have a nice day …

4. Confidence (not over-confidence)

   - Maintaining eye contact
   - Firm (not aggressive, still friendly) tone over the phone

5. Empathy (super important in conflicting situations)

   - Understand where the other person is coming from
   - Respect their views even when these are different

What are the top 10 communication skills?

6. Respect (linked to empathy)

   - Respecting ideas and opinions will trigger communications
   - Write sincere mails

7. Listening (effectively, actively – easiest to practice)

   - Ask questions, pick up on specific points
   - Rephrase to make sure you have understood correctly

8. Open mindedness (free your mind)

   - With a commitment to understand other people's points of view
   - When disagreeing, try to reach a middle ground that benefits all

What are the top 10 communication skills?

9. Tone of voice (setting the whole mood of the conversation)

- Level of emotion, volume and level of communication you choose
- Action causes reaction!

10. Asking good questions (help conversations flow and improve outcomes)

- Open-ended (encourage recipient to speak about certain points
- Probing questions (require even more detailed responses, "follow-up" questions)

What is the benefit of self-evaluation?

SELF-EVALUATION FORM

COMMUNICATION

Please take some time to go over this self-evaluation form. It is an existing exercise to enable you to gain an impression of how you see yourself as a student regarding communication skills.

Please score yourself on a scale from 1 to 5, circling a number. Be as honest as possible and do not leave any score line blank.

1	I hardly ever give an opinion in an academic discussion	1 2 3 4 5	I am always ready and willing to give my views
2	I find it very difficult to put over anything more than a simple argument in academic discussion	1 2 3 4 5	I am confident of my ability to present complex arguments in academic discussion
3	I rarely challenge the views of others in discussion	1 2 3 4 5	I frequently challenge others to substantiate their views in discussion
4	I am very unskilled in questioning others in order to get them to clarify what they are saying	1 2 3 4 5	Questioning others so that they are able to be clear about the points they are making is one of the skills I am proudest of

Université de Liège

What is the benefit of self-evaluation?

5	I am not confident about making a formal presentation	1 2 3 4 5	I am confident of my ability to give an interesting formal presentation
6	I usually find it difficult to express complex thoughts in writing	1 2 3 4 5	Others often compliment me on the quality of my written work
7	I do not really know how to present an argument in essay form	1 2 3 4 5	I am confident of my ability to put forward complex arguments in essay form
8	I am unsure what is appropriate or inappropriate language for essays	1 2 3 4 5	I instinctively use the right kind of language when writing an essay
9	I am not confident of how to use information I have researched to support points I make in an essay	1 2 3 4 5	I am able to use the information I have researched both to support points I want to make and as a material to criticize

An essay is, generally, a piece of writing that gives the author's own argument — but the definition is vague, overlapping with those of a paper, an article, a pamphlet, and a short story.
Essays have traditionally been sub-classified as formal and informal.

https://docs.google.com/forms/d/e/1FAIpQLSfElO2l1oPVW9nDWg-MOEy8YLCUh66wej00ra6-LXj8MVdyLw/viewform

What are the main types of communication?

- Non-verbal >70%
  - Appearance
  - Body language - 70%
  - Sounds (voice tone, silence)

Challenge: match non-verbal with verbal message

- Verbal communication (using words)
  - Oral communication (spoken words) – 7%
  - Written communication (written words)

[When presenting]

Non-verbal communication - Your actions speak louder than words.

- To create a positive message, think **SOLER**.

  S – Smile

  O – Openness

  L – Lean Forward

  E – Eye contact

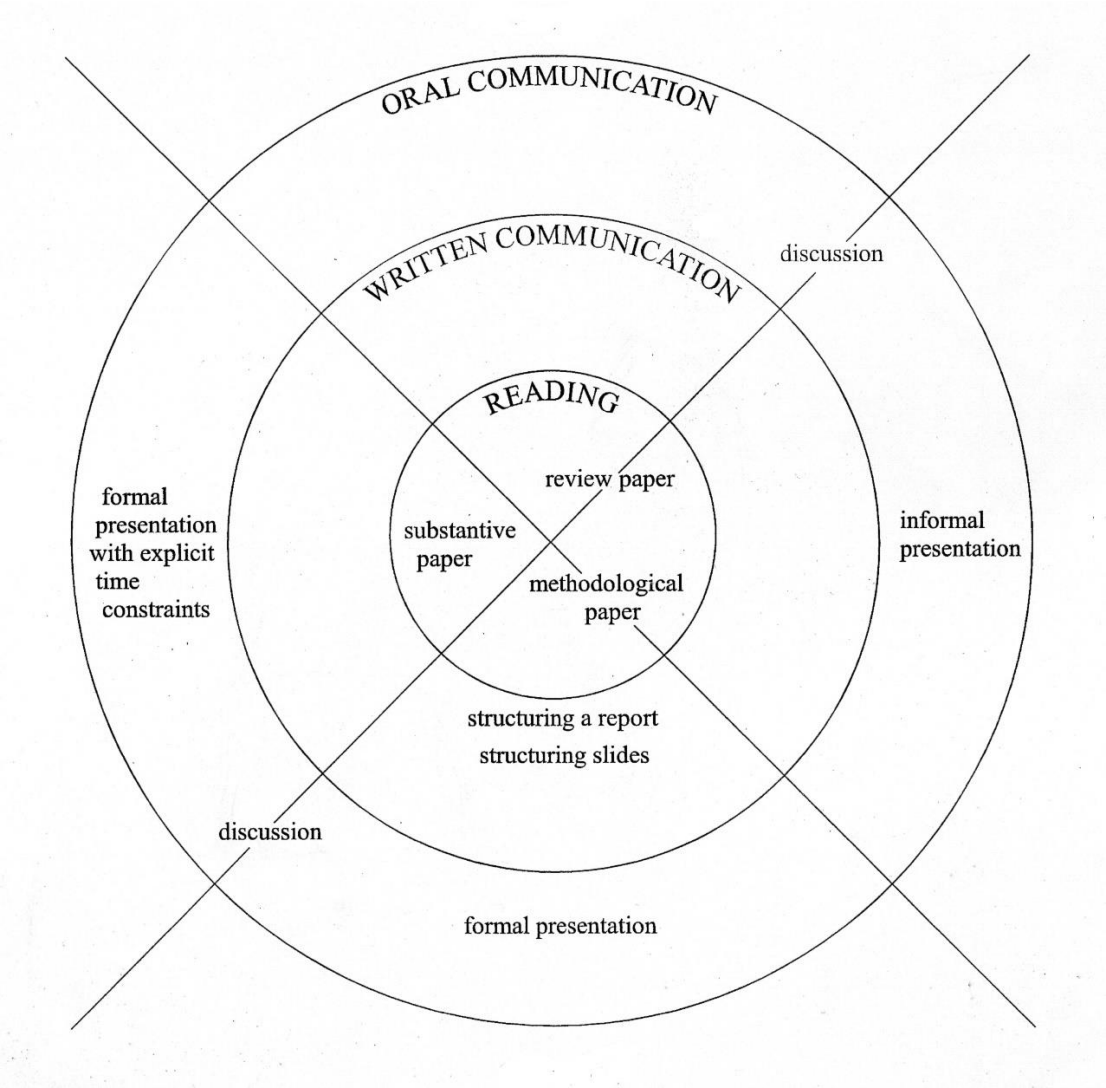
  R – Relax

Non-verbal communication

- Feelings are communicated nonverbally. It is impossible NOT to send a non-verbal message.
- Non-verbal communication can leave your message open to interpretation – i.e. it may reinforce or contradict your spoken message.
- Non-verbal communication can send a double message and can distract from the other person understanding what you are trying to communicate.
- Use the other person's non-verbal communication as a tool to ask more questions. When you ask questions, you can often find the true meaning of the communication.

"Sure the consultants are paid twenty times more than you. They look more impressive when presenting your ideas."

What are the components of scientific communication?



Effective Reading

Why?

Your supervisor gives you a pile of papers / book chapter to read.

Ouch…

Efficient reading skills will be helpful in multiple ways: knowledge gain, insight in writing styles, structuring thoughts, distinguishing main and secondary issues, …

What are different types of scientific literature?

- Primary (authors carried out the work)
  - Examples: monographs, theses or dissertations, conference papers and reports
  - Peer-reviewed journal
  - Particular format

- Secondary (work of others; target: others in the field)
  - Examples: review journals, monographic books and textbooks, handbooks and manuals
  - More flexible style: still scientific and fully referenced

Human Genetics (2019) 138:293–305
https://doi.org/10.1007/s00439-019-01987-w

REVIEW

How to increase our belief in discovered statistical interactions via large-scale association studies?

K. Van Steen[1,2] · J. H. Moore[3]

Received: 26 July 2018 / Accepted: 20 February 2019 / Published online: 6 March 2019

Abstract

The understanding that differences in biological epistasis may impact disease risk, diagnosis, or disease management stands in wide contrast to the unavailability of widely accepted large-scale epistasis analysis protocols. Several choices in the analysis workflow will impact false-positive and false-negative rates. One of these choices relates to the exploitation of particular modelling or testing strategies. The strengths and limitations of these need to be well understood, as well as the contexts in which these hold. This will contribute to determining the potentially complementary value of epistasis detection workflows and is expected to increase replication success with biological relevance. In this contribution, we take a recently introduced regression-based epistasis detection tool as a leading example to review the key elements that need to be considered to fully appreciate the value of analytical epistasis detection performance assessments. We point out unresolved hurdles and give our perspectives towards overcoming these.

What are different types of scientific literature?

- Tertiary (work of others; target: interdisciplinary audience, public)
  - Examples: science magazines, newsletters, science articles in newspapers, introductory textbooks and encyclopedias
  - Popular rather than a scientific style; reduced/short bibliography
- Grey (limited distribution, difficult accessing)
  - Examples: technical reports, journals published by special interest groups, abstracts of conference papers and conference proceedings that are only made available to conference participants, working papers, some online documents

An efficient algorithm to perform multiple testing in epistasis ...
https://www.ncbi.nlm.nih.gov › pmc › articles › PMC3648350
by F Van Lishout - 2013 - Cited by 23 - Related articles
Apr 24, 2013 - Here, m and n refer to the number of SNP pairs and the number of top pairs to retain ..... In this paper we have presented the epistasis screening software MBMDR-3.0.3. .... [6]Department of Systems Biology, University of Vic, 08500 Vic, Spain ... Calle ML, Urrea V, Vellalta G, Malats N, Van Steen K. Improving ...

Model-Based Multifactor Dimensionality Reduction for ... - ORBi
https://orbi.uliege.be › handle
by ML Calle - 2008 - Cited by 43 - Related articles
Author, co-author : Calle, M L []. Urrea, V []. Vellalta, G []. Malats, N []. Van Steen, Kristel - mailto [Université de Liège - ULiège > Dép. d'électric., ... Publication date : 2008. Publisher : Department of Systems Biology, Universitat de Vic,. Report number : Technical Report No. 24. Permalink : http://hdl.handle.net/2268/144460 ...

[PDF] Travelling the world of gene-gene interactions ...
https://www.semanticscholar.org › paper › Travelling-the-world-of-gene-gen...
ML Calle, V Urrea, N Malats. Technical Report n. 24. Department of Systems Biology, Universitat de Vic,; 2008. VIEW 11 EXCERPTS. HIGHLY INFLUENTIAL ...

[PDF] VAN STEEN - Statistical Genetics Research Group
www.statgen.ulg.ac.be › VAN_STEEN_GxG_and_GxE_INTERACTIONS
WELBIO, GIGA-R Medical Genomics (BIO3), University of Liège, Belgium ..... Calle, M. L., Urrea, V., Vellalta, G., Malats, N. & Van Steen, K. (2008a) Model-Based. Multifactor ... 24, Department of Systems Biology, Universitat de Vic, http://www.recercat.net/handle /2072/5001 [technical report, first mentioning MB-MDR]. • Calle ...

[PDF] Improving strategies for detecting genetic patterns of disease ...
public-files.prbb.org › publicacions
by ML Calle - 2008 - Cited by 89 - Related articles
Oct 6, 2008 - M. L. Calle1,*,†, V. Urrea1, G. Vellalta2, N. Malats3 and K. V. Steen4. 1Department of Systems Biology, Universitat de Vic, Carrer de la ...

Mluz Calle | PhD Mathematics | University of Vic, Vic | UVIC ...
https://www.researchgate.net › ... › Department of Systems Biology
Mluz Calle of University of Vic, Vic (UVIC) | Read 64 publications | Contact Mluz Calle. ... Department of Systems Biology; Vic, Spain .... points (P = .015) and restricted a dominant T cell response to HIV Gag p24 (P = .038). ..... Calle ML, Urrea V, Malats N, Van Steen K. mbmdr: an R package for exploring ..... Technical Report.

"ML Calle, V Urrea, N Malats. Technical Report n. 24. …UVIC"

M.Luz Calle - Citas de Google Académico - Google Scholar
scholar.google.com › citations
ML Calle, V Urrea, G Vellalta, N Malats, KV Steen ... Statistical Papers 45 (2), 139-173, 2004 ... Department of Systems Biology, Universitat de Vic,, 2008.

Model-Based Multifactor Dimensionality Reduction for ...
https://onlinelibrary.wiley.com › doi › full
by T Cattaert - 2011 - Cited by 51 - Related articles
Sep 8, 2010 - (Calle et al., 2008a, 2008b) and are graphically displayed in Figure 1. ..... Table S2 reports the specific power to detect the functional pair(s), both with .... The work of M. L. Calle and V. Urrea has been supported by Grant MTM2008-06747-C02-02 from the Ministerio de Educación y .... Technical Report No.

(PDF) Participant's Case Studies (Day 2) | Kristel Van Steen ...
https://www.academia.edu › Participant_s_Case_Studies_Day_2_
17 CSCDA 2010 Leuven, 25-27 August 2010 [2] Mukherjee B, Chatterjee N (2008) .... Dr. Gut is author of over 100 research papers, inventor of 24 patents or patent ..... [2] Calle, M.L., Urrea, V., Vellalta, G., Malats, N. & Van Steen, K. (2007) ..... Luz Calle⋆ , N´uria Malats† ⋆ Department of Systems Biology, Universitat de Vic ...

Comparison of genetic association strategies in the presence of rar…
https://cyberleninka.org › article › n
Similar topics of scientific paper in Biological sciences , author of scholarly ..... Technical Report 24 Department of Systems Biology, Universitat de Vic, Vic, Spain. 2. Calle ML, Urrea V, Vellalta G, Malats N, Steen KV: Improving strategies for ...

Some results may have been removed under data protection law in Europe. Learn more

Why is it useful to regularly read scientific documents?

- To gain knowledge (scientific knowledge, opinions, strategies)
- To stay on top of your field as well as linked fields (intro, discussion)
- To learn about journal styles / slang
- To become an expert in sifting through literature
- To learn about written communication

How to read a scientific article?

- Skim the article and identify its structure
- Distinguish the main points
- Generate the questions and be aware of your understanding
- Draw inferences
- Take notes as you read …

Skim the article and identify its structure

- Features of abstracts:
  - Purpose / rationale (why?)
  - Methodology (how?)
  - Results (what was found?)
  - Conclusion (what do the results mean?)

Skim the article and identify its structure

- Features of introductions:
  - Triggering interest
  - Providing enough information to understand the article
    - Broad: What is known?
    - Specific: What is not known?
    - Focus: What are the questions addressed?

Skim the article and identify its structure

- Features of methods:
  - Which experiments / tools were used to address the questions?
  - Most difficult to read especially when not well structured
  - Should provide the reader with information about the design of the experiment such that the validity of them can be evaluated
- Features of results and discussion:
  - Statements of what was found and reference to (visual) data [Figures, Tables] -- results
  - Comparisons to other results, interpretations, opinions -- discussion

Distinguish the main points

- Document level
  - Title, abstract, keywords
  - Visuals (captions)
  - Introduction
- Paragraph level
  - First few sentences in a paragraph
  - We hypothesize, we propose, we introduce, we develop, data suggests, in contrast to, surprising, …

Generate questions and be aware of understanding: active reading

- Before and during reading:
  - Who are these authors? What journal is this? Might I question the credibility of the work? Have I taken the time to understand all the terminology? Have I gone back to read an article or review that would help me understand this work better? Am I spending too much time reading the less important parts of this article? Is there someone I can talk to about confusing parts of this article?
- After reading:
  - What specific problem does this research address? Why is it important? Is the method used a good one/ the best? What are the specific findings? Am I able to summarize them in a few sentences? Are the findings supported by persuasive evidence? Is there an alternative interpretation not addressed? How are the findings unique/new/unusual or supportive of other work in the field? How do these results relate to my work? Applications? Interesting additional experiments to address the questions?

Draw inference: improve understanding and recall information

- Rely on your prior knowledge, world experience, materials provided in the paper, to draw inferences.
  - We learn about some things by experiencing them first-hand, but we gain other knowledge by inference — the process of inferring things based on what is already known.

Take notes as you read

- Details will slip away, eventually …
  - Stuff your (electronic) notebook, keep records of all of your scientific reading with summaries of their importance.
  - Time spent doing this will be regained when writing background, related work or literature review sections.

Be critical of published data/results!

- A lot of data is at your disposal but are they thrust-worthy?
  - Private data collections (curated according to standards?)
  - Public data collections (curated uniformly?)
  - Publications (source or summary data provided?)
  - Computerized databanks (block-chained or not?)

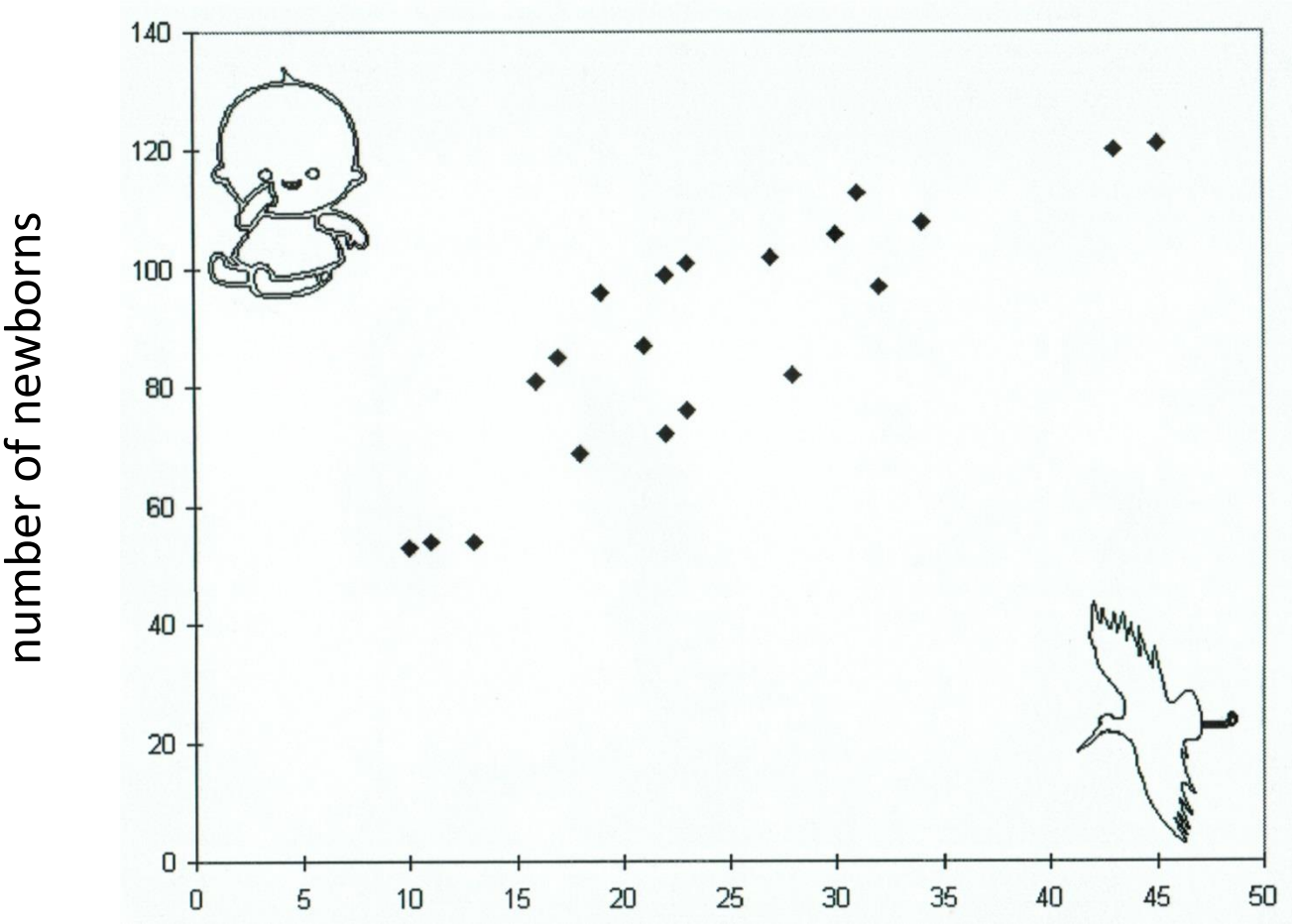
Errors will almost surely exist

- Apart from sampling errors, measurement error may arise:
  - mistakes in conceptualization
  - structural characteristics of the data collection process
- Relevant questions include:
  - How large are the errors?
  - What is the probability for a given error range?
  - Do errors cluster towards the end of a distribution?
  - In which direction does the error go?

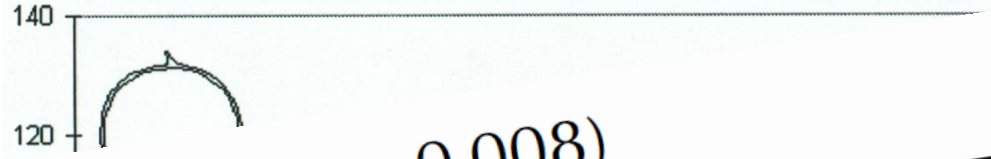
In general: “better” science through “better” data

(www.nature.com/openresearch/)

Beware if jumping to conclusions: causation versus association



Beware if jumping to conclusions: causation versus association

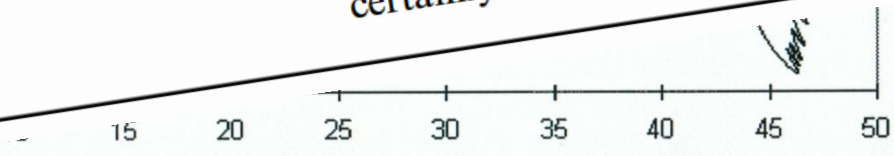


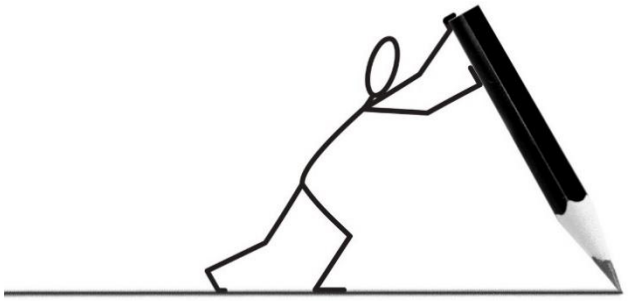
Storks Deliver Babies ($p = 0.008$)

Robert Matthews
Aston University, Birmingham, England.
e-mail: rajm@compuserve.com

KEYWORDS:
Teaching;
Correlation;
Significance;
p-values.

Summary
This article shows that a highly statistically significant correlation exists between stork populations and human birth rates across Europe. While storks may not deliver babies, unthinking interpretation of correlation and *p*-values can certainly deliver unreliable conclusions.





Effective Writing

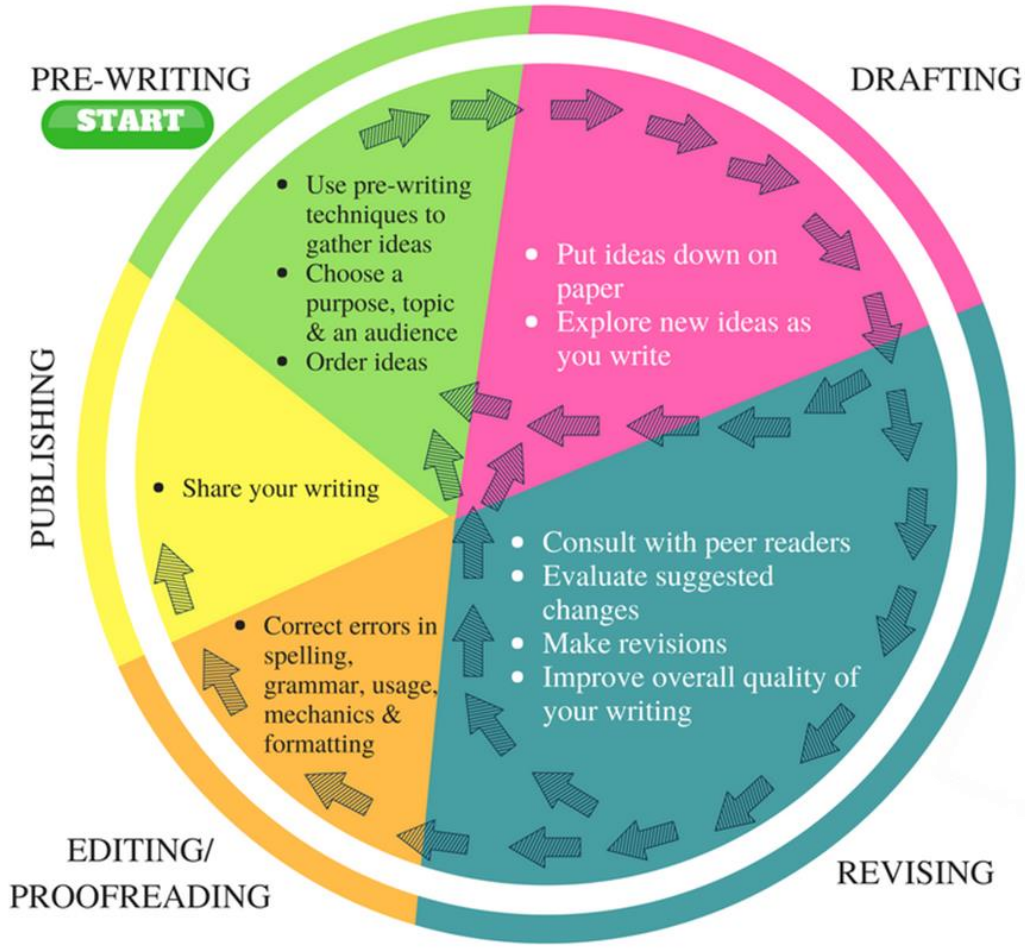
Why?

You would like to give the scientific community a chance to find out about your work.

That way, people are more likely to be able to build on it rather than reinvent the wheel and duplicate research.

Making results accessible is not only a good principle on its own, but is also a way of paying back those who fund you or invest in you.

The writing process – a non-linear process



(vwcceng111.pressbooks.com – “let’s get writing!”)

Pre-writing

- Describes all of the thinking and planning that precedes the actual writing of a paper.
  - Thinking
  - Topic choice
  - Reading

Thinking

- Understand the writing assignment and its limits including the expected length of the writing assignment.

- Establish the assignment's purpose.
  - Informative writing enlightens the audience about something.
  - Persuasive writing attempts to convince the audience to think or act in a certain way
  - Other: analyzing, hypothesizing, summarizing, reporting, recommending, evaluating, describing, requesting, instructing, …

Thinking

- Determine the assignment's audience and occasion: determines formality and scope

- Assess your own previous knowledge of the subject:
  - what you already know about a subject,
  - what you need to find out about the subject,
  - what you think about the subject

Topic Choice

- Often too much information is being generated to put in a single document: sift, distribute
- Use experience and observations to make a selection
- Generating topic and content ideas – some writing techniques:
  - freewriting = whatever comes into mind, and do not stop; may include employing your personal connection to topics; may lead to novel angles to get your work disseminated; may occur in loops to get more focused
  - journaling = reflective writing
  - probing questions based
  - combinations of the above

Reading

- To substantiate the topic, context (content)
- Use your critical reading skills to enhance your writing (style, format, structure)

Critical reading = Critical evaluation of a paper or report

Critical evaluation of a paper or report

Introduction

1. Did the author(s) indicate why the study was undertaken?
2. Was the background information provided adequate to understand the aims of the study?

Methods

1. Has the source of the data been clearly given?
2. Were the methods described in sufficient detail for others to repeat or extend the study?
3. If standard methods were used, were adequate references given?
4. Have the author(s) indicated the reasons why particular procedures were used?
5. Have the author(s) indicated clearly the potential problems with the methods used?
6. Have the author(s) indicated the limitations of the methods used?
7. (Have the sources of drugs been given?)
8. Have the author(s) specified the statistical procedures used?
9. Are the statistical methods appropriate?

Critical evaluation of a paper or report

Results

1. Were the experiments/calculations done appropriate with respect to objectives of the study?
2. Do the results obtained make sense?
3. Do the legends to the figures describe clearly the data obtained?
4. Are the data presented in tabular form clear?
5. Has the appropriate statistical analysis been performed on these data?

Discussion

1. Were the objectives of the study met?
2. Do the author(s) discuss their results in relation to available information?
3. Do the author(s) indulge in needless specualtion?
4. If the objectives were not met, do the author(s) have any explanation?

Critical evaluation of a paper or report

References

1. Do the author(s) cite appropriate papers for comments made?
2. (Do the author(s) cite their own publications needelessly?)

Abstract

1. Is the abstract intelligible?
2. Does the abstract accurately describe the objectives and results obtained?
3. Does the abstract include data not presented in the paper?
4. Does the abstract include material that cannot be substantiated?

Compiling an accessible text in 7 steps (including pre-writing elements)

- Step 1: Draft a reader's profile
- Step 2: Determine you writing aim
- Step 3: Choose a form
- Step 4: Fix your viewpoint (angle)
- Step 5: Develop a structure
- Step 6: Attract
- Step 7: Use fresh formulations

Step 1: Draft a reader's profile

- What do you readers already know about the topic?
- What is the background of your audience?
- What would they like to read?
- How would they like to be addressed?
- What does the community in general think about the subject / your audience in particular?
- Does your audience have prejudice regarding your subject?
- Can they deal with numbers or rather figures?
- What is the level of abstraction your audience can take?

Step 2: Determine you writing aim

- You would like to inform your reader
- You would like to convince your reader about something
- You would like to amuse your reader
- You would like to shock your reader
- You would like to educate your reader
- You would like to give advice to your reader
- You would like to motivate your reader towards actions

Step 3: Choose a form

- Report
- Letter
- E-mail
- Press release
- News announcement
- Column
- Background article
- Review article
- Opinion paper
- Short communication
- Software paper

Step 4: Fix your viewpoint (angle)

- The angle is your key research question
- The angle puts boundaries on the content
- The angle determines the structure

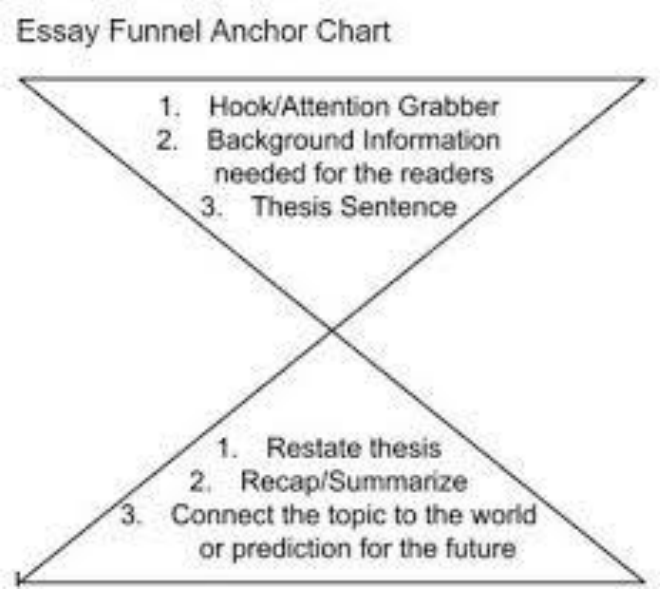
Step 5: Develop a structure

- Head – Body –Tail

Type of subject	Head	Body	Tail
Problem	What is the problem? Why is it a problem?	What are the causes?	What can be done about them?
Research	What is investigated? Why and by whom?	What were the results of the research?	Which consequences emerged from them?
Developments	What does the current situation look like? Why does it deserve attention now?	How did it emerge / arise? What are the relevant backgrounds?	Which direction do developments take now? What can we expect in the future?
Opinions, policy proposals	What is it about? Problem?	Arguments in favor or against	Conclusion

Step 5: Develop a structure

- Funnel (deductive writing; seems to be typical for scientists)
- Upside down funnel (inductive writing)
- Sand glass



- Circles – the “Olympic model”

Step 6: Attract

- Scientific material for non-scientific journals / general public
  - Less structured or predictable than for scientific audience
  - Quotes, pictures, cartoons to increase accessibility
- Illustrations
  - Make things clearer or more alive
  - To highlight an important component (aid in structure)

Step 6: Attract (continued)

- Whether newspapers or (scientific) journals …
  - Importance of a title / headline (comes second after illustration)
  - Headlines should be informative and catching (often decision maker to continue reading)
  - Quotes

How to create attractive subparagraphs?

- Think about the support of your key sentences:
  - Give a definition
  - Illustrate
  - Give an example
  - Use summing up
  - Make a comparison
  - Describe the cause
  - Give reasons

Have to obtain a smashing beginning?

- In a nutshell
- Announcement
- Conjecture
- Anecdote
- Joke
- Shocking figures
- Suggestive summary
- Riddle or paradox
- Portrait, creating a particular atmosphere
- Back in time
- ME or YOU - opening
- Question
- Contrast

VAPE ALERT Sixth person dies of mysterious vaping lung disease – as docs urge e-cigarette users to QUIT NOW

Gemma Mullin, Digital Health Reporter
10 Sep 2019, 16:42 | Updated: 10 Sep 2019, 17:57

How to reach a stunning ending?

- The circle is round
- Summary
- Conclusion
- Recommendation
- Anecdote
- Rhetorical question
- Drawing
- Reference to future
- Comparison

Don’t be afraid of using frames

for

- Technical notes / additional info
- Background information
- Mini-bios
- Historical notes
- Practical information
- Quantitative facts as supporting info
- Each text part that is standalone and attractive as information piece

Step 7: Use fresh formulations

- Write correctly
- Write personally
- Write in a dynamic way
- Write excitingly
- Write varying
- Write concretely
- Write clearly (one can partially test it!)

(Examples are given on the next slides and the longer version of these slides: homework)

Write clearly

- Avoid complicated sentences
  - long sentences, long words, difficult words, expensive words, abbreviations, long introductory sentence parts

- Avoid vague sentences
  - empty words, neutral words, euphemisms, unclear references, unanswered questions, vague connections

Test how clearly you write

- Flesch

  Ease of reading = 206.84 – (0.85 x the number of syllabi per 100 words) – (1.02 x the average sentence length)

Score	**Difficulty**	**Level**
0-30	Very difficult	academic
30-50	Difficult	students
50-60	Rather difficult	Higher secondary school
60-70	Standard	Lower secondary school
70-80	Rather easy	6th grade (~ 12 years)
80-90	Easy	5th grade (~ 11 years)
90-100	Very easy	4th grade (~ 10 years)

Write concretely (i.e. in a definite/conclusive way)

- Choose specific words
- Choose the single correct word
- Show highly informative details
- Give examples
- Prove with figures
- Use examples

Write personally

- Use personal sentences and words (cf Human interest-formula)
- Let people take the stand
- Bring people alive
- Embark on a dialogue with your readers
- Avoid sexist language

Write in a dynamic way

- Be active instead of passive
- Choose verbs instead of nouns
- One time instead of twice or three times
- Deeds instead of words
- Be sober rather than pompous

Write excitingly

- Play with telling time
- Use the time bomb
- Take time to your advantage
  - Flashback
  - Flash-forward
  - Cliffhangers

Write varying

- In your choice of words
  - Synonyms
  - Reference words
- In your choice of sentence build-up
  - Break with the standard word sequence
  - Use different sentence types
  - Use direct style (US versus European writing style)
  - Bring variation in the length of your sentences

The importance of proof-reading at different levels: crosschecks

- Read the paper aloud
- Critical evaluation of your own paper (see before)
- Word choice

The importance of proof-reading at different levels: crosschecks

- Read the paper aloud
- Critical evaluation of your own paper (see before)
- Word choice

Word choice

- Cut out wordiness wherever possible
  - Original: They are desirous of ...
  - Revision: They want ...
- Use active verbs
  - Original: Inflation is a threat to our economy
  - Revision: Inflation threatens our economy.
- Replace colloquialisms with fresh and more precise statements
  - Original: There were several reasons for the United States' entrance into the war.
  - Revision: The United States entered the war for several reasons.

Word choice

Multiple meanings of the same word:

(www.insider.com)

Word choice

Contradictory meanings depending on the region:

“weerhouden”

- In Belgium: to hold back
- In the Netherlands: to retain = to continue to have (something)

“to table”

- In the UK: to propose
- In the US: to set aside

Getting your work published

Why?

Going through the process improves your writing and analytical skills

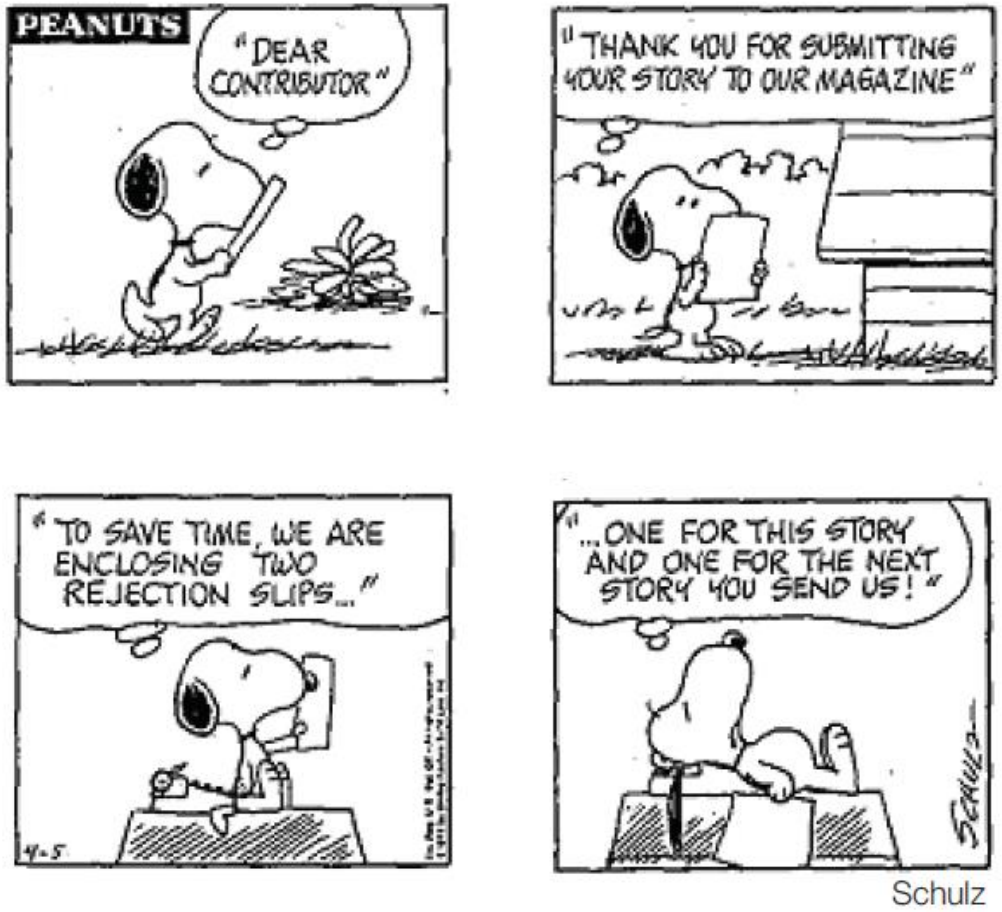
It gets you and your work known in the wider scientific community.

It is good for your career (having a good track record makes it easier to attract funding) and it should be good for your organization

How to get your work published?

- Remember why you are writing and adhere to the good common practice rules:
  - determining the proper structure and writing style
  - grabbing the attention
  - holding the attention
  - giving the reader a reason for reading
- Be critical, as if it were someone else's paper
- Choose the right journal
- Persevere!

A rejection may be or may not be your fault



Questions you should ask (yourself) - attending to the content

- Are the facts true, complete, and controllable?
- Are the conclusions, beliefs, and opinions well founded and supported?
- Do the facts legitimate the conclusions, beliefs, and opinions?
- Is there an over-generalization?
- Are the cause and effect relations properly given?
- Is there a proper distinction between facts, opinions, and beliefs?

Questions you should ask (yourself) – attending to the internal consistency:

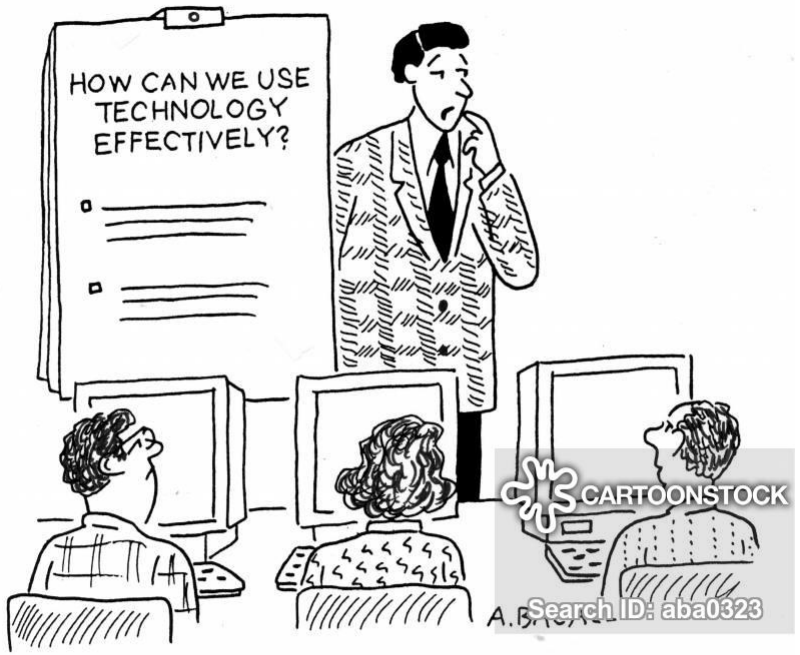
- Is the order of presentation logical and consistent?
- Is there unnecessary redundancy?
- Have conclusions been drawn before the necessary and sufficient facts have been presented?
- Is there enough emphasis on the main point / is there too much emphasis on matters of secondary or minor importance?
- Is the product too verbose / lengthy? “Pardon me that this letter is so long, I didn’t have the time to make it shorter”

Editor's advice on how to get your work published

- Study the journal (get to know the journal)
- Use good English (avoid rejection based on bad grammar)
- Be realistic (be aware of the value of your results but avoid over-interpretation)
- Tell a coherent story

Editor's advice on how to get your work published

- Don't make sweeping conclusions (you cannot support)
- Don't try too hard to sound important (avoid being pompous)
- Make sure the title matches the content
- **Read lots of papers and learn from them**



"I'm going to switch to plan 'B'.
Our computers are down."

Effective Presenting

Why?

You have been asked to present your work in front of the department. Worse, you have been asked to justify it.

All of a sudden, it's high school all over again. You picture yourself at the front of the room: sweaty palms, initially speechless.

When you finally start, you speak too fast for anybody to understand.

Your 20-minute presentation is over in 5 minutes; at least, you can sit down again.

There is no need to go through all this stress!

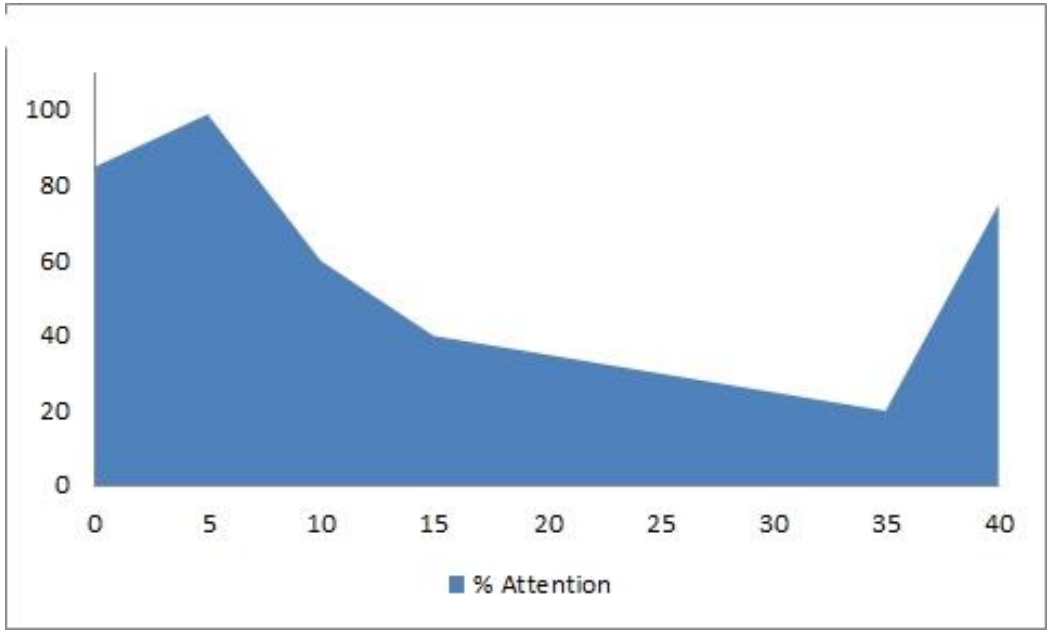
Parameters of a presentation

- Structure (outline, ear catcher, clarity, timing)
- Content (dosage, understandable, directness)
- Presentation
  - Linguistics (sentence structure, word choice)
  - Voice (volume, intonation, pronunciation, articulation, color)
  - Body language (attitude, movement, eye-contact, mimicry, gesticulation)
- Aids (variation, stage-management, efficiency)
- Interaction (group contact, handling questions and remarks or comments)

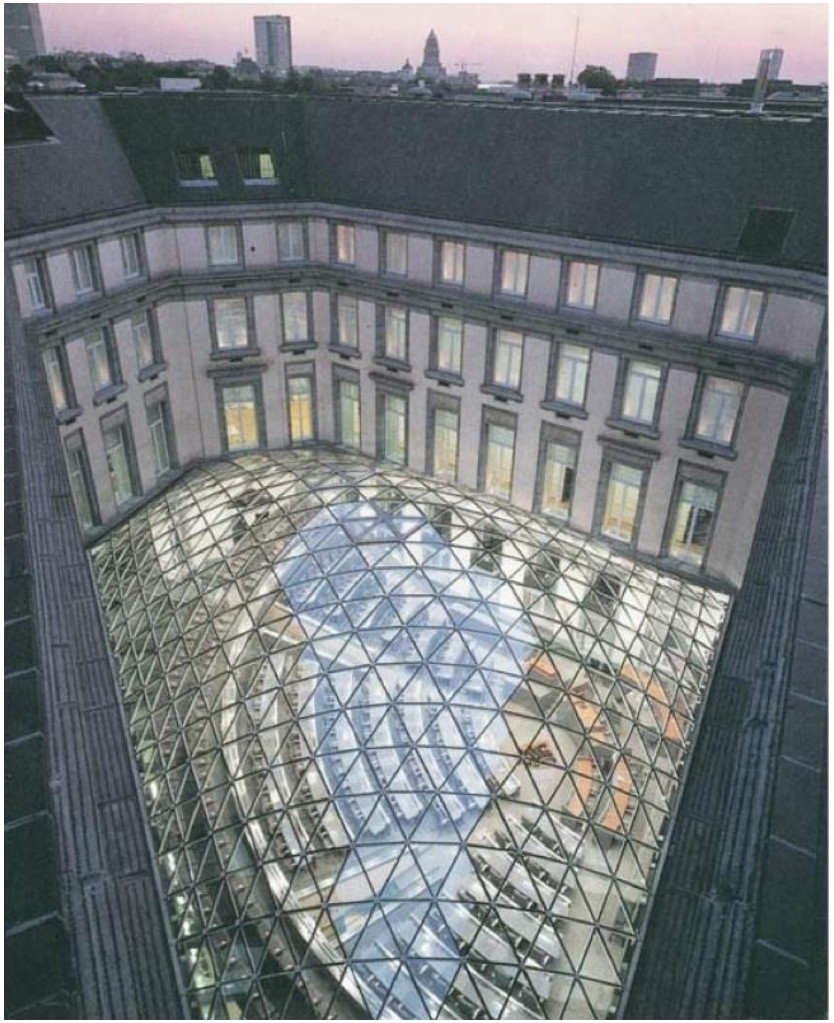
(details in the longer version of these slides: homework)

Building up your presentation: waves of attention

- Beginning: 85%
- Ending: 75%
- Location, moment, participants, circumstances



Attention triggering beginning; stunning ending



“As Above, So Below” (Rudy Rucker)

Pieter Bruegel *(Brueghel)* the Elder, c. 1525 – 9 September 1569: “the Dutch proverbs”)

“Everything, however finely spun, finally comes to the sun”

(nothing can be hidden forever)

Preparing a presentation

- Setting

- Content

Increasing our belief
in
detected statistical interactions

Kristel Van Steen, PhD[2] (*)

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(*) WELBIO, GIGA-R, Medical Genomics, University of Liège, Belgium
Systems Medicine Lab, KU Leuven, Belgium

Université de Liège

BIO

Setting

- Who is my audience?
- Program?
- Location (room)?
- Aid, technical devices?
- Environmental (circumstantial) factors?

Content

- What is already known to my audience?
- What does my audience need to know?
- What does my audience want to know?
- How will it receive the message?

Preparation scheme

Major Thought / Theme / Topic			
Key Idea 1	**Key idea 2**	**Key idea 3**	**Key idea 4**
Sub idea	Sub idea	Sub idea	Sub idea
Sub idea	Sub idea	Sub idea	Sub idea

Pitfalls

- Urge for completion
- Urge for competence
- Urge for providing proofs

Keep in mind that listeners have one chance to hear your talk and can't "re-read" when they get confused (possible exception: handouts)

Structure your story (a story?)

KISS: Keep It Simple Stupid

- Bring your message in a simple way, stick to the important information, use plain language
- Tells you something about content not build-up

OLYMPIC model

- Contains Head-Body-Tail (within or between circles)
- Circular build-up in which you connect Tail with Body again

Structure: introduction

- Goal(s)
- Interest
- Structure and method
- Commitment (timing, material, questions)

Structure: middle

- Options (e.g., report of research: problem setting, methods – hypothesis – set up, progress in the research work, results, conclusions and advice, …)
- Inductive versus deductive
- Road maps
- Summaries

Structure: end

- Reminder to goals
- Summary of key (central) message
- Invitation to questions, discussion
- Final words (reminder, actions)

Assessment of presentation

- First impression
- Eye contact
- Gestures
- Movements
- Clothing
- Voice
- Attitude
- Dealing with questions
- Dealing with opposition

Movements

- Hand and arm movements
  - Increase span (a bit)
  - Natural (as in conversations)
  - Illustrate (non-rhythmic)
- Leg movements
  - Functional (pacing up and down)
  - Vary relation with audience
  - Vary relation with visual aids
  - Strengthen ideas

Voice

- Sound
  - Tone height
  - Decibels
  - Quality
- Resonance
- Articulation
  - Open
  - Flexible, smoothly
  - Up front in mouth
- Speed

Language

- Presentation language is different from written language
- Be concrete
- Use metaphors
- Use moments of silence
- Use variation
- Dose information content
- Talk in a personal way
- Avoid expletives
- Jargon? Abbreviations? Synonyms?

Questions

- Announce (timing)
- Replace yourself in the mind of the one who asks the question
- Appreciate
- Recapitulate / reformulate / summarize
- Define terms
- Distinguish between opinion and facts
- Decompose the question
- Refer to arguments (literature, own work, presentation)
- Follow-up

Tools: using the beamer

- Particularly handy when >50 people
- Allows projecting impressive presentations in “no time” (software)
- Pros:
  - Hold on to the red thread of your story using visual presentations
  - Have a backup text for the audience and you (but be careful)
  - Handouts
- Cons:
  - Some degree of technical expertise required
  - Tendency to include too much information
  - Dropping letters and too many colors blur the real story behind

Slides

- At a glance
- Not more than 2/3 of the space
- 1 mental thought at a time → 1 message per slide
- Avoid full sentences (however depends on audience and aims of the presentation)
- Homogeneous (tranquil) layout
- The number of slides is not the problem, the number of objects on a slide is …

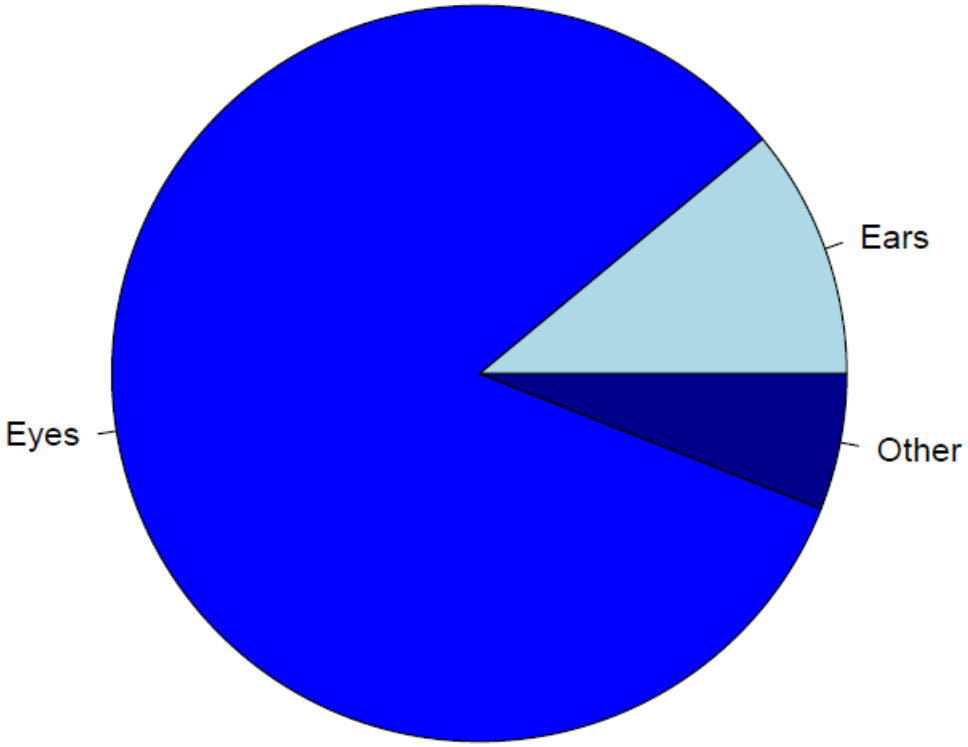
Slides

- Background light, text dark
- No vibrant colors (red/green, orange/blue)
- Italic is generally not that clear
- Font type: Calibry versus Courier New versus ALGERIAN
- Never entirely in CAPITAL LETTERS
- Avoid underlining
- Font size (here: 24)

Graphics in slides

- Simplicity above all (perceptive limit in brains = 6 objects; seeing 6 objects takes 0.02 of a second)
- Emphasis on one direction
- No horizontal AND vertical lines
- Not more than 3 (?) curves
- No vertical text
- Proportional axes; consistent axis labeling
- Legend

Visuals are important but do not overdo it.



Information (proportional) taken up by the senses

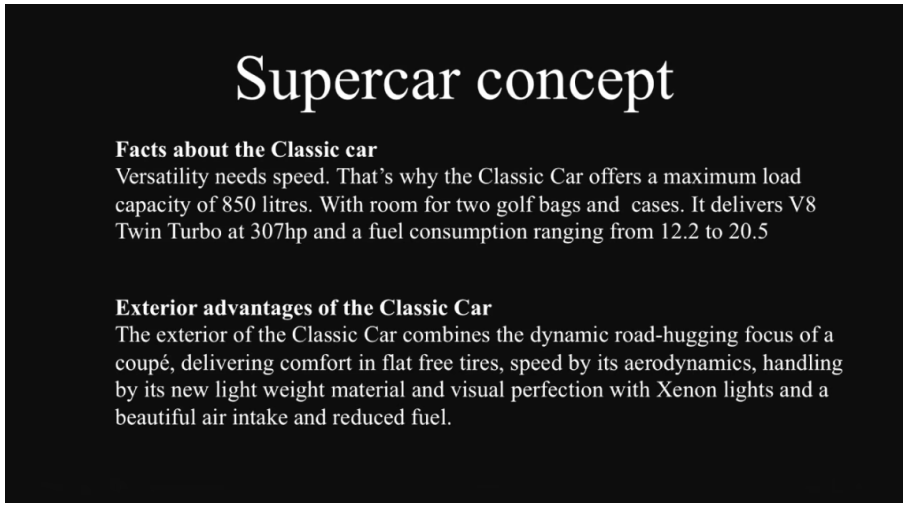
Death by PowerPoint

http://www.youtube.com/watch?v=bOrHxRB3JrQ&feature=player_detailpage

https://www.youtube.com/watch?v=K0pxo-dS9Hc

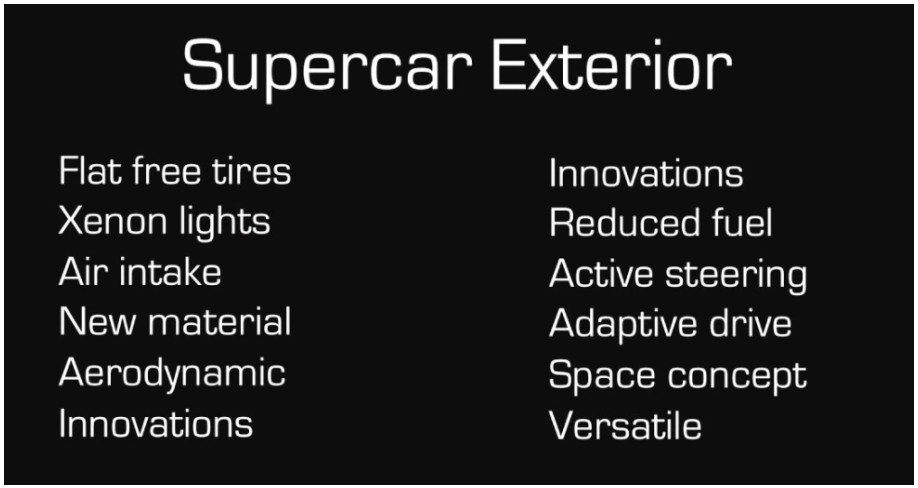
https://www.youtube.com/watch?v=Iwpi1Lm6dFo

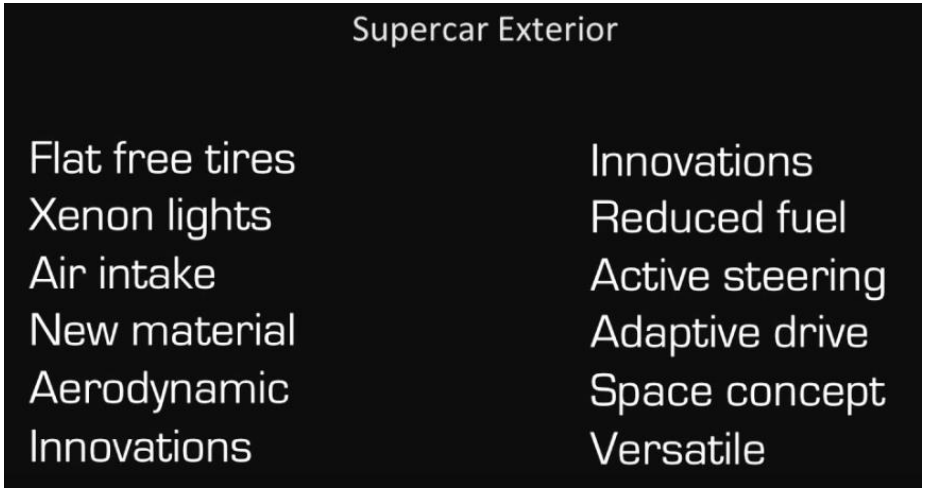
Go or no go?


Supercar concept
Facts about the Classic car
Versatility needs speed. That's why the Classic Car offers a maximum load capacity of 850 litres. With room for two golf bags and cases. It delivers V8 Twin Turbo at 307hp and a fuel consumption ranging from 12.2 to 20.5
Exterior advantages of the Classic Car
The exterior of the Classic Car combines the dynamic road-hugging focus of a coupé, delivering comfort in flat free tires, speed by its aerodynamics, handling by its new light weight material and visual perfection with Xenon lights and a beautiful air intake and reduced fuel.


Supercar exterior
Exterior advantages of the Classic Car
The exterior of the Classic Car combines the dynamic road-hugging focus of a coupé, delivering comfort in flat free tires, speed by its aerodynamics, handling by its new light weight material and visual perfection with Xenon lights and a beautiful air intake and reduced fuel.

Go or no go?


Supercar Exterior
Flat free tires
Xenon lights
Air intake
New material
Aerodynamic
Innovations
Innovations
Reduced fuel
Active steering
Adaptive drive
Space concept
Versatile


Supercar Exterior
Flat free tires
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Air intake
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Aerodynamic
Innovations
Innovations
Reduced fuel
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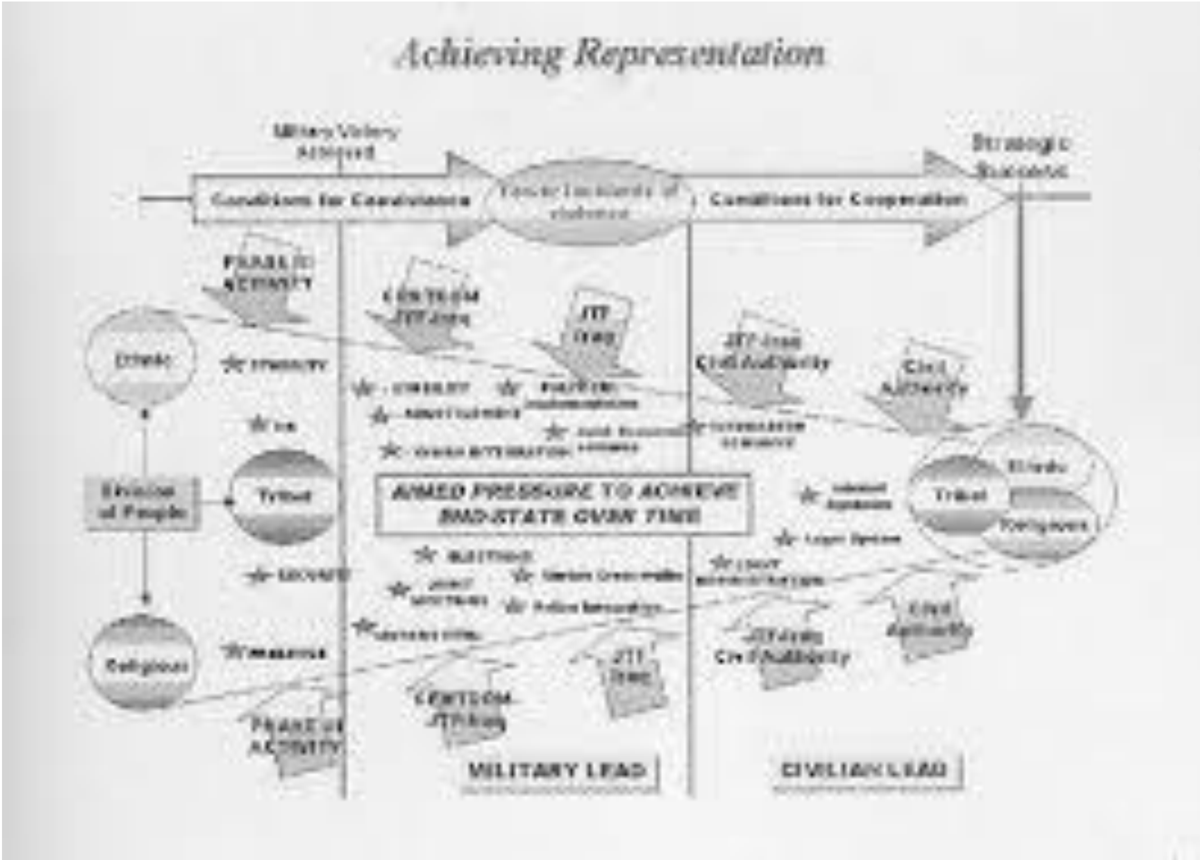
Adaptive drive
Space concept
Versatile

Go or no go?

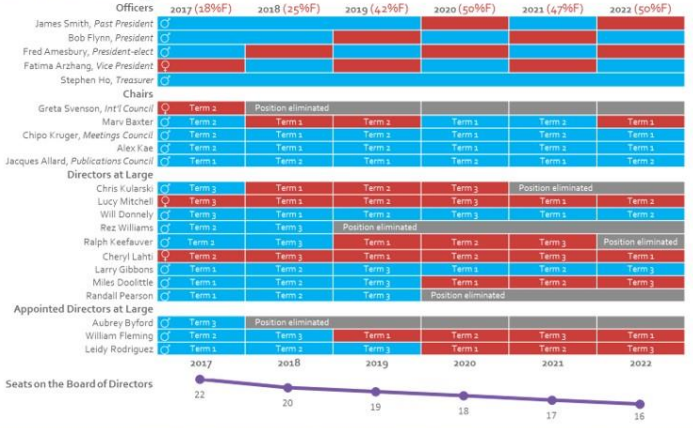

Achieving Representation
Conditions for Coexistence
Conditions for Cooperation
Strategic Success
Ethnic
Tribal
Religious
Division of People
ARMED PRESSURE TO ACHIEVE END-STATE OVER TIME
MILITARY LEAD
CIVILIAN LEAD

Go or no go?

BoD Gender Goal 50% 2022 (5 years)

#Mmbrs	Officers	Chairs	DatL	DatL Appt	Reduce	#Mmbrs	2017	2018	2019	2020	2021	2022	2023
							22	20	19	18	17	16	16
1	James	Smith	2017	2017	Past President		m	m	m	w	m	w	m
2	Bob	Flynn	2017	2017	President		m	m	w	m	w	m	w
3	Fred	Amesbury	2017	2017	President-elect		m	w	m	w	m	w	m
4	Fatima	Arzhang	2017	2017	Vice President		w	m	w	m	w	m	w
5	Stephen	Ho	2014	2017	Treasurer		m	m	m	m	m	m	m
6	Greta	Svenson	2017	2018	Chair, International Council		w	xx	xx	xx	xx	xx	xx
7	Marv	Baxter	2016	2017	Chair		m2nd	w1st	w2nd	m1st	m2nd	w1st	w2nd
8	Chipo	Kruger	2016	2017	Chair, Meetings Council		m2nd	m1st	m2nd	m1st	m2nd	m1st	m2nd
9	Alex	Kae	2016	2017	Chair		m2nd	m1st	m2nd	m1st	m2nd	m1st	m2nd
10	Jacques	Allard	2017	2018	Chair, Publications Council		m1st	m2nd	m1st	m2nd	m1st	m2nd	m1st
11	Chris	Kularski	2015	2017	Director at Large		m3rd	w1st	w2nd	w3rd	xx	xx	xx
12	Lucy	Mitchell	2015	2017	Director at Large		w3rd	w1st	w2nd	w3rd	w1st	w2nd	w3rd
13	Will	Donnely	2015	2017	Director at Large		m3rd	m1st	m2nd	m3rd	m1st	m2nd	m3rd
14	Rez	Williams	2016	2018	Director at Large		m2nd	m3rd	xx	xx	xx	xx	xx
15	Ralph	Keefauver	2016	2018	Director at Large		m2nd	m3rd	w1st	w2nd	w3rd	xx	xx
16	Cheryl	Lahti	2016	2018	Director at Large		w2nd	w3rd	w1st	w2nd	w3rd	w1st	w2nd
17	Larry	Gibbons	2017	2019	Director at Large		m1st	m2nd	m3rd	m1st	m2nd	m3rd	m1st
18	Miles	Doolittle	2017	2019	Director at Large		m1st	m2nd	m3rd	w1st	w2nd	w3rd	w1st
19	Randall	Pearson	2017	2019	Director at Large		m1st	m2nd	m3rd	xx	xx	xx	xx
20	Aubrey	Byford	2015	2017	Director at Large [appointed]		m3rd	xx	xx	xx	xx	xx	xx
21	William	Fleming	2016	2018	Director at Large [appointed]		m2nd	m3rd	w1st	w2nd	w3rd	w1st	w2nd
22	Leidy	Rodriguez	2017	2019	Director at Large [appointed]		m1st	m2nd	m3rd	w1st	w2nd	w3rd	w1st
						% Women	18.2%	25.0%	42.1%	50.0%	47.1%	50.0%	50.0%
-1	xx	xx	2018	2020	Director at Large [appointed]			-1	-1	-1	-1	-1	-1
-1	Greta	Svenson	2017	2018	Chair, International Council			-1	-1	-1	-1	-1	-1
-1	Rez	Williams	2016	2018	Director at Large sunset				-1	-1	-1	-1	-1
-1	Randall	Pearson	2017	2019	Director at Large sunset					-1	-1	-1	-1
-1	Chris	Kularski	2015	2017	Director at Large sunset						-1	-1	-1
-1	Ralph	Keefauver	2016	2018	Director at Large sunset							-1	-1
16						#Mmbrs	22	20	19	18	17	16	16
						Year	2017	2018	2019	2020	2021	2022	2023

Gender distribution goals for the Officers and BoD



Go or no go?

Snow	Sunshine	Rain	Hail
44	51,6	52,8	92,9
30,2	76,1	103,2	102
129	91,8	73,8	75,5
41,7	43,2	106,9	99,1
9,8	112	97	38

Snow	Sunshine	Rain	Hail
44	51,6	52,8	92,9
30,2	76,1	103,2	102
129	91,8	73,8	75,5
41,7	43,2	106,9	99,1
9,8	112	97	38

Go or no go?


Colors can make your presentation look amazing
But it can also make your presentation too busy to be true
Slide 18: Did that just to prove my word

Go or no go?

Colors can make your presentation look amazing

But it can also make your presentation too busy to be true

Towards a successful presentation

- **ICEPAC: principles of instruction**
  - Interest
  - Comprehension
  - Emphasis
  - Participation
  - Accomplishment
  - Confirmation

- **CREST: useful types of verbal support or training aids**
  - Comparison
  - Reason
  - Example
  - Statistics
  - Testimony

Towards a successful presentation (David JP Phillips)

David JP Phillips has spent 7 years studying 5000 speakers, amateurs and professionals in order for the first time in history to detail every single skill a communicator from stage or in a presentation uses in order to deliver their message.

https://singjupost.com/the-110-techniques-of-communication-public-speaking-david-jp-phillips-transcript/

110 skills to become a great speaker (David JP Phillips)

How to reduce nervousness?

My selection:

- PREPARE
- PRACTICE
- FAMILIARIZE

Movements

- Hand and arm movements
  - Increase span (a bit)
  - Natural (as in conversations)
  - Illustrate (non-rhythmic)
- Leg movements
  - Functional (pacing up and down)
  - Vary relation with audience
  - Vary relation with visual aids
  - Strengthen ideas

Finally: The future of presenting

- Interactive web conference courses
  - Website as a partner tool
  - Discussion board to post questions / answers
  - Video for visual contact
  - White board for file storage and sharing

  See URL: http://www.extension.harvard.edu/distance-education/how-distance-education-works/web-conference-courses

- Web conference presentations?

Effective Listening

We have two ears and one mouth,

so we should listen more than we say

(by Zeno of Citium)

Listening – receiving the message

- We can listen at about twice the speed the average person talks.
- We can speak at a rate of 125 to 150 words per minute, but we can hear, process, and analyze at a rate of 400 to 800 words per minute.
- The extra time between what you say and what is heard can be used negatively or positively in the communication process.

Negative uses

- Making assumptions
- Being defensive
- Daydreaming/Being distracted/Acting impatient
- Interrupting
- Looking away
- Doing another activity while listening

Positive uses - Effective listening

What is effective listening?

- The ability to pay attention to and effectively interpret what other people are saying (English Oxford Dictionary)
  - Listening is not hearing
  - Different levels of listening
    - Ignoring: not listening at all
    - Pretending: trying to show someone that one is interested but one is not
    - Selective: only hearing what one expects to hear
    - Attentive: paying close attention
    - Active (empathic): using the following 10 keys

What are the ten keys to becoming an effective listener?

When you talk, you are only repeating what you already know.

If you listen, you may learn something new (Dalai Lama XIV)

1. Be attentive
2. Put the speaker at ease
3. Empathize
4. Be patient
5. Avoid personal prejudice
6. Listen to the tone
7. Identify key messages
8. Pay attention to what is not being said
9. Wait for pauses to ask questions
10. Reflect back

Personalized Medicine: Individual-specific data is more important than population-level data

Patient wellness is the first priority in personalized medicine

Diseases manifest in a different way in men and women

Measurement error affects "shapelet" analyses

In Conclusion

Evaluation and Performance Appraisal of the LEARNING process through SCIENCE

SELF-EVALUATION FORM

GAINING INFORMATION AND KNOWLEDGE

1	I am very uncertain about how to find information in a library	1 2 3 4 5	I am able to find the precise information I need in a library quickly and efficiently

SELF-EVALUATION FORM

PROBLEM SOLVING

1	I find it very difficult to identify the important constituent parts of a problem	1 2 3 4 5	I am confident that I can focus immediately on what is important about a problem

SELF-EVALUATION

PROGRESS

1	Gaining information and knowledge	I have not made any progress at all since the last evaluation	1 2 3 4 5	I have made good progress since the last evaluation
2	Problem solving	I have not made any progress at all since the last evaluation	1 2 3 4 5	I have made good progress since the last evaluation
3	Personal effectiveness	I have not made any progress at all since the last evaluation	1 2 3 4 5	I have made good progress since the last evaluation
4	Communication	I have not made any progress at all since the last evaluation	1 2 3 4 5	I have made good progress since the last evaluation

Version May 2017 BIO

Evaluation

General to BIO3 team members

- The skills, competencies and abilities that we aim to acquire or further develop within BIO3 include:
  1. managerial and leadership skills;
  2. the ability to communicate with the public;
  3. the ability to connect with foreign colleagues in networks;
  4. administration of projects;
  5. dealing with and understanding political circumstances;
  6. negotiating with business partners;
  7. cultural understanding.

  (http://www.portlandpress.com/pp/books/online/fyos/083/0105/0830105.pdf)

- These skills will prepare you very well to the demands from potential employers these days, whether affiliated to high-level academic institutions or the industry. It is up to you to take the opportunities offered within BIO3 in this sense. Achievements regarding these will be included in your evaluation or reference letters.

Specific to PhD students

- Each PhD student is yearly evaluated in May
  - Based on a report and acquired credits within the doctoral program https://www.ulg.ac.be/upload/docs/application/pdf/2015-11/fodo_ca_ulg_en_-_2015.pdf
  - Based on a presentation in front of thesis progress committee members

These following questions are taken as guidelines for the PI to write an overall report for a PhD student (e.g., when applying for a post-doctoral position). The questions are circulating among PIs in the US:

1. Was X reliable?
2. Was X always on time for meetings, met deadlines without trouble?
3. Was X productive with his/her time?
4. Did his/her project progress at or above the speed you expected?
5. Was X focused and stayed on track?
6. Was X well-organized?
7. Was X able to manage his/her own time and retrieve information/data/results for ~~o~~this/hers easily?
8. What level of expertise did X reach in his/her area of study?
9. How would X compare to others at the end of their degree in familiarity with concepts, literature, and ability to apply approaches to new problems or datasets?
10. Was his/her work reproducible? Did X keep lab notebooks/script annotations/log files that were sufficient for someone else to re-create his/her work?

My favorite writing guidelines [inspired by the "world's greatest authors"]

1. Be disciplined
2. Write in the style you'd like for reading
3. You have to read so you can write
4. Keep a notebook at hand
5. Write hot, edit cold
6. Allow ideas to flow, even when you are unsure
7. Write, write, write and cut
8. Allow yourself for writing imperfections and learn, correct
9. Write what you know about
10. [Show, don't tell]

My favorite presentation guidelines

1. Train before trying
2. Presentation first, PowerPoint second
3. Know your audience
4. Tell a story
5. Show it, don't write it
6. Embrace color, but carefully
7. Talk to (not at) your audience
8. Watch what you say
9. Don't overprepare
10. Differentiate yourself

And now it is up to you!!!

References

- Slides from short courses and printed material
  - "WeCom: wetenschappelijke communicatie" (short course presented in Belgium)
  - Technical writing and presenting – Baylor University/Maastricht University
  - Tropical Biology Association - Skills Series: Scientific writing and publishing results
  - Scientific writing booklet compiled by ME Tischler (department of biochemistry and molecular biophysics at the University of Arizona)

References

- Material from URLs:
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  - http://www.biochem.arizona.edu/classes/bioc568/papers.htm (scientific reading)
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