ACADEMIS

Create Better Science

Leadership for Scientists

Supervising and Mentoring

Organizing Teamwork

Leadership by Example

Your Position in the Community

With contributions by

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Quotes on Leadership

A leader is one who knows the way, goes the way, and shows the way.
John C. Maxwell

In looking for people to hire, you look for three qualities: integrity, intelligence, and energy. And if they don't have the first, the other two will kill you.
Warren Buffet

Only when there are things a man will not do is he capable of doing great things.
Mencius

To handle yourself, use your head; to handle others, use your heart.
Eleanor Roosevelt

Don't tell people how to do things, tell them what to do and let them surprise you with their results.
George S. Patton Jr.

Management is doing things right; leadership is doing the right things.
Peter F. Drucker

Example is not the main thing in influencing others. It is the only thing.
Albert Schweitzer

He who cannot be a good follower cannot be a good leader.
Aristotle

Not all readers are leaders, but all leaders are readers.
Harry S. Truman

The only safe ship in a storm is leadership.
Faye Wattleton

Before you are a leader, success is all about growing yourself. When you become a leader, success is all about growing others.
Jack Welch

Courage is what it takes to stand up and speak; courage is also what it takes to sit down and listen.
Winston Churchill

A leader is best when people barely know he exists, when his work is done, his aim fulfilled, they will say: we did it ourselves.
Lao Tzu

People who enjoy meetings should not be in charge of anything.
Thomas Sowell

Respect yourself and others will respect you.
Confucius

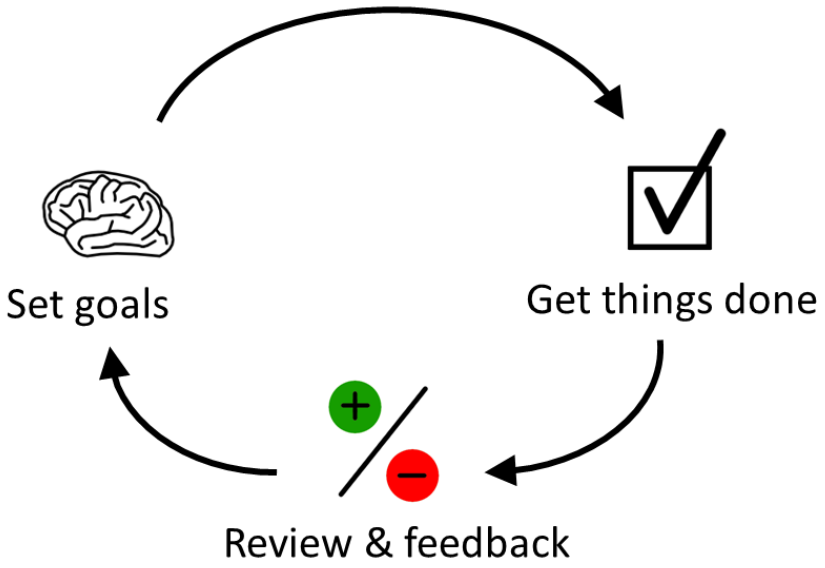
Part I: Mentoring

Leadership and learning are indispensable to each other.
(John F. Kennedy)

When you are supervising undergraduate or graduates students you have a strong role as a mentor. You are a source of information, of advice, and a role model. More generally, as a mentor you are someone supporting someone in a job, project or skill with your experience. Typically your support covers three areas:

1. Identifying and setting goals
2. Getting things done
3. Giving feedback

In a successful mentor-mentee relationship, you move through these stages repeatedly. The time scale for a cycle may vary from hours to years, depending on the actual goals.

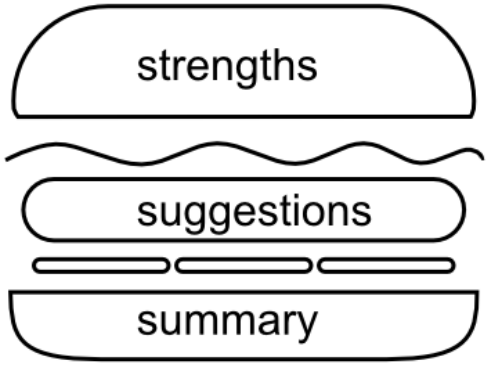


Sandwich Feedback

Whatever your mentee is doing, he will need feedback to figure out what to improve and how. As a mentor, you are a valuable source of feedback. But good feedback also includes a form of criticism. It needs to be delivered in a constructive way so that your mentee will accept your suggestions.

The Sandwich Technique is a tool to make feedback constructive.

To give constructive, start with positive things - include concrete examples of what the mentee did well. Only after that give suggestions for improvement – simply telling the mentee what was bad is insufficient (most probably he already knows), he also needs to know how to do better. Finish with a positive, encouraging summary.



Don't take the Sandwich too serious. When I was new to the Sandwich technique I had to talk to a PhD student about his project. I was eager to try the Sandwich and he knew it. When I stumbled through my remarks a little stiffly "On the positive side.." we both had to laugh. It was a good conversation.

Meeting with Your Mentee

When you meet with your mentee, you might follow this agenda:

1. Ask your mentee what went well.
2. Give examples of what you liked.
3. Ask your mentee what could be improved.
4. Suggest improvements of your own or look for ideas together.

When you are mentoring a person over a longer period, make sure to point out what progress he has achieved. Such support is the best feedback you can give.

SMART Goals

When setting goals with a mentee, a team, or for yourself, you need to make sure that everybody knows what the goal is. The **SMART** definition helps you to establish hard, measurable goals. SMART goals are:

- **Simple**
  A goal is simple if it can be understood by a person not involved.
- **Measurable**
  A goal is measurable if there is an objective criterion that determines whether the goal has been reached.
- **Ambitious**
  A goal is ambitious if you have to leave your comfort zone. What does this goal enable you to do that you couldn't before?
- **Realistic**
  A goal is realistic if all participants sincerely agree that the goal can be reached on time with the given resources.
- **Timed**
  A goal is timed if there is a concrete date or time until when the goal is to be reached.

SMART goals do not totally prevent project participants from cheating themselves, but it should at least give you a better feeling whether things go in the right or wrong direction.

What makes a goal measurable?

Here are some ideas for the M in SMART goals:

publication, patent, physical object, file, thesis, report, poster, table, sequence alignment, lab journal entry, event, presentation, conference talk, meeting with supervisor, approval by supervisor, review by another scientist, declaration, TV interview, proving or disproving a research hypothesis

Writing a Development Plan

For long-term planning (3-12 months) it may help your mentee a lot to write a development plan and discuss it with you. A development plan contains career or personal goals, and concrete steps to reach them.

There are many templates for development plans available, e.g. on http://www.academis.sites.djangoeurope.com/blog/tags/ebooks/ .

When you review a development plan, you will often have to make goals smaller. Having overly ambitious goals does not help if your student stops halfways and loses faith. Adding many small steps is what counts in the end.

Part II: Teamwork

The Mission Statement

While I was finishing my PhD, I got an email from Janusz Bujnicki, one of my referees. He wrote: "Hi Kristian, would you be interested in a postdoc position in Poland". I said: "I don't know. What is the project about?" And Janusz replied: "I want to move into RNA 3D structure prediction". That sounds cool, I thought. And then we moved into RNA 3D structure prediction for the next five years and produced a nice pile of papers on the way.

The point is, whenever I was asking myself: *"Hey what am I doing here?"* there was a clear answer: *"Kristian, you are moving into RNA 3D structure prediction."*

Understand the vision of your supervisor

For a postdoc, it is crucial to understand the vision of your supervisor. What is your laboratory or department trying to achieve? Is it making life better for someone? Is it optimizing a technology, or is it boldly going where no one has gone before?

As a postdoc you are one of the most experienced persons in the lab, and a role model. If you and your supervisor are moving into the same direction, everybody else will have a much easier time following. This is why understanding the vision is so important. Once you understand the vision of your supervisor, it is much easier to do the right experiments, write the right papers, get the right grants, and give students the right instructions.

Formulating a Mission Statement

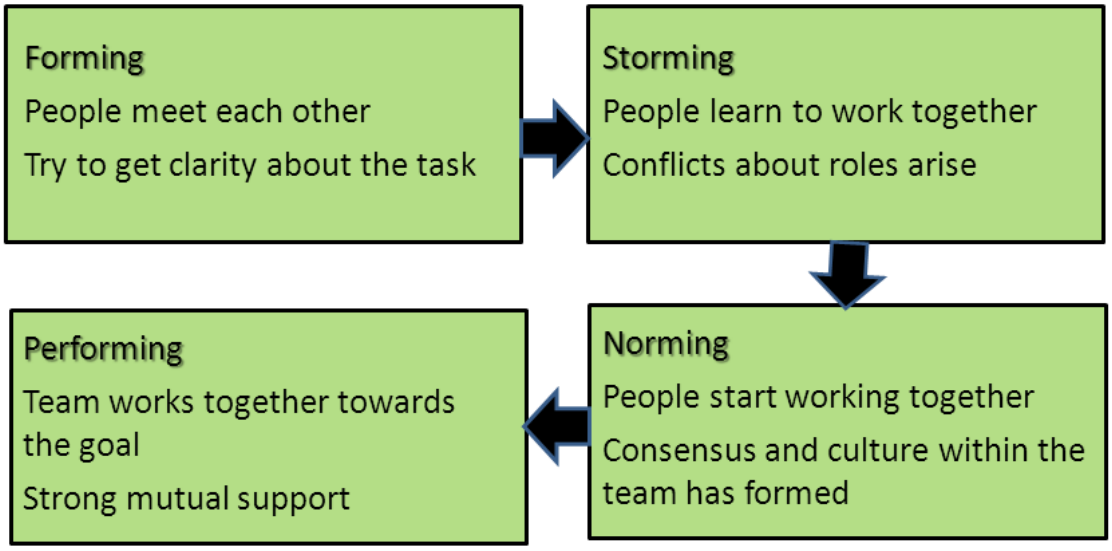
That vision can be put into a single sentence: The **Mission Statement**. John F. Kennedy made his mission statement *"Let's put a man on the moon."* A good mission statement can be less than 10 words. The bioinformatician Björn Peters made his mission statement: *"The key challenge in bioinformatics today is not the development of new algorithms, but truly understanding the available data."*

In some companies, you find the mission statement on the wall. But more often, you have to look for the vision between the lines. Read the most recent grant application and the lab homepage. What does it tell about where the group is heading?

Finding the mission statement means work. It may mean discussions with your boss. But the time invested is saved tenfold later.

What is your mission statement?

Phases in Team Development



Adapted from Tuckman 1965

Team Roles

Adapted from Meredith Belbin 1981

Using a Task Board

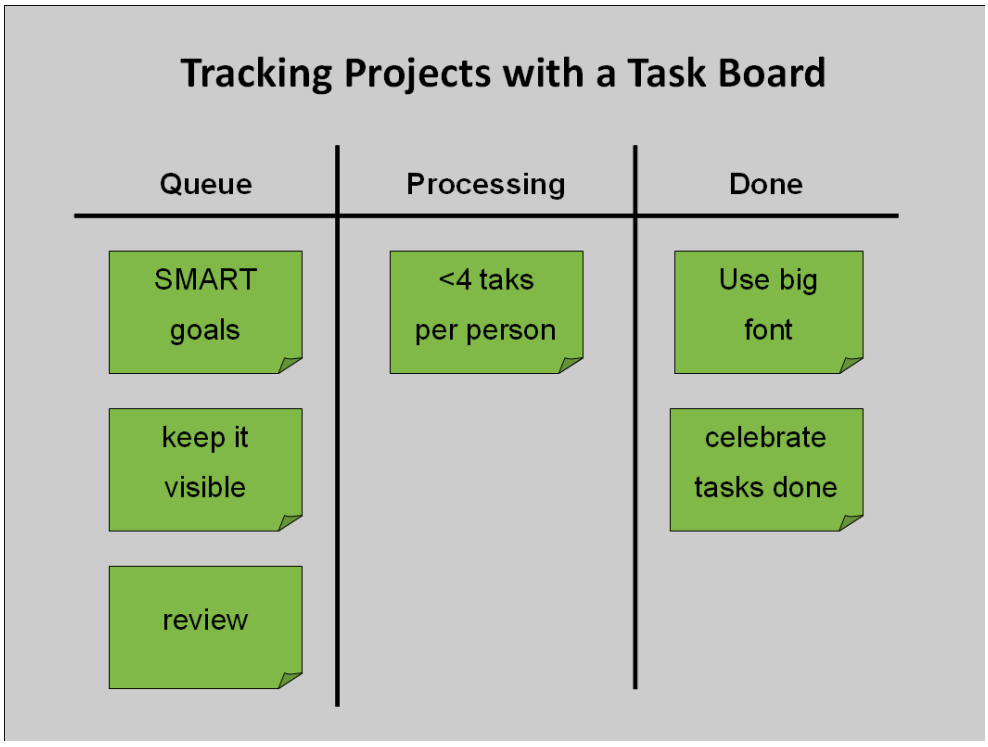
A task board helps a team to keep track of progress in a project. You basically write tasks on paper cards and attach or pin them to a board. The board is divided in three sections: **'Todo', 'Work in progress'** and '**Done**'. All tasks start in the 'Todo' section and move as the project progresses.

It may be tempting to use whatever electronic tool for the board, but **don't**! The main function of the board is to constantly remind you and your team of what you are working on.

The board is a great tool to **detect inefficiencies**. So if you start using a board you may recognize that your tasks don't move or move very slowly. This is normal, and the board helps you to take measures to improve your work efficiency.

It helps to **keep tasks anonymous**, i.e. not assigned to a particular person. This encourages people to help each other and protects them from blame when something they worked on doesn't progress as expected.

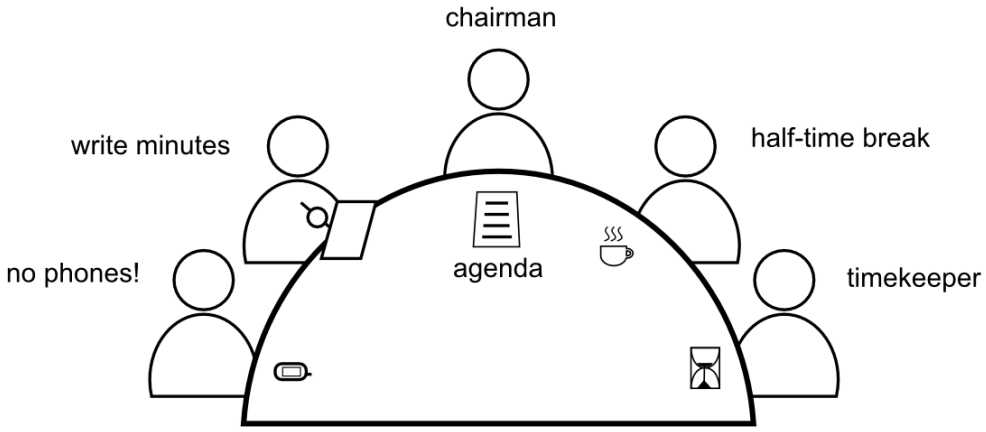
If you want to speed up improvement, you can **limit the number of tasks** in the work-in-progress column. This is done in **Kanban**, a method used in manufacturing and software development. The limit helps to focus on the tasks at hand, especially when there is a lot of pressure by deadlines etc.



Productive Meetings

Meetings are frequently quoted as the biggest time sink in professional life. Probably you have already been to meetings that drag on and finish without a tangible outcome. Would you prefer to attend a meeting perceived as a success, not a waste, by all people involved? During the monthly board meetings at my speaking club (www.spreeredner.de), we are following a very strict procedure that has worked well for the past two years, involving two different presidents and 4-8 board members.

The bottom line is that successful meetings require preparation. Fortunately, the effort invested pays off immediately in the form of time-per-person saved or things achieved.



The goal

Why exactly are you having the meeting? For instance, *"To discuss <your topic>"* is not a goal, it is a process! Richard Templar defines **four purposes** meetings can have [1]: share information, collect information, make decisions, and forge a team. Setting a clear purpose and goal involves talking to other participants in advance. This not only saves time but may occasionally make the entire meeting unnecessary. In brief, a good meeting is if you get it done, and get out.

The chairman

The role of the chairwoman or -man is to set a goal for the meeting, prepare the agenda, and run the meeting. During the meeting, the chairman opens and adjourns the meeting and makes sure the agenda is implemented. Depending on the chairman's role in the team, the chairman can act as a facilitator focusing on running the meeting well, or as a leader that gives clear guidelines and influences decisions strongly.

To create a constructive atmosphere, you can ask all participants for a brief statement at the beginning. As a rule of thumb, let everybody speak once before anyone speaks twice.

The agenda

The agenda sets the start and end time and what is to happen in between. When writing an agenda, think about what you want to achieve with each point. What will be the outcome (a report, a decision, ideas etc.)? Often it makes sense to write the goals for each point into the agenda directly, so that everyone can see it. That way, agreement on the goal is more likely. Finally, each point on the agenda should have time allocated. Don't be afraid to put a point of 3 minutes in your agenda if that is all the time it takes.

The minutes

The meeting minutes are the written result of a meeting. If decisions have been made or ideas have been collected, a single document is a good place to keep them. Not only do the minutes help to follow up and review the meeting later (e.g. actions decided), they also help to uncover misunderstanding among the attendants.

Keeping minutes requires a dedicated person other than the chairman. Minutes do not have to be long. It can be a single page listing: When did the meeting take place? Who was there? What ideas have been found? What decisions have been made?

The timekeeper

Time in meetings gets out of control far too easily. The timekeeper solves that problem by keeping an eye on the clock. If a delay occurs he can gently reminds the chairman or a speaker. If the problem persists, you can use a signalling device (we found flags or red/yellow/green lights and a mobile app working equally well). For reasons unknown, if you set the start of the meeting to an odd time (e.g. 10:05), people tend to be on time.

Half-time break

In a 90'-meeting a break of 10' in the middle helps participants to maintain their focus. The interruption allows you to take breath and carry on to the end.

No phones!

Turn them off!

Summary

These tools help to facilitate meetings from 10 minutes to two hours. When you are planning a longer meeting, extra planning may be required to make the event cohesive and to avoid tiring out the attendants, e.g. using the 7P framework (www.gogamestorm.com/?p=263). For special situations like problem-solving sessions and conflicts more preparation is required as well. Gamestorming [2] provides a plethora of methods you can experiment with.

[1] Richard Templar. The Rules of Management: A Definitive Code for Managerial Success

[2] Dave Gray, Sunni Brown, James Macanufo. Gamestorming: A playbook for innovators, rule-breakers and changemakers.

Short Meetings

Kickoff meeting

Make a good start for a project with a kickoff meeting. Organize a meeting where the participants learn to know each other. The purpose of a kickoff meeting is to let everybody know that the project has started, and to communicate the project goal clearly. Make it short. Announcing a goal may take no more than 10, 5, or 2 minutes. Leave time for questions afterwards and the team to warm up.

Coffee & Cookies

Addressing everyday problems works best in an informal atmosphere. You can create room to discuss issues with junior colleagues. For instance, a regular round of cookies gives people a small incentive to join. You don't to moderate anything. Over time, the relevant issues will come on top by themselves.

Lightning Talk Session

Lab seminars and journal clubs are daunting for many. If you want to try something different, organize a lightning talk session. A lightning talk is presenting a piece of work (a paper or your own project in five minutes). This way, you can have 5-6 presentations in an hour and still time for questions.

Retrospective Meeting

Evaluate a period of work, a milestone, or a single task in detail. Bring together all participants on a round table to evaluate what was good and what could be improved. The purpose of a retrospective meeting is not to assign blame or criticize anyone, but to create actions that improve things. Prepare a room where you are not disturbed, best with a whiteboard or flipchart. Retrospectives are the backbone of continuous improvement practices such as **Kaizen** or **Scrum** (www.scrum.org).

Expressing concerns is more difficult when a formal authority is present (e.g. you as a direct superior). If you are the boss, speak as little as possible, or delegate the moderation altogether and get out.

Celebrate

When you finish a project successfully, it is time to meet once again. First, to let all persons involved know the project is finished. Second, to celebrate the shared success. Celebrating when there is a good reason reinforces team spirit.

Pre-Mortem

When planning a long-term project, it is worth thinking about the risks in advance. In the Pre-Mortem you have a discussion around the following question:

Imagine our project failed spectacularly. How did that happen?

Make sure you have things to draw/write/record ideas and suggested fixes.

Spending half an hour on identifying risks and how to prevent them from the start may help you prevent anything from a rejected conference submission to a nuclear disaster.

Part III: The Personality of a Leader

Being a Leader

A Leader likes both people and him/herself.

A leader is integral as a person - words and actions correspond to each other.

A leader is reliable, in particular regarding dates, timing and responsibilities.

A leader is solving problems, obstacles and removes limitations.

A leader creates an atmosphere of safety for those lead.

Who do you want to be?

Are you thinking “How to achieve that?” instead of “How to pay the bills”?

This is the path of the leader.

(based on "Byc liderem" by Monika Kasprzyk which in turn is based on the books by John C. Maxwell)

Five Levels of Leadership

1. **Formal authority**
   Leadership by position: People execute your tasks because they feel obliged to do so.

2. **Agreement**
   Leadership by consent: People follow you because they want follow someone.

3. **Productivity**
   Leadership by results: People follow you because of what you achieved for the organization.

4. **Shaping**
   Leadership by example: People follow you because of what you achieved for them.

5. **Personality**
   Respect: People follow you because of who you are and what you represent.

10 Principles of Kaizen

1. Assume the status quo can be improved.
2. If something is wrong, correct it.
3. Accept no excuses and make things happen.
4. Improve everything continuously.
5. Abolish old, traditional concepts.
6. Be economical. Make small improvements.
7. Empower everyone to take part in problem solving.
8. Before making decisions, get to the root cause.
   (also see: the 5-Why technique; http://www.gogamestorm.com/?s=five+why)
9. Get information and opinions from multiple people.
10. Never stop trying to improve.

Establish a Low Threshold

Lower your expectations. If you expect perfect, excellent work all the time, you deny your team the chance to be brilliant. If the best thing they can do is to fulfill your expectations, they will feel failing most of the time. Instead, expect work that is simply ‘good enough’. Give your team room to reach for the sky, because that is the room they need to grow.

Stop-the line Culture

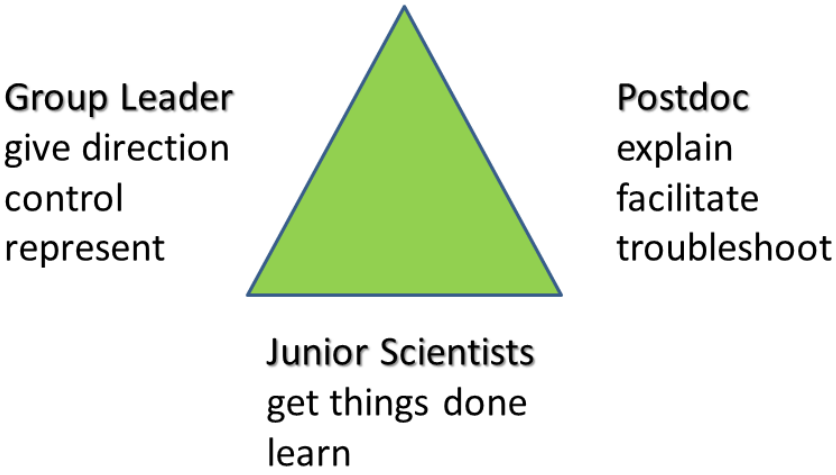
At Toyota car factories, every worker has the power to stop the assembly line. Each team member is responsible for timing and quality. When a manager presses a product out too quickly, quality gets lost. The person doing the job knows best what time it takes. The managers’ job is to educate the workers how to recognize quality.

The Early Victory Strategy

When you work with a new team, pick a small target first. Find a goal that can be achieved easily and quickly. You will learn to know the team better, they learn to cooperate, and the team will grow confidence in itself, that will be needed later when striving for a bigger goal.

Elastic Leadership

Leadership Roles in Science



Part IV: Promoting Your Science

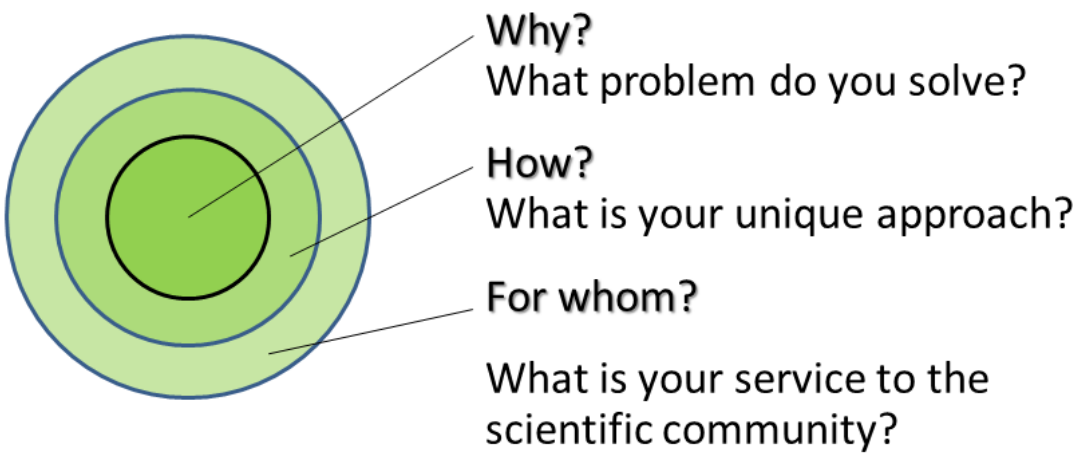
The Elevator Pitch

"What are you doing?" is a question you will hear often on networking events.

The answer to that could be the **elevator pitch**, a 30-60 second micro-presentation. The elevator pitch is your oral business card. An elevator pitch is a starting point for a conversation with strangers. A good pitch is both **short and interesting**.

How would you describe your research in a minute?

The three questions in the diagram may help you prepare a pitch:



A good pitch needs preparation. Use your answers to develop a text for a short pitch, then rehearse. Writing and rehearsing that pitch is a good exercise that you might repeat from time to time.

As **Jack Vincent** [1] puts it: *"Preparation may not get you compliments, but it gets you results"*.

A poster session is the perfect pitch ground. Introduction rounds are also great for pitching.

However, at the coffee table the elevator pitch may be too artificial. After all, its purpose is simply to start a conversation.

Also see [2] and [3].

[1] Jack Vincent. Sales Pitches that Snap, Crackle and Pop.

[2] http://www.kosmosonline.org/2012/07/19/so-what-do-you-work-on-the-academic-elevator-pitch/

[3] http://protoscholar.com/2007/10/30/the-academic-elevator-pitch/

Conversation Starters

Many people find talking to strangers at a networking event, e.g. a conference, challenging. Especially if you are conversing in a foreign language, finding the first words may be difficult.

You can try to start a conversation with a question.

- How did you come to be a scientist?
- What is your laboratory really good at?
- What does successful research mean to you?
- What are the most important qualities you look for in a scientist?
- What skill or talent would you like to have in your group?
- What was your most disastrous experiment?
- What would you recommend to someone having a bad day in the lab?
- What event or activity are you looking forward to in the next few months?
- Do you have a scientific role model that inspires you?
- Is there a piece of advice you would like to share with young scientists?

Nine Grounds

Chapter Eleven from Sun Tzu "The Art of War"

The principles of warfare are: There are dispersive ground, marginal ground, contentious ground, open ground, intersecting ground, critical ground, difficult ground, surrounded ground, and deadly ground.

Where the rulers do battle in their own ground, this is called dispersive ground.

Where one enters the other's ground but not deep, this is called marginal ground.

Where it is advantageous if you occupy it and it is advantageous if the enemy occupies it, this is called contentious ground.

Where one can come and go, this is called open ground.

Where ground is surrounded by others, and the first one to reach it will gain the support of the masses, this is called intersecting ground.

Where one enters deep into enemy ground, with many walled cities and towns to his back, this is called critical ground.

Where there are mountains and forests, defiles and ravines, swamps and wetlands, and places difficult to pass, this is called difficult ground.

Where the entrance is narrow, the exit circuitous, allowing the enemy to attack his few to our many, this is called surrounded ground.

Where if one who does battle with full force survives, and one who does not do battle with full force perishes, this is called deadly ground.

Therefore, on dispersive ground, do not do battle.

On marginal ground, do not stop.

On contentious ground, do not attack.

On open ground, do not become separated.

On intersecting ground, form alliances.

On critical ground, plunder.

On difficult ground, press on.

On surrounded ground, be prepared.

On deadly ground, do battle.

(taken from www.sonshi.com)

Acknowledgements

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