

Rasjonalitetens makt og maktens rasjonalitet

Magne Jørgensen

Francis Bacon ...

"Kunnskap er makt"



10 Utsagn om rasjonalitet og makt (Bent Flyvbjerg)

Erfaringer fra studier av beslutninger i byplanlegging i Ålborg:

- Makt definerer virkelighet.
- Rasjonalitet er kontekstavhengig, konteksten er ofte makt, og i kontekst av makt er grensen mellom rasjonalitet og rasjonalisering flytende.
- Rasjonalisering fremstilt som rasjonalitet er en hovedstrategi i maktens rasjonalitet.
- Jo større makt, desto mindre saklighet
- Stabile maktrelasjoner er mer typiske enn antagonistiske konfrontasjoner.
- Maktrelasjoner er ikke statiske, men produseres og reproduseres konstant.
- Maktens rasjonalitet har dypere historiske røtter enn rasjonalitetens makt.
- I åpen konfrontasjon viker rasjonalitet for makt.
- Rasjonalitet-makt relasjoner kjennetegner stabile maktrelasjoner i høyere grad enn de kjennetegner konfrontasjoner.
- Rasjonalitetens makt ligger i stabile maktrelasjoner, ikke i konfrontasjoner.

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Reklamens makt – og rasjonalisering ... [Gillette - The Best A Man Can Get? (1921)]



- *".. the blade is biflexed between overhanging cap and fulcrum shoulder. It is flexed once into the inside curve of the cap. This is the minor flexure – the curve is for easy gliding action and play of the wrist in shaving. It is flexed a second time – more sharply and in a shorter radius – by the grip of the overhanging cap for the whole length of the fulcrum shoulder. This is the major flexure. This arrangement provides an exactness of adjustment to 1/1000 of an inch."*
- Denne teksten, sammen med en illustrasjon ble gitt til 65 personer, sammen med et spørreskjema. Alle var enige om at den nye barberhøvelen var bedre enn den gamle til Gillette, og at det var rimelig å betale \$5 for den nye i motsetning til \$1-2 for den gamle.
- MEN, ingen av dem var i stand til å forklare hvordan de nye egenskapene virket eller hvilke fordeler de ga!

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Rasjonaliseringen fungerer fortsatt ... (2008)

Compare the features of **M3POWER™**, **MACH3® Turbo** and **MACH3®**



	M3POWER	MACH3 Turbo	MACH3
Battery power (delivers micro-pulses)	✓		
Three progressively-aligned blades	PowerGlide™	Anti-friction	✓
Microfins	10	10	5
Indicator [®] lubricating strip	* More lubrication	* More lubrication	✓
Open cartridge design	✓	✓	✓
Forward-pivoting cartridge head	✓	✓	✓
Single-point loading	✓	✓	✓
Ergonomic handle	Redesigned	Redesigned	✓

*compared to original MACH3

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Hvorfor lar vi oss lure av rasjonaliseringer og dårlige argumentasjoner?

- Ikke hensiktsmessig å kjempe mot "maktens rasjonalisering"?
 - ledelsesmakt
 - markedsrett
- Vi gjennomskuer ikke rasjonaliseringen?
- Vi synes det er bedre men en rasjonaliserings som virker enn en rasjonell begrunnelse som har liten effekt?
- Vi mangler motstandskraft fordi vi ikke vet hvordan vi manipuleres?
- Vi mangler opplæring i å gjennomskue rasjonalisering?
- Vi mangler opplæring i å argumentere rasjonelt?

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**The Banana Experiment: Which of these banana pictures include some yellow color?
(A. B. both. none)**



A



B

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Software professionals seem to rely very much on own and other people's judgments

- Experiment (unpublished):
 - **Subjects:** 52 software professionals
 - **Context:** Evaluation of a course in software testing.
 - **Question:** How much do you agree in the statement: "*most of the participants of this testing course will substantially increase their efficiency and quality of test work*".
 - **Treatment:** Different types of supportive evidence.
 - **Results:** As much as 15% reported that they would emphasize a positive course evaluation of a friend who had participated in the course more than supporting evidence from an independent study conducted by scientific researchers at a well-known university. If they themselves had participated and found the course useful, as many as 80% would believe more in their own, specific experience, than in the scientific study providing aggregated information.
 - **Implication:** This experiment illustrates that even in situations where the normative response would be to use the aggregated and more objective information, many people seem to prefer the highly specific.

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What is valid evidence? A real-life example (1)

- A software development department wanted to replace their old development tool with a more modern and more efficient one.
- They visited many possible vendors, participated at numerous demonstrations, and contacted several “reference customers”. Finally, they chose a development tool. The change cost about 10-20 million NOK + training and other indirect costs.
- A couple of years after the change, the department measured the change in development efficiency (not common – most software organizations never study the effect of their choices).
- Unfortunately, the development efficiency had not improved and the new development tool was far from as good as expected.
- This illustrated that even when applying much resources and time to collect evidence, software professionals may fail in making good decisions. What went wrong in this case?

What went wrong? A real-life example (2)

- The collection and evaluation of evidence had focused on “tool functionality”, following the principle “the more functionality, the better”.
- The demonstrations focused on strengths of the tools, not on weaknesses. Although, the software professionals were aware of this, they probably failed to compensate for what the demonstrations did not demonstrate. (We are not good at identifying lacking information!)
- The reference customers had themselves invested much money in the new tool. As long as they do not plan to replace the tool, then they would however not be reference customers anymore, they will tend to defend their decisions. (Avoidance of cognitive dissonance.)
- Although the amount of information (evidence) was high, they organization lacked the most essential information (independent evaluations of the tools in context similar to their own) and processes for critical evaluation of the information.
- In addition, they lacked the awareness of how they were impacted by the tool vendors persuasion techniques.
- Guidance in the principles of evidence-based software engineering would, we think, improved the decision.

What could have been done better?

- Collection of research studies comparing the tools.
 - At that time, there were no such studies, but possibly studies on related tools.
- Less biased and more systematic use of practice-based experience.
 - They could, e.g., try to find tool customers similar to one's own organization and use more structured and critical experience elicitation processes.
 - They should not let the tool vendor choose reference customers.
- Completion of own empirical studies.
 - Invite the tool vendors to solve problems specified by the department itself at the department's own premises.
 - Many vendors seem to accept this type of "competition", given an important client.
- They should avoid demonstrations, dinners with the tool vendors and other situations known to include more persuasion than valid information (or, at least, they should not let those who were exposed to this type of impact participate in the decision.)

A better process? Evidence-based software engineering (EBSE)

- *Convert a relevant problem or need for information into an answerable question.*
- *Search the literature and practice-based experience for the best available evidence to answer the question.*
- *Critically appraise the evidence for its validity, impact, and applicability.*
- *Integrate the appraised evidence with practical experience and the client's values and circumstances to make decisions about practice.*
- *Evaluate performance in comparison with previous performance and seek ways to improve it.*

Illustration of EBSE: Windows or Linux?

- Context: An organization wants to develop a large IT-system and has to decide whether this should be based on a Windows or Linux-platform.
 - **NB:** This is a field where I do not have much knowledge myself. The context is mainly chosen to illustrate the steps of EBSE.

Step 1 – Formulation of problem

- The total evaluation of Windows vs Linux will typically be based on many problem formulations.
- One important problem formulation (the one we will focus on in this example) may be: **Is “Total Cost of Ownership” (TCO) most likely lower when using Linux or Windows as platform for this type of IT-systems.**
 - Here, a clarification of what we mean by TCO and “this type of IT-systems” should be described.

Step 2 – Collection of knowledge

Examples of search facilities:

- IEEE Xplore (<http://ieeexplore.ieee.org>) provides access to IEEE publications published since 1988.
- The IEEE Computer Society Digital Library (www.computer.org/publications/dlib) provides access to 22 IEEE Computer Society magazines and journals and more than 1,200 conference proceedings.
- The ACM Digital Library (www.acm.org/dl) provides access to ACM publications and related citations.
- The ISI Web of Science (www.isinet.com/products/citation/wos) consists of databases containing information from approximately 8,700 journals in different research areas.
- EBSCOhost Electronic Journals Service (<http://ejournals.ebsco.com>) provides access to over 8,000 e-journals.
- CiteSeer (<http://citeseer.nj.nec.com>), sponsored by the US National Science Foundation and Microsoft Research, indexes PostScript and PDF files of scientific research articles on the Web. Access is free.
- Google Scholar (<http://scholar.google.com>) indexes scholarly literature from all research areas, including abstracts, books, peer-reviewed papers, preprints, technical reports, and theses.

NB: If there are many information sources, focus on those published in journals of high quality and particularly reviews.

Step 2 – Collection of information

- If there are no/little documented experience/knowledge
 - Identify people, organizations and companies with relevant experience and ask them to provide information. This is in my experience easier than it at first sight may seem to be.
 - Emphasize representativeness, relevance and people without too much vested interests.
- DO NOT base the information collection on
 - random searches on the web and reading of the 4-5 first hits
 - reference clients chosen by the vendors
 - studies where there are strong vested interests

Step 2 – Collection of information

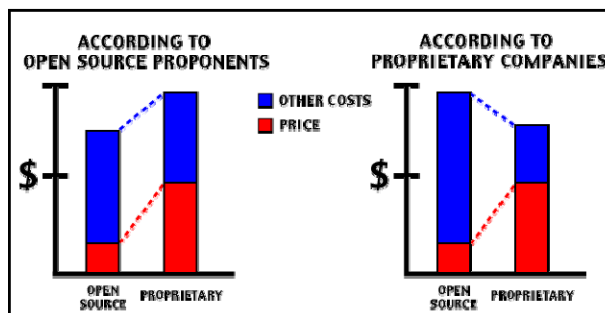
- My search using “Google scholar”:
 - *Windows AND Linux AND “total cost of ownership” [AND review].*
- Many hits. My strategy to filter the hits was in this case:
 - All analyses completed by organizations with strong vested interests were excluded.
 - Only analyses were it was likely that the author had competence in empirical studies were included.

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Step 2 – Collection of information

- Results (my evaluation):
 - The study findings vary very much (in itself a result).
 - Strong effect of “vested interests”. The figure below is borrowed from:
www.netc.org/openoptions/pros_cons/tco.html.



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Step 2 – Collection of information

- Example of why reference clients are not of much use:
 - “Microsoft Norge ønsker å knytte til seg flere referansekunder. Fortell oss hvordan dine forretningsmuligheter har blitt **styrket** ved hjelp av løsninger og produkter fra Microsoft, og vi forteller det videre. Som referansekunde får du ikke bare muligheten til å bli **profilert** som et selskap som tar ny og kostnadseffektiv teknologi i bruk - hvis du er raskt ute med å registrere din løsning kan du også bli med i trekningen av 10 **gavekort**.”
 - <http://www.microsoft.com/norge/news/archive.msp?year=2002>
 - Why is it not likely that reference clients are valid information?

Step 3 – Evaluation of information

Checklist for evaluation of a study:

- Be a skeptic!
- Remember that it is the argument that you are supposed to evaluate, not how much you agree with the claims.
- Start with the identification of the main claims.
- Assess the relevance of the claims for your purpose.
- Before you read the paper, assess whether it is likely that the authors have vested interests in the claims. If yes, how might this affect the results? What is the background and scope of the previous experience of the author? Is it likely that this biases the search for evidence and the conclusion?
- Read the paper with the purpose of identifying evidence that supports the claims. Skip the less relevant parts the first time you read the paper.

Step 3 – Evaluation of information

- Evaluate the relevance and validity of the evidence. Assess whether it is opinion-based, example-based, based on a systematic review of scientific studies, etc. Is the evidence credible?
- Evaluate the connection between the evidence and the claim. Is the claim a possible, likely, or, necessary consequence?
- Check the use of measures and statistical methods. In particular, assess randomness in selection of subjects and allocation of treatment when statistical hypothesis testing is used. If not random, assess the effect of the non-randomness.
- Search for manipulating elements, e.g., text that is not relevant for the argument, or loaded use of terminology used to create sympathy or antipathy. If large parts of the text are not relevant, evaluate the intended function of that part. Be aware of rhetorical elements.
- Assess the degree to which the norms of ethical argument are broken (these norms are part of the course material).
- Assess whether the inclusion of evidence is one-sided or gives a wrong picture.

Step 3 – Evaluation of information

- Assess whether weaknesses of the study are properly discussed. If not discussed at all, why not?
- Try to identify missing evidence or missing counter-arguments. Be aware of your tendency to evaluate only what is present and forget what is not included.
- Be particularly careful with the evaluation of the argumentation if you are sympathetic to the conclusion. Our defense against "theory-loaded evaluation" and "wishful thinking" is poor and must be trained. Put in extra effort to find errors if you feel disposed to accept the conclusion in situations with weak or contradictory evidence.
- Do not dismiss an argument as having no value, if it has shortcomings. There are very few bullet-proof arguments and we frequently have to select between weak and even weaker arguments in software engineering contexts. A weak argument is frequently better than no argument at all.

Step 3 – Evaluation of information

- Would you trust this study?
 - “Benchmark tests showed that SQL Server 2005 running on Windows was the most viable solution. One of the key factors influencing the technical team’s decision to choose Microsoft was the dependability of Microsoft software. The team wanted a solution that performed consistently and provided timely, reliable service.”
 - www.microsoft.com/casestudies/casestudy.aspx?casestudyid=200945

Step 3 – Evaluate information

What do you think about these “facts”?

SAP UNITED STATES SAP.com/usa

THE FACTS SPEAK FOR THEMSELVES, AND SO DO OUR CUSTOMERS.

When you improve ROI, lower TCO, improve efficiency, and deliver true value to the bottom line, not only will the facts and figures tell the story – so will your customers.

HENKEL GROUP

“Our sales haven’t stopped now that looking for transaction data and can derive more from maintaining our relationships with current customers and developing relationships with new customers.”
Robert Rahier, Vice President of Operations
INTERMEC TECHNOLOGIES CORP. | [Download PDF](#)

“SAP improves and accelerates decision making on all levels.”
Michael Rauch, Director of Management Reporting
HENKEL GROUP | [Download PDF](#)

“Users of data-based business processes are impressed by the up-to-the-minute and accurate quality of the information.”
Peter Havella, Project Manager
BMW MOTOREN | [Download PDF](#)

Step 3 – Evaluation of information

- Sometimes weaknesses may be very difficult to identify:
 - Assume that you had read the IDC-report suggesting that Windows had lower Total Cost of Ownership (<http://www.microsoft.com/windows2000/docs/TCO.pdf>) than Linux.
 - The results are convincing and IDC is a serious research organization and used to completion of such studies. Their market reputation would be seriously damaged if they gave the results their clients wanted, and not the “real” ones.
 - Information about how the scenarios were chosen and how the calculations were conducted is limited and difficult to evaluate. How did this influence the evaluation?
 - BusinessWeek reports that the fairness of the evaluation may be poor:
 - *“IDC analyst Dan Kusnetzky says the company selected scenarios that would inevitably be more costly using Linux. Also, he believes Windows should be cheaper to operate, since it has been around longer, giving Microsoft more time to develop software to manage the operating system. “Microsoft has had a lot more time to work on this. I wonder why the win wasn’t bigger,” Kusnetzky says. Microsoft insists that it didn’t rig the contest and chose the most popular uses for the software.”*
 - www.businessweek.com/magazine/content/03_09/b3822610_tc102.htm

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Step 4 – Synthesis of information

- Include only essential information in the synthesis. Less important information has a tendency to remove the focus from the essential and decrease the quality of the conclusion.
- Avoid that the synthesis is a rationalization of what feels right
 - If your “gut feeling” and the analysis diverge, follow the analysis (unless your own satisfaction with the choice is not of great importance)
- The reports I read on Microsoft vs Linux can be summarized as follows:
 - There seem to be no LARGE systematic, well-documented differences in TCO between Linux and Windows. If any, it seems that Windows has had lower TCO – but this may easily change with more users of Linux.
 - There is a striking lack of studies not paid by one of the parties (Windows or Linux-proponents). A few studies seem, however, to have a proper research methods.
 - Conclusion: The uncertainty/variation in results is so high that the organization cannot emphasize these differences in their choice between Linux and Windows (given that valid studies are relevant for the organization's own context). Other criteria should consequently be emphasized.
- **NB:** I did not spend more than 4-5 hours on the collection and evaluation of information. The purpose is mainly to exemplify the process.

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Argumentation Analysis

Warm-Up Exercise 1

- Erasmus Montanus:
 - MONTANUS: *... Morlille, jeg vil gjøre Jer til en sten.*
 - NILLE: *Ja snak, det er end mere konstigt.*
 - MONTANUS: *Nu skal I få det at høre. En sten kan ikke flyve.*
 - NILLE: *Nei, det er visst nok, undtagen når man kaster den.*
 - MONTANUS: *I kan ikke flyve.*
 - NILLE: *Det er og sant.*
 - MONTANUS: *Ergo, er Morlille en sten.*
- (Nille græder)

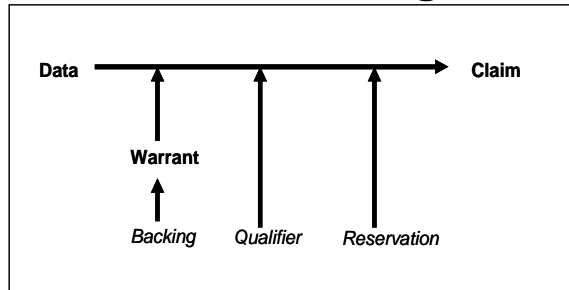
Warm-Up Exercise 2

- Pascal's Wager:
 - Either there is a Christian God or there isn't. If you believe in Him and live a Christian life, then if He exists you will enjoy eternal bliss and if He doesn't exist you will lose very little [in comparison].
 - On the other hand, if you don't believe in Him and don't live a Christian life, then if He doesn't exist you will lose nothing [and not win much in comparison to eternal bliss], but if He does exist you will suffer eternal damnation!
 - So it is rational to believe in God's existence and live Christian life. [even if the likelihood of a God is very small].
- Intuitively most disagree with the argument, but what is wrong, if anything?

Warm-Up Exercise 3

- Aristotle claimed that bodies of different weights in the same medium, travel (in so far as their motion depends on gravity) with speeds that are proportional to their weights.
- Galileo tried to refute this claim by the following reasoning:
 - If we then take two bodies whose natural speeds are different, it is clear that uniting the two, the more rapid one will be partly retarded by the slower, and the slower one will be somewhat hastened by the swifter
 - But if this is true, and if a large stone moves with a speed of, say, eight while a smaller moves with a speed of four, then when they are united, the system will move with a speed less than eight,
 - but the two stones when tied together make a stone larger than that with before moved with a speed of eight. Hence the heavier body moves with less speed than the lighter; and effect which is contrary to your supposition.
 - Thus, you see how from your assumption that the heavier body moves more rapidly than the lighter one, I infer that the heavier moves more slowly.
- We know that Galileo was right (at least in vacuum), but is his reasoning valid? And, more importantly, how do we analyze a complex reasoning?

Toulmin's Model of Argumentation



- The primary elements of an argument, according to Toulmin's model, are in **bold** letters, and the secondary elements in *italic*. Toulmin's model of argumentation can be viewed as a layout of argument.
- More details in Appendix 1 of: [M. Jørgensen](#), B. Kitchenham and [T. Dybå](#). **Teaching Evidence-Based Software Engineering to University Students**, In 11th IEEE International Software Metrics Symposium, Como, Italy, September 19-22. , 2005.

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Toulmin's Model of Argumentation

- Start with the identification of the **claims** or conclusions made by the authors. These are normally found in the conclusion section of the papers or in the abstract, but may be found other places as well. Poor papers may, in fact, have no explicit claims at all. Evaluate the claim, e.g., whether the claim is circular or vague.
- Identify the **qualifiers**, i.e., statements about the strength of the claim, and the **reservations**, i.e., statements about the limitations of the claim. These are important when later evaluating the relevance of the evidence and the connection between evidence and claim. For example, a claim that is qualified with "this weakly indicates a cause-effect relationship" should be evaluated differently from the claim "there is a cause-effect relationship."
- Look for the **data**, i.e., the evidence supporting the claim. In particular, we ask them to evaluate the relevance of the evidence. We frequently find that people are surprised by how little relevant evidence a lengthy software engineering paper contains.

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Toulmin's Model of Argumentation

- Finally, look for the **warrant**, i.e., the supporting connection between the data and the claim. This is frequently the most difficult part of the evaluation of the argumentation, where the critical appraisal ability and analytical skill of the students is most important.
- Evaluate the degree to which the relevant data supports the claim. The warrants may have a **backing**, i.e., an argument that supports a connection of confirmation or deduction between the data and the claim. When it is not obvious that the connection between data and claim is valid (or invalid), search for elements that the authors use to support it (the backing). This may, for example, consist of analytical argumentation or evidence supporting the specific interpretation of data conducted by the authors.

Argumentation types

From "Advocacy and opposition", by Rybacki og Rybacki:

- Argumentation from cause.
 - Suggests a temporal connection between phenomena.
 - When we can document effect, we may reason as to its cause; when we can document cause, we may reason as to its effect.
 - A necessary cause is a factor that must be present to bring about an effect, but will not in and of itself produce the effect.
 - A sufficient cause includes all factors needed to produce a particular effect.
 - Control questions:
 - Is the cause capable of producing the effect?
 - Is the effect produced by the cause or does the effect occur coincidentally to the cause?
 - Are there other potential causes?
 - Has this effect consistently followed from this cause?
 - Example: Smoking increases the likelihood of lung cancer.

Argumentation types

- Argumentation from sign (indicators):
 - Connect phenomena with conditions that merely exist (correlation, prediction).
 - Tells what is the case (description), while a cause explains why it is the case.
 - Signs are observable symptoms, conditions, or marks used to prove that a certain state of affairs exist.
 - Sign reasoning is assessed on the basis of the presence of a sufficient number of signs or the certainty of an individual sign's strength.
 - Example: People who smoke and buy "Se og Hør" are less likely to have higher education.

Argumentation types

- Argumentation from generalization:
 - A form of inductive reasoning in which one looks at the details of examples, specific cases, situations, and occurrences and draws inferences about the entire class they represent.
 - Should be based on a sufficiently large sample of cases.
 - Instances cited in making the generalization should be representative of all members of the group.
 - Negative (non-confirming) instances should sometimes be explained or accounted for.
 - Example: My random sample of projects in of Norwegian sw development companies shows that the average effort overrun (of all Norwegian sw companies) is about 40%.

Argumentation types

- Argument from parallel case:
 - Reason on the basis of two or more similar events or cases; because case A is known to be similar to case B in certain ways, we can appropriately draw inferences from what is known to what is unknown.
 - For the argument from parallel cases to be valid, the cases must not only be similar but their similarities must also pertain to important rather than trivial factors.
 - Example: If you liked the book X, you will probably also like the book Y. They are written by the same author and have the same “style”.

Argumentation types

- Argument from analogy:
 - Similar to “parallel case”, but related to dissimilar cases with some fundamental sameness between characteristics.
 - Considered to be the weakest type of argumentation.
 - Frequently only used rhetorically.
 - Example: Students need more structure. Students are very much like children. We all know that children need other people to structure their lives.

Argumentation types

- Argument from authority:
 - Relies on the credibility and expertise of the source.
 - Only credible within their fields of expertise.
 - Look for biases.
 - If the authority express an opinion at odds with the majority of experts in the field, the arguer should establish the credibility of that view.
 - The opinions should have a basis in facts.
 - Example: My experience [and I'm an expert in the field] is that the main problem with software projects is the lack of customer involvement.

Argumentation types

- Argument from dilemma:
 - Built with two or more arguments from cause that embody undesirable consequences.
 - Example: We need higher taxes to improve the health system. The extra burden we put on tax paying people is less negative than the suffering by those in need of better health services.

How to build a good argumentation

Preparation phase:

- Collect relevant and valid information from many perspectives
- Have a critical distance to the validity of the information
- Try not do make up your mind before all information is collected and analyzed
- Try to avoid irrelevant and misleading information
- Understand your own biases and prejudices.

Argumentation building phase

- Clarify the frames and context of your argumentation (define concepts, perspectives, assumptions, motivation, level of competence, goal of argumentation, ...)
- Include all relevant arguments, not only those in favor of your conclusion. The strength of the conclusion should be based on a balanced evaluation of all relevant arguments, and, known missing information.
- Focus the argumentation on the most relevant and valid evidence.
- Emphasize the logical connection between evidence and conclusion.

Improvement phase

- Critically evaluate your argumentation and improve (play the devil's advocate)

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Argumentation – What should be avoided?

- Hasty generalization
 - Example: The other day I met a group of Danish people. None of them understood what I said. I don't think Danish people are able to understand Norwegian.
- Transfer
 - Example: Bill Clinton lied about Monica Lewinsky. We can never trust what he says. Irrelevant arguments
- Circular reasoning (repeating the claim, so that it looks like an argument)
 - Example: If people exercised enough we would have no obesity. The fact that obesity is a health problem, shows that people do not exercise enough.
- Avoiding the issue
 - Example: We cannot listen to X's arguments related to speed limits. As an adult he was penalized for speeding several times.
- Forcing a dichotomy
 - Example: Should we force the children to go to bed at a time solely decided by their parents, or should we treat them as individual beings with own rights?

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En slags sjekkliste ...

- Hva er hovedpåstandene eller konklusjonen?
- Hvem er det som fremsetter argumentasjonen?
 - Uavhengig vurdering sannsynlig?
 - Egeninteresse?
 - Hva slags erfaringsbakgrunn og perspektiv kan ventes?
- Hvilke argumenter støtter opp under hovedpåstandene eller konklusjonen?
- Hvor god er sammenhengen mellom argumenter og påstand/konklusjon.
- Hvor gode er argumentene?
 - Basert på syensing?
 - Basert på egen erfaring? Og hvor relevant og uavhengig er den?
 - Eksempelbasert? Selektivt valgte eksempler?
 - Relevant og kvalitetsmessig gode undersøkelser gjennomført?

En slags sjekkliste ...

- Brukes språklige og/eller andre virkemidler til usaklig påvirkning?
 - Tekst som ikke deltar i hovedargumentasjonen (det kan være mesteparten) vil ofte ha som funksjon å påvirke følelser og skape sympati med konklusjonen.
 - Ord er "ladet" og kan brukes til å skape sympati eller antipati, uten at det er en del av den rasjonelle argumentasjonen.
 - Sjekk alltid hvor stor del av "argumentasjonen" som er relevant for konklusjonen. Vurder hvilket formål resten av argumentasjonen har.
- Brytes noen av de "etiske normene" (se tidligere slide).
- Er argumentasjonen ensidig eller gir et feilaktig bilde?
- Finnes en tilforlatelig dokumentasjon av svakheter/mangler ved argumentasjonen.
 - Hvis ikke. Er det fordi at argumentasjonen er perfekt, eller fordi det er noe å skjule.
- Er det ting som IKKE er med, som burde vært med.
 - Det er en typisk menneskelig svakhet å kun vurdere det som står, og ikke det som IKKE står beskrevet.
- Hvor relevante er resultatene for DITT FORMÅL

Lesestoff

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