

SECOND — COMPLETELY REVISED — EDITION

# ORGANIZING CREATIVITY

How to generate, capture, and collect ideas to realize creative projects.



Daniel Wessel

*with an introduction by Tanja Gabriele Baudson*

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I would like to thank ...

- ... the muses who inspired me to write this book,
- ... Keith Blount and his team for the "Scrivener" writing software,
- ... the programmers of Circus Ponies Notebook, DokuWiki, and DEVONthink,
- ... the organizers of the MinD-Akademie 2007 and 2011,
- ... the participants of my explorative survey about the organization of individual creativity,
- ... all critics who gave me feedback to improve this work,
- ... Tanja Gabriele Baudson for the interesting stimulations,
- ... Eva Maria Reussner for her valuable feedback and for agreeing to be the hand model on the cover of this book,
- ... the readers and commentators of my blog at [www.organizingcreativity.com](http://www.organizingcreativity.com)
- ... Steven Drennon from [writers.stackexchange.com](http://writers.stackexchange.com), who recommended the Trademark disclaimer,
- ... Steve Jobs, he achieved a lot and made even more possible, may he rest however he desires,
- ... Tanja Gabriele Baudson for writing the introduction to this book, and
- ... Dylan Damian for proof-reading this book.

*Thank you.*

V 2.21

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*For my muse*

*(Thank you :-))*

## DISCLAIMER

I will not and cannot take responsibility, legal or otherwise, of what will happen if you use the information and recommendations in this book.

The ways to organize creativity described in this book work for some people, but you have to try out what works for you.

There is **absolutely no warranty** regarding the advice issued in this book.

## ACKNOWLEDGMENTS

The main part of this book is based on own experiences, conversations with other scientists or artists, and a survey I did about organizing creativity. Theoretical aspects are mostly based on the works of Mihaly Csikszentmihalyi, Mark A. Runco, and my own thoughts and observations.

## GIVE SOMETHING BACK

The first edition of this book took me over *a year and a half* of my life to write, the second edition took another ~~half~~ year and a half.

*Time I will never get back.*

Given the amount of my life I have invested in this book, I want to know whether it was successful. For me, "successful" means that other people read it *and* take something useful from it.

I have made this book available as PDF on my blog at [www.organizingcreativity.com](http://www.organizingcreativity.com) (note that it is still copyrighted!). I see that people read it (or at least *can* read it) by the download statistics and the comments/eMails I receive ([danwessel@organizingcreativity.com](mailto:danwessel@organizingcreativity.com)).

**But this book is not "free" — although the pricing differs from the typical book.** You can read it without paying anything *upfront*.

If you think that it is not useful for you, I respect that. But if you have taken something useful from it, I like to get paid for my work. Money is the most direct and honest feedback you can give — it shows beyond a doubt that what I have done is *useful*.

Thus, you can read the PDF from my website for as long as you want, but if you think you have taken something useful from it, that it helped you, then consider what this help was worth and give me feedback by granting me some money. You can do this easily on my website at:

<http://www.organizingcreativity.com/feedback>

And now, let's see *whether* you find something useful in this book. 😊

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# Preface

**The Golden Age of Creativity**

**Executive Summary**

**Introduction by Tanja Gabriele Baudson**

**Introduction by the Author**

## THE GOLDEN AGE OF CREATIVITY

Today we have more opportunities to be creative than ever. Although our world is “fast-paced”, we have an unprecedented amount of spare time. The Internet not only gives us access to knowledge, affordable materials and tools, it also provides us with new and widely available distribution channels. Everybody now has the *potential* to be creative, be it in art, science, engineering (including DIY), commercial or private projects.

Yet, only few people actually *are* creative. The reason is simple: **Real creativity is hard — and always will be. If it was easy, it would not be praiseworthy.**

Many people think that creativity is the easy way, the brilliant solution, the divine inspiration, the shortcut that avoids druggy work. It can be, but in almost all cases it needs knowledge and skills, motivation and determination, time and effort to succeed. And it needs something else that is often falsely seen as an anathema to creativity: *organization*.

Creative project are complex — creativity is more than just one idea, and realizing a creative project is often more difficult than even the most creative person can imagine. And to deal with this work and realize creative projects you need organization.

Given that requirements, areas of creativity, personal preferences, and all other aspects of creativity differ, **there is no simple one-size-fits-all solution for organizing creativity.** Each person will need to find her own solution. **This book aims to provide you with options how you can organize your creativity.**

It is not a nice, feel-good/inspired kind of book. It is a practical book that deals with a complex and important issue.

What you do with it depends solely on you — it is your creativity.

# EXECUTIVE SUMMARY

In this book I describe a general principle to organize creativity — create the infrastructure necessary to generate, capture, and collect ideas, and to realize and archive creative projects.

There is no way to be creative without investing the time and hard work needed to *learn* a domain. If you are looking for a silver bullet, I am sorry, this book will not help you. You will need to manage your time and your tasks when you want to be creative.

When the knowledge is at least partly available, ideas will come in the right circumstances – circumstances which you can create (esp. regarding time for incubation and your work space) – and yes, there are so-called “creativity techniques” to *generate* ideas.

But having ideas is not enough. *A creative project is more than one idea.* It usually consists of multiple ideas, and new problems will have to be solved while developing an idea. Thus you cannot remember all ideas, nor have them instantly available when you need them. Consequently, you need to *capture* them immediately, as ideas are fleeting and often come at inopportune moments. There are multiple ways to easily capture ideas, choose the one that best fits you in the current situation.

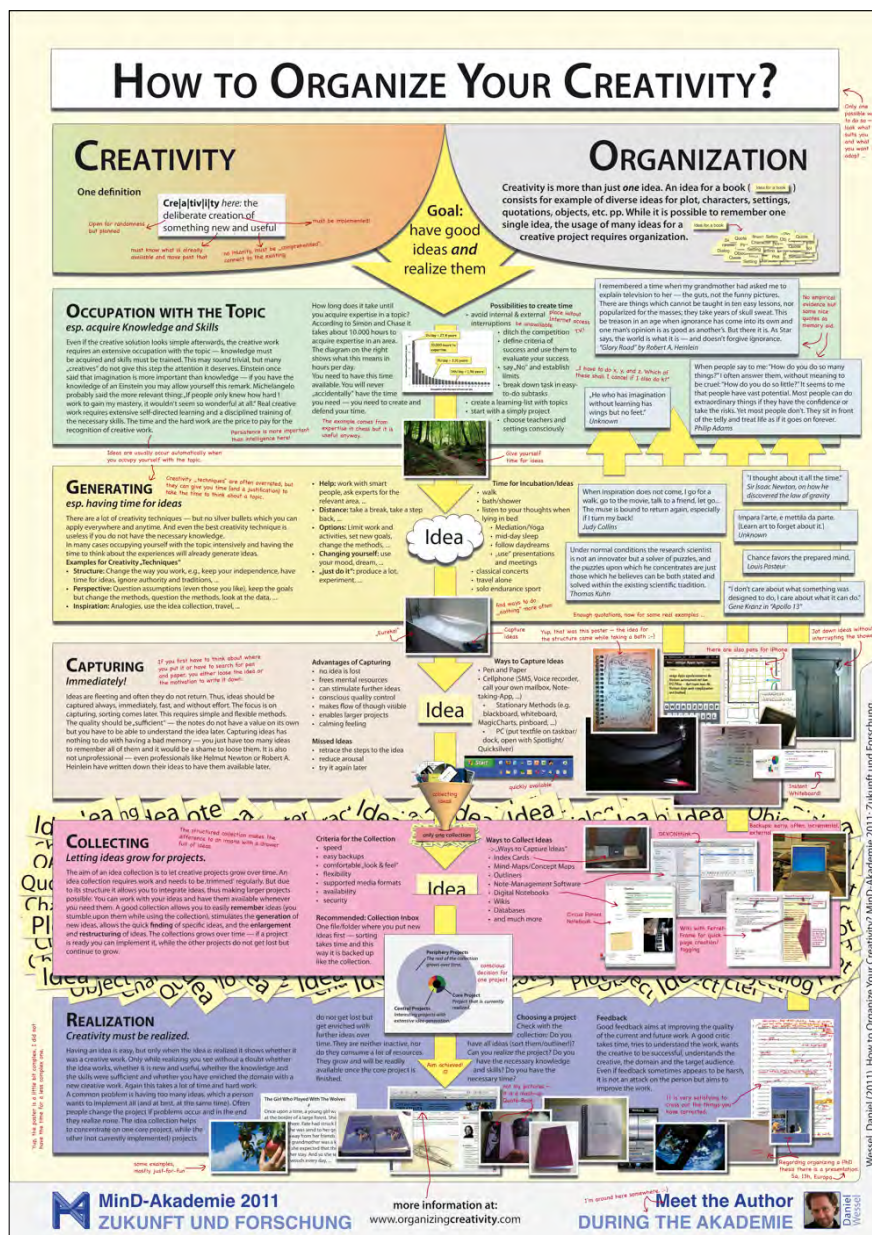
But capturing ideas is also not enough. You need to *collect* them — actively building an ordered collection of your ideas, give it structure. It's best to use a collection inbox. Collecting ideas will help your ideas to grow, to develop, you should prioritize projects to foster the development of projects you find important.

Over time, you have enough ideas and information to realize a project. You can then select a suitable project for *realization* and implement it. As you have all the information available, it makes realizing a creative project a matter of craft — requiring knowledge and skills — and not a series of problems, for which you need “new” creative ideas that may or may not come when you need them. You can then distribute it, trying to convey your idea and get feedback on it.

After completing the project, you can *archive* it to be able to revisit the project later.

While creative people have done variants of this process for centuries, to my knowledge, actively improving the infrastructure to help oneself to organize creativity with the goal to realize creative projects is rare.

In short, this book shows ways to improve your organization of creativity to increase the chances that you have good ideas and can realize creative projects.



The whole process described in this book was also presented as a poster on a student conference. The poster itself was too large to be displayed here in a readable format. However, you find the poster at:

<http://www.organizingcreativity.com/book-as-pdf/poster>



## INTRODUCTION BY TANJA GABRIELE BAUDSON

This book is unique. All too often, creativity and organization are conceived of as mutually exclusive concepts. The present book, putting them side by side in the title already, shows that this is not necessarily true.

Most probably, the key to integrating these seemingly contradictory concepts lies in the necessity to differentiate between the stages of the creative process. When people are asked what they consider to be the key aspects of creativity, most of them would mention something like “having many ideas” or “being original” (in other terms, having unusual ideas). Indeed, these are key aspect of divergent thinking, an aspect of creativity which is commonly used when creativity is to be measured in one way or another—in particular, in psychological studies.

Having ideas is but one side of the coin, though. Everyone is creative; everyone knows what it is like to have ideas. People let their mind wander and come up with funny or unusual associations—and a new idea is born. Every day, people are faced with problems that cannot be solved in routine ways and thus require novel approaches. However, most of these numerous ideas get lost. This is where “Organizing Creativity” comes in. Put most briefly, the book teaches us two things: first, to value our ideas; and second, to optimize the creative process at every single one of its stages.

Most of the time, being creative is not a straightforward issue. The greater the project, the more it requires the ability to deal with complexity; and “Organizing Creativity” helps its readers achieve precisely this, by breaking down the creative process into manageable steps. As a trained psychologist, Dan has the scientific background to explain the psychological phenomena underlying creativity and knows what he is talking about; as one of the most creative (and most organized!) persons I know, he knows how to successfully put this knowledge into practice. In particular, he shows one thing: being a creative person not only in terms of generating numerous ideas, but also in terms of finishing actual projects is feasible, and feasible for everyone.

To achieve this goal, it is necessary to assume responsibility for one’s success, though. Keeping track of one’s ideas and projects (and usually, there is more than one!) is similar to herding cats—it is not easy to keep them together and make them do whatever one wants them to. Here, “Organizing Creativity” offers practical help as well in terms of prioritizing one’s projects, managing one’s time, and monitoring one’s steps towards success.

Regarding its practical applicability, it is probably hard to find a more hands-on book to deal with the complexities and pitfalls of the creative process. The numerous tables provide quick and useful overviews about specific aspects of its organization. But what makes this book a great companion to be read over and over again is the vast amount of resources it provides. To my knowledge, “Organizing Creativity” is the first book to present so many practical and helpful ideas in so much detail. The author speaks from experience; obviously, he has



## INTRODUCTION BY TANJA GABRIELE BAUDSON

tried out quite many of them until he found the way to organize his creativity that worked best for him. And this is an opportunity the book provides, too: it invites its readers to try out the great number of techniques, tools, and suggestions presented here; to get to know what one needs to be creative; and, finally, to choose whatever suits these needs best. Creativity works in a highly individual way; and “Organizing Creativity”, by providing, describing, and discussing an extensive selection of diverse resources and possibilities in great detail (and with a great sense of humor!), offers ways to account for this individuality. By describing what works best for him, Dan also sets an example of how the issue of individualizing one’s creative process can be addressed.

For me, the first edition of this book already was a great source of inspiration. When I visited Dan at his workplace, I was flabbergasted by how he had analyzed and adapted his work environment in a way that worked best for him and supported the realization of his projects in the best possible way. For myself, after trying out quite some of the interesting tools and techniques presented in “Organizing Creativity”, I have found ways that suit my individual creative process best. Again: It is feasible—and it is a great deal of fun.

In this sense, I wish all readers an enjoyable and interesting discovery of their own creativity. “The wish to do something is a presentiment of one’s abilities,” as Goethe put it; and these abilities become manifest once one has put a creative idea into practice. May “Organizing Creativity” thus help realize many of the creative projects that are yet hidden in drawers, attics, or not even conceived of.

*Tanja Gabriele Baudson*

Trier, March 25th, 2012

## INTRODUCTION BY THE AUTHOR

There are many books on creativity — ranging from research books to touchy-feel self-help stuff. Why write yet another book about creativity?

This book has a specific focus, and a way it addresses this focus. It deals specifically with *organizing* creativity. It describes the organization of creativity as a process, turning being creative — deliberately creating something that is new and useful — more into a craft<sup>1</sup> than into an act of inspiration<sup>2</sup>.

Personally, I think this is a good idea, for all kinds of creative people.

If we imagine a continuum of creative people, at the one end are those who just “happen” to be creative. They see, hear, feel, experience something and express it in a work of art, either immediately or later. For example, many photographers, poets, painters, dancers, or certain musicians. For them<sup>3</sup>, organization might appear like a gray-dull curtain, standing in the way they deal with their creativity, or chains, unnecessarily constraining them. However, the kind of organization addressed in this book deals with aspect that allow these creative individuals to have more opportunities to have these “creative moments” — and to make more out of them. They will be less at the mercy of their sudden insights and can use more of the insights they had. While there is the risk of a caterpillar effect — thinking about how you do something can interfere with doing it — the risk should be minimal. If you do not fret over it, you should forget it over time — it goes into the back of your head. You can focus on improving the infrastructure, establishing a workflow, so that no ideas get lost, and enjoy the creative moments that come. You can prepare — and then let it happen.

At the other end of the continuum are creative people who go by making notes, building structure, careful planning, analysis, aggregation, and synthesis, who build up their works over time. For example, many writers, architects, programmers, and almost all scientists. They<sup>4</sup> might already have a structure, but I doubt that many have carefully reflected upon it. Of course, there is also a risk here, the risk that organization takes up too much time. Organization is easier than creativity and it might be nice to spend time on organizing, yet creating nothing. You see a similar effect in productivity in general, it is much easier to spend time on organizing the tasks than to actually do them.

Of course, we can also look at the degree of professionalism on this continuum. And also on this dimension it does not matter where the creative person is. Professionals or amateurs, it does not matter.

Professionals need to be very good at what they do — if they want to get paid

<sup>1</sup> The idea of seeing something that is normally regarded as inspiration but is in fact a craft goes back to Alley’s great book: “The Craft of Scientific Writing”, see page 377.

<sup>2</sup> My muse may forgive me, and I think she will — that urge for efficiency, for improving things was present since I can think, so I guess she likes it too.

<sup>3</sup> You could call them sorcerers, tapping into magical powers by feeling the magic in their blood.

<sup>4</sup> You could call them wizards, doing magic by studying spells.

## INTRODUCTION BY THE AUTHOR

for their work. Naturally, they should have an interest in improving their work. And I hope that professionals find something useful in this book.

But what about amateurs, they do not compete, do they? While we now live in an age when amateurs can do amazing works, what can be called "amazing" has also changed. The internet provides us not only with information and material to do our creative work, it also gives us a basis of comparison. It does not matter where in the world you are, or how obscure your creative hobby is, you can easily connect and compare yourself with others online. In a way, there are no little ponds anymore, in which a small fish can appear big. The ponds are all connected to the ocean now, and in this ocean are some magnificent fish. It is one reason why I strongly plead for setting an explicit focus and investing the necessary time and effort to become proficient in what you do — or as someone once said: "An amateur practices until he gets it right. A professional practices until he never gets it wrong." This book can help you with this.

Like written on the back cover, I think that creativity, deliberately creating something that is new and useful, is more than just one idea. To realize a creative project, you need countless other ideas. An idea for a plot needs ideas for characters, settings, and dialogues, an idea for a study needs ideas for dependent variables, instructions, and materials. And even private projects need to be fleshed out. This makes creative work complex and this requires organization to succeed.

Consequently, I want to offer something more than trite "creativity techniques". Many books about creativity start and end with creativity techniques that can be used for generating ideas. Few, if any, address the whole process from acquiring knowledge and honing skills to the successful realization of a project. This book offers such an overarching perspective without losing the details. It looks at ways to organize creativity by mastering the topic, generating ideas, capturing and collecting them, and when the project is ripe realizing the creative project and archiving it. Given that tools are needed, but often not specific to a phase, I have put them into a separate section. It keeps the chapters on the process short. This is also the reason for a separate chapter on general tips.

Given that I am personally interested in writing, scientific work (did my doctoral dissertation in psychology), and photography, the focus is more on these areas than — let's say painting, engineering, or the performing arts. However, the process is general enough to be applied to these and other domains as well.

Regarding the sources, I wrote an acknowledgement on page 6, however, I am not sure whether I have stated all my sources. This is a bad excuse for plagiarism, but I constantly monitor my work behavior and that of others (drives them mad, I know), and essentially wrung out my brain for this book. And I certainly did not write it as scientific work, nor should it be treated as such. Also, looking back at the first book and the blog entries I have written, and what I have read afterwards, there are many cases of parallel creativity when it comes to

## INTRODUCTION BY THE AUTHOR

productivity or organization — or creativity.

And with this book, I want to support the realization of creative projects. Creative projects can make the world a better place, but many good ideas often fail due to lack of organization — ideas remain ideas only. However, if we want to continue living on this planet, we need to realize good ideas.

And I hope that this book will fulfill this purpose.

And I hope that it is useful for you.

*Daniel Wessel*

Tübingen, March 25th, 2012

## DIFFERENCE BETWEEN THE FIRST AND THE SECOND EDITION

When I wrote the first edition of "Organizing Creativity", I wanted to write down everything I knew about it — and I did.

Unfortunately, it showed. The book contained too much content at the wrong place. This second edition is strongly revised: Tools are in a separate chapter and issues that are not directly relevant to the process of organizing creativity have a chapter of their own (General Tips). This greatly reduced the amount of information in the core part — the process of mastering the topic, generating, capturing, and collecting ideas, and realizing and archiving creative projects is now much easier to read. At the same time, the information is still available in separate chapters.

So, the second edition was restructured to improve readability — it is more concise and more practical. It is also updated with what I learned about it in the meantime (mostly based on my blog entries at [www.organizingcreativity.com](http://www.organizingcreativity.com) — writing is a great way to learn about something).

Thus, edition 1 is more like "The Lord of the Rings" — much information, but a little long-winded. Edition 2 is more like "The Hobbit" — small, quick, entertaining — and additionally (I think) very pragmatic and useful.

# Creativity

What is Creativity?

How is Creativity Determined?

Advantages & Disadvantages of Creativity

Responsibility

The Idea Process

## WHAT IS CREATIVITY?

Creativity means *deliberately creating* something that is *new* and *useful*. As the following table shows, if one of these elements is missing, it is not a creative work.

Creativity must be ...	
<b>deliberate</b>	<b>for without it, it is random/an accident</b> A monkey with a typewriter cannot claim ownership, someone else would have to recognize the quality of the work, like discovering an art form in nature. This does not mean that you may not play around, but it should be deliberate, with the intention of being creative and guided by knowledge and the skill to achieve the effects you strive for.
<b>created</b>	<b>for without it, it is daydreaming, fantasies, pipe dreams</b> A lot of people have beautiful works of art and billion dollar ideas in the dreamworlds of their minds. But without realizing the ideas and dealing with the buggy details that only appear on the road to realization, there is no way of assessing whether the idea really works, whether it is really great.
<b>new</b>	<b>for without it, it is no contribution, just copying or plagiarism</b> Many people reinvent the wheel or unconsciously copy things they have seen ages ago. To be creative it must be new — not only new for you. This means learning what is there — to go beyond it. Note that "new" depends on the field (see page 32).
<b>useful</b>	<b>for without it, it is stupidity/madness</b> Creativity is a solution to a problem, it achieves a goal — be it to solve an engineering problem, answer a question, make someone happy, or inspire people. Writing creativity "cReaTivTY" might be new, but it is not useful. "Useful" also means that it must be understood by others. Explore new worlds, but keep a trail behind you so that others can follow — cross rivers, but leave bridges

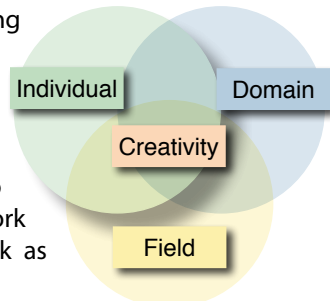
This definition of creativity is different from a child's drawing, a mid-thirty Apple fan boy with a Moleskine notebook, or that guy in the café who talks about all the stories he will write (someday). These criteria also mean that creativity is very hard — luckily — otherwise it would not be praiseworthy.

But who praises — and what? While deliberation and the actual creation is strongly dependent on the individual, the newness of a work depends on the domain, and its newness and usefulness is assessed by the field.

## HOW IS CREATIVITY DETERMINED?

What is involved in deliberately creating something that is new and useful, i.e., being creative?

While we usually say that an individual is creative, this is only part of the truth. According to Mihaly Csikszentmihalyi, creativity happens in the interaction between an individual, who "is" creative, a domain, in which the creative work is situated, and a field, which judges the work as creative.



<b>individual</b> (the one "being" creative)	The individual "is" creative (alone or with others). However, this person is strongly influenced by her setting — the available knowledge and technology, the personal influence of other people — and the <i>zeitgeist</i> (apparent in parallel creativity).
<b>domain</b> (e.g., mathematics, engineering, painting)	The domain differs, e.g., in <b>size</b> (amount of knowledge/prior works available), <b>structure</b> (coherence of knowledge/prior works/ease of learning), <b>materials/methods available</b> (need to develop own methods/costs/sophistication), <b>open questions</b> (and ease of finding new questions), <b>participants</b> (field, e.g., varies in openness to new creative persons), and <b>visibility</b> (how much attention does it get). It must be learnt by the creative person which defines the person's creative area — general area and specific subdomain (e.g., a scientist who is a psychologist who is a social psychologist). It can also be combined with other domains (interdisciplinary work) and (rarely) be redefined by the creative person (e.g., new direction in art, new subdomain in science).
<b>field</b> (the people who judge something as creative)	The field judges what is to be considered as creative and filters what is accepted into the domain/gets attention. The field is often specific to the domain. In some areas it also controls the access to resources needed to be creative (e.g., access to equipment like radio telescopes), or to distribution channels (e.g., gallery owners, journal editors). It can differ according to people involved, places, domains and time. What "is" creative, or rather regarded as such, can change.

## HOW IS CREATIVITY DETERMINED?

- Have a look at the creative individual who you admire the most. Which creative persons or creative works have influenced her?
- Do you know your domain? Use the criteria to get a clearer impression of your domain.
- What is your creative community, your field? What criteria do they have? Why may they decide whether your works are creative or not? What do you get from them and what do they get from you? Whom can or should you ignore?

So creativity is the result of an interaction, of a person or team (i.e., individual) working in an area (i.e., domain) whose work is considered by someone (i.e., field) as creative. It is an **attribution**<sup>1</sup> of the field to the work of an individual in a domain.

This has important consequences:

<b>it is high effort work</b>	To name just a few sources of high effort: You have to know the domain, you have to know the field, and you have to actually create and communicate the work. It is not something you can do <i>en passant</i> .
<b>it is high risk work</b> <sup>2</sup>	Nobody can guarantee you success — whether you really deliberately create something that is new and useful. Your results vary (e.g., good days/bad days, knowledge, skill), the domain changes (e.g., existing contributions, structure), as does the field (values, power structure, taste).
<b>it is extremely satisfying work</b>	You have to opportunity to use your full powers — e.g., of imagination, knowledge, skill — in pursuit of something hard and worthwhile. Few things are more satisfying.

It has also consequences for creativity itself, most importantly, what is not part of the definition. Creativity is not necessarily "good" — or advantageous.

<sup>1</sup> A striking example is if you do something creative for your partner. If the field consists only of the two of you, a lot of actions that were done hundreds of thousands of times can be creative — as seen by your partner. For example, decorating the bed with rose pedals, can be creative if the field is only the partner and this behavior is new, useful, deliberate and realized by you, although it would not be creative if the field was the whole world. See also page 368.

<sup>2</sup> See also, „Advantages & Disadvantages of Creativity“ on page 34, „Worst Cases in Realizing Ideas“ on page 184, and „Non-realizable/Canceled Projects“ on page 187.

34 **ADVANTAGES & DISADVANTAGES OF CREATIVITY**

Creativity is usually highly valued, but it is not necessarily "good", "positive", or advantageous.

Deliberately creating something that is new and useful does not specify **for what it is useful**. Thus **in itself, creativity is value neutral**. It *can* be used for benign goals, but it is not limited to them — nor are the realized projects always *used* for benign purposes. Creativity cannot help being misused.

The **consequences** of creativity also vary:

Personal	Society
<b>positive consequences</b> <ul style="list-style-type: none"> <li>• fun</li> <li>• feeling of accomplishment</li> <li>• fame &amp; remembrance<sup>1</sup></li> <li>• satisfying the need to be creative</li> </ul> <b>negative consequences</b> <ul style="list-style-type: none"> <li>• open resistance/personal danger/ruin if the status quo is changed<sup>2</sup></li> <li>• social isolation<sup>3</sup></li> <li>• harm from the subject/domain (e.g., benign the first to 'discover' a carcinogen)</li> </ul>	<b>positive consequences</b> <ul style="list-style-type: none"> <li>• enlarge mankind's options<sup>4</sup></li> <li>• improve the world</li> <li>• spread joy</li> </ul> <b>negative consequences</b> <ul style="list-style-type: none"> <li>• negative side effects of the discovery (e.g., DDT)</li> <li>• negative effects of art (e.g., patriotic songs, dangerous fashion trends)</li> </ul>

Thus, creativity has positive and negative aspects (see also page 184).

**Given that there are no safeguards against misuse in the creative process or the final product itself, you have to take the responsibility yourself.**

You are honored for the benefits, so make sure that you accept the responsibility (see page 35) for the drawbacks.

<sup>1</sup> For as long as the sun still burns - or even beyond.

<sup>2</sup> Very apparent in business and science (see page 302) — those who suffer heavy losses usually put up a fight (e.g., competitors, proponents of different theories, etc.). Also apparent when religion (and morals/decency) is involved. I have never understood why God is so great, yet needs puny human fists to make a point. Even more dangerous today, now that the crowds are prone to switch wisdom to digital pitchforks in a fit of righteous anger, and turn into an angry mob without individual accountability and responsibility, enjoying the fall of someone else. And individual responsibility is the difference between a veiled avenger and a pussy with an internet access. Crowds are awe-inspiring when they build, but sickening when they destroy.

<sup>3</sup> Not only because it takes huge amounts of time. Seeing possible but improbable negative sides of an issue nobody else can imagine might cause you to come off as negative or destructive, even if you use these scenarios to develop counter measures in case this situation does occur.

<sup>4</sup> To light a candle and push back the boundaries of darkness. / To make the world think with a drop of ink.

**RESPONSIBILITY** 35

Creativity is worthy of **recognition**, but even more so is the **sacrifice** — of ideas, effort, time, and material — when a project is stopped, because the dangers are too high.

You are responsible for the things you create, no matter whether spare time or occupation, working alone or in teams — responsibility cannot be delegated or diffused. Keep your integrity and conscience and make sure you notice if (when) the moment comes — act accordingly:

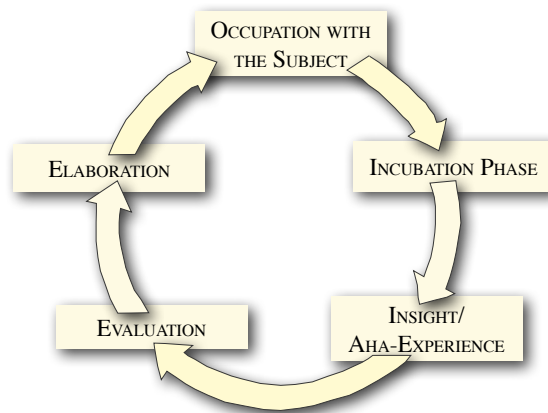
<b>get watchdogs</b> (e.g., an ethics commission)	Independent, knowledgeable people should surveil the project and its results. Note that there must be no negative consequences for them if they decide to stop the project. An ethics commission does not work if the fox watches the henhouse, or if its members think they might experience repercussions.
<b>look for side-effects</b>	You might have the best intentions in mind, but some inventions are easy to misuse or show its negative consequences only over time when small effects accumulate.
<b>convey the meaning and limits clearly</b>	Make sure that the dangers can be easily seen and understood. For example, talk in "deaths per year", not in abstract statistics.
<b>blow the whistle</b>	Blow the whistle <sup>1</sup> if your concerns are ignored. Be careful never to use the infrastructure (e.g., computer, eMail, xerox) of your employer, and only distribute documents/facts that were available to multiple people.
<b>educate the public</b>	If you cannot stop your work, educate the public. Use your expertise and learn from those influence groups that do not discredit themselves with ideology (far left/right), or violence. Sometimes the best communication to a CEO is with a large crowd of protesters in front of the company headquarter — and some reporters. If it costs money (and loss of reputation often does), they are more prone to listen.
<b>work against your project</b>	Work against your former project by improving it and/or removing the negative effects.
<b>mind the "small" stuff</b>	Show everyday responsibility and protect the environment. It conveys the right message and will ensure the right mind-set if larger issues appear.

<sup>1</sup> Reporters without Borders have a "Handbook for bloggers and Cyber-dissidents" online with some useful tips ([www.rsfs.org/IMG/pdf/Bloggers\\_Handbook2.pdf](http://www.rsfs.org/IMG/pdf/Bloggers_Handbook2.pdf)).



## THE IDEA PROCESS

Where do ideas come from? According to the well-known process model of creativity by Mihaly Csikszentmihalyi, the process can be divided in five phases.



1. It starts with the **occupation with the subject**. Creativity does not simply occur in a vacuum, or by a muse handing down a brilliant idea to a nitwit, you need to know the domain before you can have creative ideas.
2. Next is the **incubation phase**, a time where the work on the problem seemingly stops. The person occupies herself with other, seemingly unrelated matters.
3. This phase suddenly ends with the **insight or aha-experience**. Suddenly the solution to the problem "comes into the mind of the creative person". *„Eureka!“*
4. After this experience, the idea must be **evaluated**. Often ideas seem brilliant at first, but they do not work when they are thoroughly tested.
5. If the idea holds, it must be **elaborated**: it must be refined, the details must be worked out.

After an iteration of this process the creative person is one step further to her overall goal and the cycle begins anew.

Note that this process is **cyclical**, i.e., except in the case of a small, well defined problem, working creatively not only generates, but sets the ground for the development of new ideas. Often the solution of a problem raises new problems, which also have to be solved, which raise new problems, etc. Also note that according to Csikszentmihalyi, the creative process **rarely occurs in this simple, clearly defined way**. There can be an overlap of different stages in a process that jumps wildly from stage to stage, even different processes running simultaneously and in parallel.

Implicitly, it means that **creativity is more than just one idea**. And this requires **organization**.

# Organization

Creativity is More Than Just One Idea

Advantages of Organizing Creativity

Organization of Creativity

Organization of Creativity: Examples

Organization of Your Creativity



# CREATIVITY IS MORE THAN JUST ONE IDEA

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Creativity must be organized because **creativity is more than just one idea**. This is implicit in the model of creativity by Mihaly Csikszentmihalyi, but actually easy to notice when you look at a creative work: Imagine you have a great idea for a plot that would make a really good book.

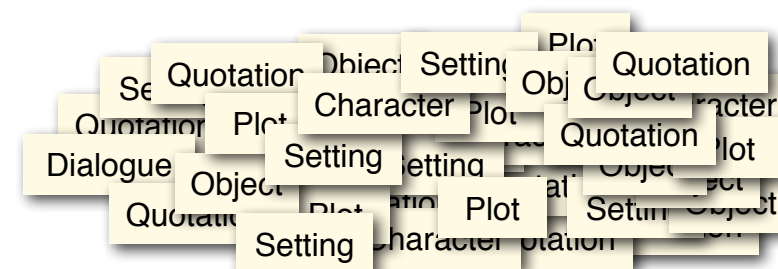
To actually write this book, you need more than just this one idea, the plot. You need ideas for characters, for the settings, the dialogues, side-plots, objects, etc. pp. What makes books great is that they do not only have one idea, e.g., a boy who grows up to be a famous wizard, but countless of other ideas, e.g., an amazing school, interesting classmates, helpful pets, etc.

So, instead of just one idea (which one might remember)

Idea for a book

a creative project consists of multiple ideas and looks more like this (simplified):

## Idea for a book



The same is true for drawing, only that you will likely collect sketches, and for science, where you will collect data and make notes on phenomena, which you then analyze and write articles about.

Point is, a **creative project gets complex very, very quickly**. Once it goes beyond that single idea, once you start to flesh the idea out, it becomes harder and harder to memorize all the information.

**You need organization to deal with this complexity** — you need to capture and collect your ideas. If you do not do this in a way that works for you(r creativity), it is likely that your project will fail and that you will not be creative.

Luckily, organization is not something one either has or has not, but something you can develop — if **you** are willing to invest the time and effort.

## ADVANTAGES OF ORGANIZING CREATIVITY

Organizing your creativity has many advantages:

<b>reduces complexity/makes complex projects possible</b>	It allows you to handle more ideas and deal with more complex projects than you can keep in your memory — and with perfect recall.
<b>reduces cognitive load while working</b>	You can concentrate on the aspects you are working on, without having to keep other ideas in mind.
<b>makes ideas quickly available</b>	An external memory is a perfect memory that never forgets anything and where the information is instantly available. You can more quickly scan through lists of your ideas than you can remember them.
<b>clearer structure</b>	You see which aspects you already have and which are still missing, and you can more easily plan the order of implementation.
<b>stimulates new ideas</b>	Having all ideas available in an external form allows to see the links between them.
<b>fewer mistakes</b>	Allows you to achieve consistency by avoiding mistakes in memory.
<b>allows development of ideas</b>	Allows you to revisit bad ideas later and work on them. Many good ideas came from working on bad ideas.
<b>allows you to resume your projects instantly</b>	Interruptions in creative work are common — ranging from minutes to days or even years. If you organize it you can quickly resume where you have left, because you know what you wanted to do, where you are, what you need to do.
<b>protects against plagiarism<sup>1</sup></b>	You know which ideas were yours and which ideas are (based on) other people's work. No more "accidental" plagiarism due to bad note-taking.
<b>if you do it anyway, do it right</b>	On some level all creatives organize their creativity, even if they use only their minds. If you do it, do it right.

<sup>1</sup> If you plagiarize you are in the difficult position that you are likely to become a victim to success. The more 'your' work is regarded as creative and spreads, the more likely it becomes that someone recognizes the plagiarism, and the more humiliating and public your downfall will be. While plagiarism is unethical idea theft, the worst crime in Academia and Art, and should be exposed, it is nothing to enjoy or snicker about. It is a gut-wrenching situation and people exposing plagiarism should not enjoy it. And recently, it unfortunately has become a weapon in political killings, not to defend science, but to strike down a public person — and science is too noble to be misused as an executioner's blade.

## ADVANTAGES OF ORGANIZING CREATIVITY

Thus, organizing creativity increases the quality and quantity of your creative projects. Unless you are dealing with instant creativity (e.g., short problems like the 9-dot-problem, see below), you need to organize your creativity.

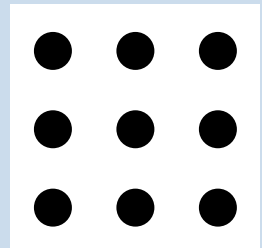
<b>scientist/engineers</b>	You need organization for your literature, to plan your experiments, to remember the exact manipulation and the exact results, correctly cite the sources, etc.  Researchers might have found things by looking for something else (e.g., Röntgen's x-rays), but they were highly trained and worked with extraordinary care to notice and eventually understand the unusual effect. Thomas Alva Edison's most important invention was the invention of invention: the first industrial research lab (R&D).
<b>artists</b>	You need to remember instances that deserve to be transformed into an artwork, to remember scenes in everyday life, to test out different ideas, or to make sure you have something to refer to when you face that blank page.  For example, Leonardo da Vinci's left over 15.000 pages of notes and drawings, a clear sign of organization by capturing his ideas.
<b>private projects</b>	You need to remember ideas when you have time to realize them, or when a specific person has birthday, or to quickly resume your creative work that you do in your spare time.

So, what do you need to organize? What kind of creative projects do you have that you want to realize?

### THE NINE DOTS PROBLEM

Connect the nine dots with **four** (or less) straight lines without removing the pen from the surface.

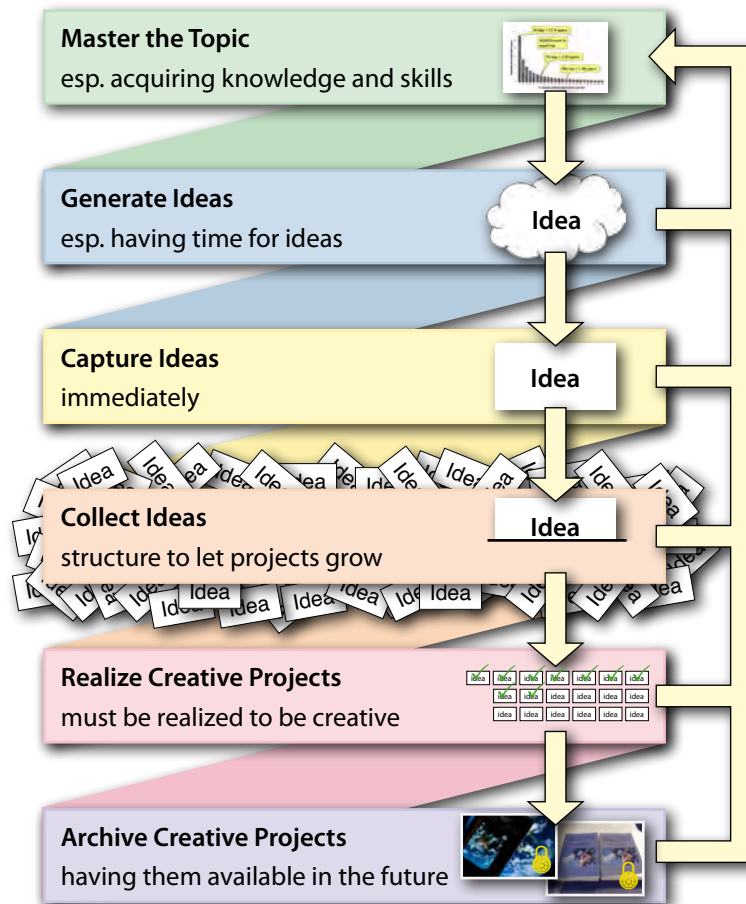
Whereas the solution to this problem requires creativity (by challenging assumptions), the kind of creativity that is the focus of this book is much larger and needs much more organization and planning to be successful.



# ORGANIZATION OF CREATIVITY

How can you organize your creativity? The following model shows the steps in realizing a creative project and where organization is helpful:

**Organizing Creativity = Creating the Infrastructure to ...**



Starting with a **mastery of the topic** ideas are **generated**: they “simply come” if you have time for ideas or can be stimulated with techniques (see pages 52ff). An idea must be **captured** immediately (see pages 72ff), otherwise it is likely to get lost or not remembered later, and capturing ideas can induce more ideas. The captured ideas should be transferred to an idea **collection** (see pages 124ff) to remember them, find them again, stimulate new ideas and restructure the ideas to a working order. The idea collection ripens until enough ideas are available for a concrete project. Once there are enough ideas the idea can be

# ORGANIZATION OF CREATIVITY

**realized** (see pages 148ff), which will take a lot of refinement (and work and time) and generates new ideas. Finally projects can (and should be) **archived** (see pages 190ff), e.g., to stimulate future projects and have a portfolio available.

Note that generation and realization of ideas are two separate aspects, mediated by repeated capture and collection of ideas: You cannot expect to sit before an empty page and write a masterpiece in one go, from start to finish. You will have to generate, capture and collect the necessary ideas first.

While you will have ideas while realizing a creative project, it's more problem solving than generating great ideas. Ideally, you have first collected enough ideas and ordered them in a working structure so that **realizing the creative project becomes matter of craft** — requiring knowledge and skills — and not a series of problems for which you would need creative ideas ‘on the go’ that may or may not come and hamper the work.

And of course, each of the steps contributes to topic mastery, which can stimulate further ideas (see the yellow back-arrows).

Trying to be creative without organizing it, just hoping for that accidental discovery or masterpiece, is like hoping for a lotto jackpot — without filling out a ticket.

However, creativity is hard and it is easy to become enamored by the organizing part — because that part is easy. And while you can spend a lot of time striving for perfection in organizing, unless you actually risk investing the time and the hard work to make your ideas reality, it is not creativity.

So, while organization is important, it has only a supporting function. The whole organization process supports your creativity, but it is ‘only’ instrumental and not the final goal<sup>1</sup>.

Keep the focus on the product, what you create, not the organization for the product. The product is evaluated and must be excellent, not the organization behind it<sup>2</sup>.

<sup>1</sup> Not even in the case of this book. How I organized the work for this book is irrelevant. What matters are whether the final work is able to help you getting more out of your creativity, help you to realize more and better ideas.

<sup>2</sup> Or the problems, as someone once said: "There is no A+ for effort in real life." What matters is what you have created, nothing else.

## ORGANIZATION OF CREATIVITY: EXAMPLES

The following table shows each step, what organization can and should do, and gives examples:

Step	Organization	Examples
<b>Master the Topic</b>	Self-Directed Learning, i.e., acquiring the knowledge/training the skills	learning about experimental design in psychology practicing playing the violin
<b>Generate Ideas</b>	making time for incubation using generation/“creativity” techniques	establishing the habit of going for a walk after lunch analogy or deviation amplification
<b>Capture Ideas</b>	creating the infrastructure to immediately capture an idea effortlessly.	keeping a notepad and a light pen next to the bed using an idea collection file
<b>Collect Ideas</b>	establishing an idea collection	using a Wiki to collect ideas. using DEVONthink to keep reference material
<b>Realize Creative Projects</b>	help in deciding which project to realize. time management/work structure feedback /conveying ideas	criteria for projects that are likely successful. making a habit of working two hours each day undisturbed. criteria for feedback
<b>Archive Creative Projects</b>	having finished ideas available all times for reference/inspiration/portfolio	using a wiki to keep an archive of finished project files

## ORGANIZATION OF YOUR CREATIVITY

Starting to organize your creativity is actually quite simple. Chances are, you are already doing it in some way (making notes, doing sketches).

Given that there is no single solution that works for all areas of creativity and all people, you have to try out what works for you. This book provides you with more options.

Whereas you can use the suggestions in this book as safe, predictable, and easy to use procedures (steps to do, like the high level *master-generate-capture-collect-realize-archive process*, or more concretely, *how to use a Wiki as an archive*), it is much more effective if you look at the principles<sup>1</sup> behind these procedures — what they aim at (e.g., the criteria they should fulfill). It allows you to creatively adapt the procedures to the demands of your creative life.

In general, it pays to look at your workflow (how you learn about the topic, generate, capture, collect, realize and archive ideas) and find the dead-ends and bottlenecks in the way you work (for example, finding a way to automatically copy your notes to your computer, see also page 272).

However, keep in mind that while organization is something you can develop, it takes time and effort to do so. You have to invest in your organization before you see the rewards. And you should be able to see the rewards.

For this you need measurable criteria with which you can evaluate your creativity. In almost all cases it boils down to two criteria:

1. **the amount (quantity) of work you produce, and**
2. **the quality of the produced work.**

Both are needed, one without the other is useless. But you have to define what exactly this means for you and how it is measured: What is ‘enough’ output and what is high quality output, i.e., what is your field — who judges?

Keep an eye on these criteria and evaluate any changes in your organization against these two criteria. Make sure you can take back any change you plan on doing. If after getting used to the change, your output does decrease in quantity or quality, then change it back. Also document your approaches<sup>2</sup>, looking back at them might give you some hints what works for you and what does not.

Focusing on the quantity and quality of your work will ensure that you do not focus on organization as a goal in itself but that it actually does what it is supposed to do:

**Help you become more creative.**

<sup>1</sup> See Bereiter, C. (1999). In Search of High Impact. In L. Harasim (Ed.), *Wisdom & Wizardry: Celebrating the Pioneers of Online Education*. (pp. 8-9). Vancouver, BC: Telelearning, Inc. for a discussion on principles vs. procedures, why principles are better, but procedures often win.

<sup>2</sup> For example, by making screenshots of a digital collection on your computer. Reflection and metacognition (thinking about how you think) go a long way here.

# Organize Creativity!

Master the Topic

Generate Ideas

Capture Ideas

Collect Ideas

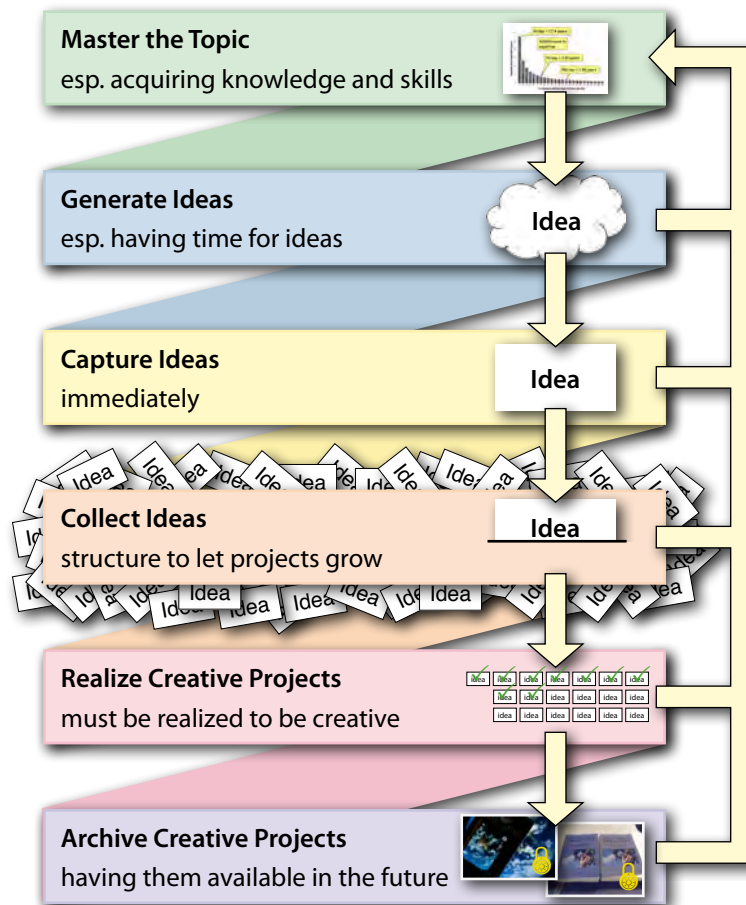
Realize Creative Projects

Archive Creative Projects

## STARTING TO ORGANIZE CREATIVITY

If you decide to organize your creativity (more than you already do), the following hints might make it easier for you to make and keep up the change.

**Organizing Creativity = Creating the Infrastructure to ...**



<b>focus on the infrastructure</b>	Changes in the infrastructure will bring you further than resolutions or isolated changes. For example, if you want to capture the ideas in bed, change the infrastructure so that you always keep a notepad and a light pen next to the bed. Buy a notepad and a pen that is dedicated for this place and leave it there, just tear out the pages you have written.
<b>invest in the infrastructure</b>	A focus on the infrastructure places a high work load in the beginning of the work — and often you have to take it on faith that it will pay off later. But whereas you might invest in the wrong modification occasionally, most of the time it <i>should</i> pay off — in ease of use, in speed, in reduction of the complexity of working with a complex topic. In short, it leads to <b>higher quantity and higher quality work!</b>  Thus, treat it like an investment — take a critical look at what it offers you for your money (time, effort) and make sure you can get something even if it fails to deliver (e.g., your entered data).
<b>try out different things until you find something that works for you</b>	Find something that works with minimal effort for you. You know that it works when you have kept it up for about 4 weeks in a row and it has improved the realization of your projects.
<b>keep it with you</b>	Keep it available no matter where you are.
<b>start by organizing your new ideas</b>	Get into the habit of using it as it is meant to be used and organize your new ideas first. Organize older ideas from other collections when you have spare time. Sorting ideas into a collection is drudge work and can make organizing very unpleasant.
<b>keep a log of the changes</b>	Looking at past ways of organizing your creativity will show you more easily what works for you under which circumstances, so keep a record of how you organized your creativity.
<b>go through the process first, then into the details</b>	You find a detailed description of each of the steps of the process in this book. For a first orientation, get an impression of the different steps and understand the principle, before you go deeper into the details.



# Organize Creativity!

## I. MASTER THE TOPIC

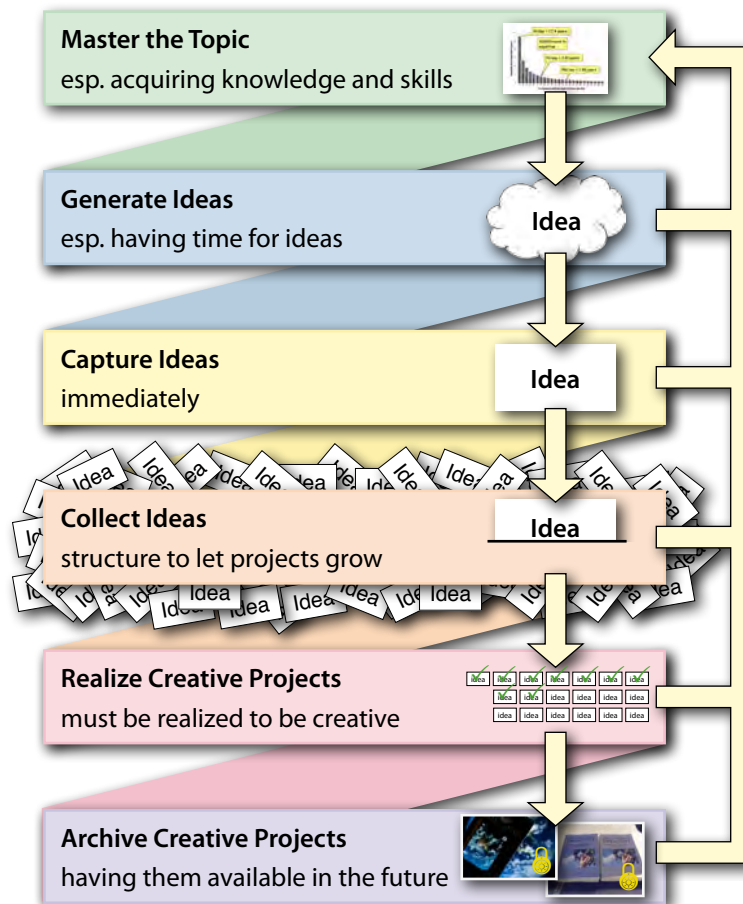
## A CASE FOR HARD WORK

I. MASTER THE TOPIC

THE PROCESS

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Organizing Creativity = Creating the Infrastructure to ...



Hard work is necessary for creativity. For many, this sounds like betrayal, like it undermines the whole point of being creative, but it is — (un)fortunately — the truth. For example, look at the following formula:

$$\Delta x \Delta p \geq \hbar/2$$

Is it a creative work? Who knows? Could you use it as a starting point to develop a creative theory — creative in the sense that it is good for something, not just some mad ramblings? Probably not. Unless you have a solid background in mathematics and physics you will probably not recognize the formula or any of the symbols (except the “ $\geq$ ” and the “2”), nor be able to do something with it.

We admire the great scientist for her knowledge and contribution to science, but do not see the hours of learning/reading she has done. The first step to be creative is to have something to be creative with. You cannot (brain)storm an empty attic (well, you can, but what’s the point). Unless you have a solid knowledge about the subject matter it is unlikely that you will be creative. Einstein once said that imagination is more important than knowledge — if you have the knowledge of an Einstein you may allow yourself this remark. Michelangelo probably said the more relevant thing: „If people only knew how hard I work to gain my mastery, it wouldn’t seem so wonderful at all.”

Likewise you need the skills to implement an idea successfully, to play that song, draw that image, conduct that experiment. Many people can create masterpieces — in their minds, but they cannot put it into form in the real world. Even successful creative individuals who do “simple” things (like Mondrian’s color studies, or Munroe’s xkcd comics) have the skill to actually convey what they meant. They did more than draw a few lines.

Thus, in creativity, the skill of implementation becomes inseparable from the originality of the idea, and both are needed. The road to masterpieces is plastered with failures, in science and art. Unfortunately, we do not see the failed sketches, because no one cared to keep them — they were failures! We do not see that a great story was revised countless times. We do not see that a brilliant experiment had several failed pre-studies that no journal would even touch. But they are there, unseen, and if you want to be creative you will contribute to this pile of failed ideas and projects on your way to realize the great ideas.

Creativity is hard work — now let’s deal with it. 😊

I remembered a time when my grandmother had asked me to explain television to her — the guts, not the funny pictures. There are things which cannot be taught in ten easy lessons, nor popularized for the masses; they take years of skull sweat. This be treason in an age when ignorance has come into its own and one man’s opinion is as good as another’s. But there it is. As Star says, the world is what it is — and doesn’t forgive ignorance.

“Glory Road” by Robert A. Heinlein

## A CASE FOR TIME

You have approximately 8 hours per day freely at your disposal. Besides for having a life, this time is needed to

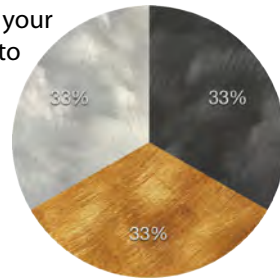
- learn the domain & train your skills
- incubate and generate ideas
- realize the creative project

### HOW MUCH TIME?

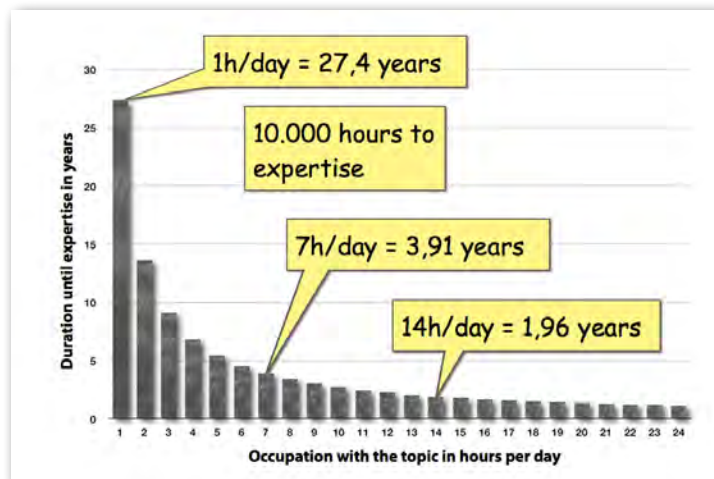
How much time does it take to become an expert?

If we look at a simple example like chess, we can refer to the works of Simon and Chase who determined that 10.000 hours are necessary to reach expertise in chess.

10.000 hours is hard to grasp as a number in itself, so how long does it take depending on the amount of hours you invest in one day?



● Sleep/Hygiene (8 hours)  
● Work (8 hours)  
● Your Free Time (8 hours)



If you invest one hour each day, you will be there in 27.4 years, if you invest two hours it will take 13.69 years, and so on. A normal work day of seven hours (without taking a single day or weekend off) will still take you 3.91 years to become an expert. Note that this time is time actually spend on becoming proficient in the domain — i.e., time spend working hard on something difficult.

This graph also shows why there are no polymaths anymore — and why you have to set priorities on what you want to focus. Given the amount of time needed you cannot expect to become proficient in something that makes up only a small part of your time. You have to make a huge investment and it takes longer the less time you invest every day.

You find more information on time management on pages 58ff.

## HAVING TOO MANY INTERESTS

A lot of people — most of them highly intelligent and very creative — stay eternal dilettantes because they are interested in too many things at the same time.

Your time is limited (see page 186) and as it takes time to become skillful in a domain (see page 54), you cannot realize everything. While your idea collection will make sure that no idea is lost and reduce a lot of pressure, it is still hard to do good work if you spread yourself too thin, if you skip from topic to topic, even if you realize each work before you skip to the next.

### use the variety of a topic

You may have more success if you find an area of creativity with **a lot of variety within**. For example, photography covers classic art/painting (composition), chemistry (developing analog film), computer science (post-processing), physics (light), social skills (dealing with voluntary and involuntary models), and much more. If all the sub-areas serve the main area (here: photography), any effort you invest in the sub-areas will also improve your work in the main area. Structured **hierarchically**, this way you can follow many topics, but each with the clear goal of improving your work in your (one) key area.

### use a tiered approach if multiple topics are relevant

If you really want (i.e., need) to follow different key areas, use a **tiered approach**. When you start with a new area, invest a lot of time to learn as much about it as possible — from books, magazines, movies, etc. — and try out a lot of things to gain experience. After you get your new topic off the ground (you have become **proficient** with it and now learn mostly by doing and you have integrated it into your life) and you have **resources left**, then, and only then, start a new area. At best, try to connect your prior area with the new one (if possible). For example, if you start with photography learn until you become proficient. If you now want to start writing stories, use your photography skills to photograph scenes and use them as stimulation for/illustration of your stories. Having different areas on different levels will make it easier to become really good in the “oldest” ones, and it gives you challenges on different levels.

### prioritize projects

Too many interests also applies to specific projects. See page 56f for more information.



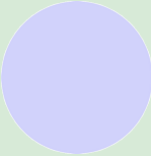


## PRIORITIZING PROJECTS

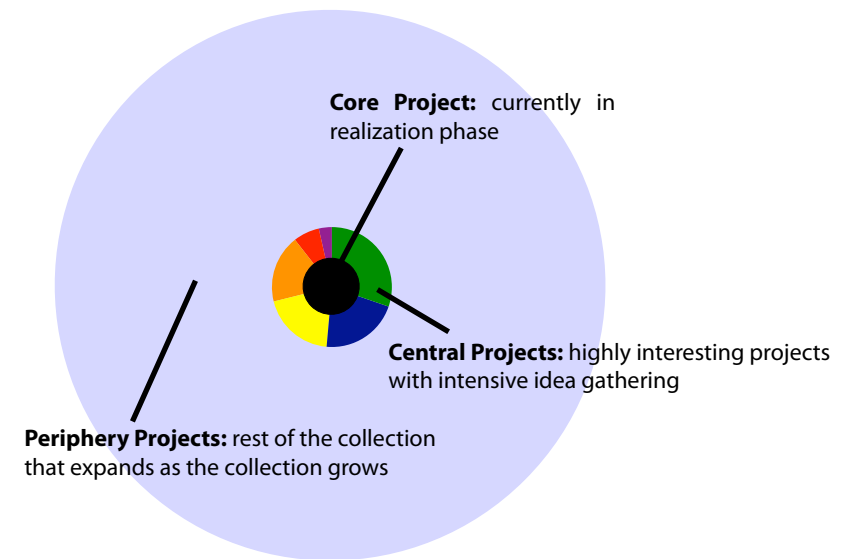
Even within a domain you might have different ideas you might want to realize. However, you cannot realize all of your ideas in your limited time (see page 186). You have to set priorities.

The idea collection (see page 124ff) will take one great burden of your shoulders that often prevents that any project is realized: **The need to do everything at once — because nothing can go lost when you collect it!**

All your ideas are collected in the idea collection, you will not lose an idea over time. So, there is no need to start countless projects at the same time. You can, and should, focus on the project whose time has come. To make this easier, it is very helpful for capturing and collecting ideas to differentiate between three classes of projects:

 <p><b>Core project</b> (one single project only)</p>	<p>This is the project you focus on, that you want to realize as soon as possible. You should keep it in the back of your mind and you should know the unsolved problems in that project, so that your mind can work on it, and that you can generate ideas for it.</p>
 <p><b>Central projects</b> (no more than five to seven)</p>	<p>There will be other projects than the core project that you will very much like to realize now. Don't. Instead, keep them as central projects. Remind yourself of them occasionally, e.g., by keeping them easily visible in your idea collection and in the back of your mind, e.g., by using landmines (see page 268). Focus on gathering ideas for these projects, but do not start implementing them. It's easy to add more ideas to these projects, but once you start implementing another project in addition to the core project, things become complicated. So focus on the core project and make sure that you can easily choose one of the central projects <b>after</b> you have finished realizing the current core project.</p>
 <p><b>Periphery Projects</b> (a lot)</p>	<p>Most of your ideas will be periphery projects. Nice, but not important or fleshed out enough to be realized anytime soon. Keep them in the collection and let them grow over time. Make one of these ideas a central project when you have finished a core project.</p>

## PRIORITIZING PROJECTS



Differentiating your ideas this way will help you to make sure that you realize creative projects without getting tangled by starting a lot of projects at the same time and realizing none.

You have an idea for a central or even periphery project while working on the core project — great, jot it down and continue working on the core project. The idea will end up in the collection and it will not be lost. Used this way, the idea collection is similar to a “someday list” on which you note tasks that you want to do some day, but cannot do now. Using the collection to enlarge your ideas will allow you to let the ideas grow so that the project is ready when **you** are ready to realize it.

At times, you will have no choice, but to do different projects at the same time (e.g., different work projects). But even here the collection will make it easy to quickly switch between the projects, and have all related ideas available in an instant with perfect recall.

## TIME MANAGEMENT

The most important step in time management is to make sure that you **limit the things you have to do**.

On a project level this means **channeling your interests** (see page 55) and **prioritizing projects** (see page 56f). But even if you have only one project you want to realize, **you will never find the time for creative projects, you have to make it yourself — and defend it**. Unless you make a conscious effort to make time for your projects you will never have it. And unless you fight hard to defend this time slow, you will never keep it.

This said, here are some tips for time management.

<b>it takes time to make time</b>	Time management often costs time first. You have to be willing to invest this time <i>before</i> you see (and reap) the rewards (e.g., creating a good archive allows you to find your files more quickly in the future, but costs some time first). Check whether the one-time investment is dwarfed by the often paid micro-payments in time, then do it (time/effort calculations can be used for this see page 353), and weekends and vacations can be used to start them.
<b>stop the little holes</b>	Often it is not a huge time sucker that takes up much of your time, but many little sappers that drain your time (and energy). Investing the time to stop those ticks and stressors not only saves you time, but often also the energy, allowing you to do something useful with this time.
<b>it is important what you do, but more important what you do not do</b>	If you want to focus on a project, you must ignore the distractions and make conscious choices of not doing things, not matter how stimulating they might sound at the moment. One goal of an idea collection is to reduce the pressure of not working on other ideas, because these ideas are collected, grow over time and do not get lost. They are available later after you have finished working on the current project. However, there will be lots of distractions in everyday life that you have to ignore to be creative.
<b>learn to say “No” (with grace)</b>	Without limiting the input of tasks you have to, no time management can work. There is simply not enough time. However, often you cannot say “No!” directly (e.g., to your boss, or partner). But you <i>can</i> demand clear priorities. Tell the person what you have to do and what you should drop if you do the new task, e.g., “I have to do x, y, and z. Which of these shall I cancel if I also do k?”


## TIME MANAGEMENT

<b>prevent internal interruptions</b>	It is easy to get sidetracked by new and exciting things, especially if you have to work hard on your project (e.g., ‘quickly’ checking eMails). Making an task list of the things you have to do and changing the infrastructure to prevent virtual/mental interruptions can help you to stay on track.
<b>prevent external interruptions</b>	Find a time slot in which you decide to work and defend it against interruptions by others, even by people who think they have a right to your time. You do not need to be available 24/7. This is challenging when you begin, because others will not understand it at first. And you will have to send them away again and again. Choosing the right workspace/modifying it helps. Using the right mind set, e.g., seeing your creative work as similar to teaching duties, or a confidential conversation with a client, where you would not tolerate interruptions either, can help.
<b>have a partner who is also creative</b>	If you work for longer time frames on creative projects it helps if your partner is similar minded and also likes to work creatively.
<b>do not wait for inspiration</b>	Inspiration is overrated. While you need good ideas to be creative, you do not need to be inspired to actually realize these ideas. You just need to implement them, which demands craft (knowledge and skill), not inspiration. And yes, this also applies to creative writing. A schedule you stick to no matter how ‘inspired’ you feel will get you far, if you wait for inspiration it is unlikely that anything creative will come out of it.
<b>be careful with caffeine</b>	Caffeine can keep you awake, but too much of it and you are <i>only</i> awake (think Zombie!). Use it only in small amounts. If you are tired, get other stimulation (e.g., music, a shower, a walk around the block).
<b>work as much as you can without sacrificing your ability to work</b>	Make sure you drink (water, juices, milk; keep it nearby that you can drink effortlessly while working), eat (pieces of bread, raisins — you can eat them with one hand and they are not sticky), and sleep enough. You might want to punch through the night, but you need breaks in order to function effectively (and stay healthy).

## TIME MANAGEMENT

<b>restrict your online activities</b>	Limit surfing to dedicated research for your project and evaluate your surfing behavior whether it fulfills this purpose. While mood management is sometimes necessary (e.g., you search for a funny site to cheer you up, so that you can continue with some boring work), be careful how much time you spend online. If it is not related to your work or some project you are doing, why do you waste your time with it?
<b>ditch the TV / create a "media-free zone"</b>	Many people spend ages consuming TV, without ever producing anything themselves. Often it is used to relax after work, but it rarely <i>refreshes</i> you. The evening usually starts and ends with switching on the TV. Ridiculous waste of time. Ditching the TV (put it in the cellar first) and going for a run after work and/or taking a shower/bath will give you the necessary distance from work/energy <i>and</i> a lot of time you can spend on creative projects. It is the same with cutting the Internet connection (for a while, if you need it for work). A media free zone is very, very powerful for creativity.
<b>stop shifting bits and bytes</b>	Computer games use up tremendous amounts of time. Make sure you get something equally valuable for it. In most cases, if you need inspiration, watching a Game Walkthrough on YouTube gives you enough insight into the story. Keep in mind that playing games is only shifting bits and bytes. A computer who "plays with you" to make matters challenging, but not too challenging, does not really have a value and brings you nothing.
<b>consciously decide how you spend your time</b>	Think about how you use your time and what you will have to show for at the end of the day. We do many things out of habit and not all habits are good. For example, watching DVDs to relax might be nice, but starting working on a project gives the better results.
<b>in general changing the infrastructure by removing competition is the better solution</b>	Be it TV, computer games, or other activities — removing the competition is usually the easiest solution. Instead of trying to control your behavior and not invest too much time in something that is available, removing it completely usually leads to better results.
<b>work regularly</b>	It will help you to stay in the habit and will speed up knowledge building.

## TIME MANAGEMENT

<b>use weekdays</b>	Even with a full working schedule you are likely to have some hours in the evening for creative work. Make sure that you can resume working quickly, e.g., by having a dedicated room available in which you only need to clean up your tools, not the work itself. If you work digitally, consider a separate work environment for your creative work.
<b>use one day solely for creative work</b>	Reserve one day for your creative work, e.g., Saturdays. You can do the shopping on weekdays, after work. Don't open the blinds, put on headphones, listen to your favorite music, blind out the world and work on your favorite project. If you are inspired and your creative project is developing extraordinarily, you can do a night shift and continue to work into the Sunday.
<b>use synergies between creative projects and other work</b>	If you can, combine your creative projects with other work. For example, if you work as a postal worker, take a camera with you when you deliver the letters — you might find an interesting motif. Make sure it does not interfere with your paid work or its rules and regulations.
<b>schedule time to reflect and recharge</b>	It is not only the time when you work, but also the time when you recharge. For example, take a tea time each day at 4:40. Think about what you have done and still need and want to do and use the moment (as Clavell puts it in "Noble House") to "settle the cares of the day and put the world into perspective". 
<b>consider your domain carefully</b>	Choose a domain in which you want to spend time and where you have an easy/pleasurable time learning. No time management strategy can help you if you have a general motivation problem about the topic.

In short, think about how you spend your time: focus on your project and defend the time you have allocated for it.


Every time.

## TASK MANAGEMENT

Closely related to time management (see page 58ff) is task management. Here are some tips to help you get your tasks done.

<b>switch between the bigger picture and the concrete “doable” tasks</b>	It is easy to lose the big picture. It is also easy to get lost in the daily todos. Thus, plan your project on a higher level, but then focus on the concrete steps for a while. Switching between both views will help you see why you are working and that you are on track (the big picture), and allow you to stay motivated and do the tasks (by having clear-cut todos).
<b>divide large tasks into small, concrete subtasks</b>	Henry Ford said that “Nothing is particularly hard if you divide it into small jobs.”. It also allows you “to quickly do small task x” when you have a few minutes.
<b>use an easy and reliable remembering system</b>	In most cases a calendar (for schedule events) and a todo list is sufficient for remembering tasks. Do not invest too much time and effort into an elaborate system. Focus on doing, not on organizing. GTD (Getting Things Done) and the like are usually overkills.
<b>make a task list / use a task management tool</b>	It is hard to stay focused when you are working for a long time, get interrupted frequently, or simply have a lot to do. A task list can keep you on track. Keep it simple — a list with checkboxes of the tasks you have to do is often enough. Then again, maybe a task management tool is for you (see page 356).
<b>plan which tasks you do</b>	Look beyond the creative project and do non-project related tasks when you are too tired, to have more productive time for your project (e.g., cleaning the house at 2 a.m. to have time for your project at 2 p.m.).
<b>adapt tasks to your mood</b>	Even if you cannot concentrate (pushing rope day) or do not have it in you (bad bristle day), you can use the time to do all the mundane tasks that need to be done.
<b>make sure you have feedback about your progress</b>	When dealing with longer tasks, make sure you get feedback at the right time. Too frequent feedback about tiny steps can be discouraging. Make sure getting feedback is effortless, e.g., when processing files put the done files into a different folder.
<b>use breaks to get a change of perspective</b>	Keep the breaks short and use them to evaluate your work. Get up, walk around, look at your work from a distance. Avoid starting anything (like playing a ‘mini-game’) that you know from experience you will not quit when the break should be over.

## TASK MANAGEMENT

<b>Pomodoro-Technique</b>	A popular technique. You decide on the task you want to do, set the timer to 25 minutes, work on the task until the timer rings, check a box that you did work on the task, then you take a 5 minute break, set the time again for 25 minutes and repeat the process. After four 25 minutes phases you take a 15-20 minutes break.
<b>do the worst thing first</b>	If you deal with the worst thing first on your todo list (and do not cheat but punch through), then the next worst thing, etc., your day improves continuously. You will be inclined to do the things on the list as early and fast as possible in order to reach the more pleasurable todos.
<b>if you can do a task in less than two minutes, do it now (and tweak this rule!)</b>	David Allen’s book “Getting Things Done” gives the useful tip of doing tasks that can be done in under two minutes immediately. You should adhere to this rule and tweak it by changing your organizational infrastructure to make more possible within those two minutes (e.g., improve your file system to allow you to find files quickly, sorting your notes to have them available on demand).
	
<b>use the downward slope</b>	If you have to stop soon, then stop in the moment when you know exactly what you have to do next. Jot down some notes to make sure you remember it and then stop. This will allow you to resume the task more quickly when you continue. In writing stop in the middle of a paragraph when you are sure to remember how to continue it next time you write. When you leave your desk prepare it for resuming your work.
<b>in longer projects, do something every day</b>	Even if it is just reviewing notes — doing something every day will help you stay in the project. It is hard to continue a creative project if you take a break of a few weeks.
<b>use external deadlines</b>	The name deadline comes from a line drawn around a prison. Going beyond this line got you shot. Thus, deadlines must have consequences to be effective, i.e., you must not be able to “prolong” the deadline. Deadlines of conferences or contests can be very motivating.
<b>focus on the success measures</b>	If you try to improve your task/time management, focus on the success measures. You see that it works when you produce more (high quality) creative work.



## WORK SPACE

A good work space is necessary in nearly all aspects of creativity. Having everything available that you need is easy. The real difficulty is keeping interruptions at a minimum to allow you to work in long stretches of time.

You can prevent most interruptions if you plan ahead and protect these spaces. Get the infrastructure right — change the work setting so that you do not have to actively prevent these interruptions every time you sit down and want to work.

<b>protect your physical space</b>	Interruptions, like visits from strangers, colleagues, or family members, are an issue. Avoid them by working at night, in a place where nobody searches you (see next page), and establish a door policy (closed door means: do not disturb, a half-closed door: only when important, and an open door: come in any time).
<b>protect your virtual space</b>	Interruptions are usually phone calls, eMails and instant interrupter messages. Disconnect the Internet or mute the new mail sound and use the fullscreen mode of your applications (e.g., the fullscreen writing mode of Scrivener).
<b>protect your mental space</b>	Find a place where you feel at ease working, where you like to be and feel safe, and where you are not motivated to do anything else, but focus on your project.

See also "Group Creativity Room" on page 295.



My workspace for a painting project. Late at night, no distractions, just some good Whisky and some concentration.

## WORK SPACE

### GOOD PLACES FOR WORK

If you need to work for long, uninterrupted stretches of time, the following places might be helpful. Most of them can only be used if your creative work can be carried with you, e.g., you work digitally and need only your notebook or tablet.

<b>home</b>	The place where "work gets done". If you do not have children and/or a partner (or the partner is also creative/respects it), you can work anywhere at home (but it pays to have a dedicated place for it, see below).
<b>retreat at home</b>	If you have children or other kind of interruptions, build/defend your own space at home. This can be the garage, a room in the cellar or in the attic, or a shed in the garden.
<b>office (at unusual hours)</b>	Office buildings are usually deserted on weekends (depending on the job) and early in the morning/late in the evening. If you have to work in the office, these are usually the best times to work. And lock your door.
<b>university library</b>	Most major cities have one and there are usually places that can be accessed by anybody, student or not. Ideally, you see a lot of students working, which is very stimulating. You might have to arrive early to get a good place to work. Cheap food is usually available nearby, which is an extra plus.
<b>hotel room</b>	Can be very useful for work, but make sure you get something to eat and drink from the nearest supermarket first. Minibars are expensive and get empty quickly.
<b>train/airplane</b>	There is the risk of the people travelling with you (some are obnoxious), and if you need an internet connection it is usually frequently interrupted. On the other hand longer train journeys give you time to work, and even shorter ones can be used (e.g., for reading, see page 349).



## DEVELOPING KNOWLEDGE AND SKILLS

Creativity depends on the craft of the individual, and this requires knowledge and skill. The following points might help you with learning knowledge and training skills:

<b>choose the right domain</b>	You will spend a lot of time learning the domain, so choose one that genuinely interests you, not because your parents/partner/friends say you should (or shouldn't) occupy yourself with it or because of the money/recognition is good. Burn for it!
<b>start with the fundamentals</b>	As Randy Pausch said, without the fundamentals you cannot do any fancy stuff. So start with a solid understanding of the basics, because all your future learning and your performance will be build upon it.
<b>rote learning is sometimes necessary</b>	In almost all areas there are some things that you have to learn as is, be it vocabulary, definitions, formulas or the like. It is tedious, but get it done.
<b>learn for understanding</b>	Whenever possible learn for understanding. You have to understand the building blocks to use them.
<b>achieve the principles, not the procedures</b>	Learning is often reduced to procedures (e.g., "plan-write-rewrite"). Whereas they are safe, predictable, and easy to work with, strive to achieve the principles behind them, what the exercises really aim at (and improve the exercises if you see a better way). <sup>1</sup>
<b>keep good notes</b>	The best advice a former math teacher gave me was to write clearly, and give the page a clear structure. It helps a lot if you can read your notes later — and like to read them. Don't just scribble, make good notes about the things you read and learn.
<b>write down your questions and answer them</b>	When learning you will encounter things that you do not understand — yet. Write them down, and if you cannot answer the questions yourself later, ask others — not for the solution, but for instrumental help to answer the question yourself, so that you can solve the problem by yourself next time. <sup>2</sup>
<b>write down your ideas</b>	It is possible that you have great ideas while learning a domain. Write them down and evaluate them later when you have more knowledge. Otherwise you are very likely to forget them.

## DEVELOPING KNOWLEDGE AND SKILLS

<b>create help sheets</b>	You learn a lot when you create help sheets. Similar to cribs/cheat sheets you write down what you know about the topic, but focusing on the important aspects (see page 354).
<b>do it every day</b>	Schedule a certain amount of time (e.g., 4 hours) each day for studying and stick to it. It is not the excitement of beginning a new topic that will give you expertise, even if you spend the whole day learning during the first few days. It is the regular practice that will — over time — help you to reach expertise.
<b>learn from the best (for you)</b>	Find out who the best teachers/books/sources are in your domain and learn from them. Meeting their standards will be the first challenge. If you are forced to take a specific teacher (school, university), fight for high-quality education (see page 299). Beware of your teachers — their reputation might taint yours, positively or negatively.
<b>choose the right environment</b>	High class institutes/courses usually have other advantages — they draw the best people, have more resources, better materials, etc. You are surrounded by smart people and have a lot of learning opportunities. This is crucial and should be a conscious decision if you want to work in science.
<b>find a mentor</b>	A mentor can monitor your learning progress, give you honest feedback, show you the ropes, give invaluable advice, or can make connections to other people. Find someone who has the necessary perspective and people skills, and who does not want to turn you into a clone of him-/herself, but wants you to develop your own style. Professionals who have just retired are usually a good idea.
<b>take good courses</b>	Courses are good when there is a big difference between reading about the subject and actually doing it, yet it has a steep learning curve so that you can actually learn something in the few course hours. Search for an instructor who is not only an <i>expert with personal experience</i> , but can also <i>convey what she learned to your level</i> (usually not related!). Ideally, she has a vested interest in the quality of the course, either due to personal standards, or due the hope of promoting the hobby/attracting customers.

## DEVELOPING KNOWLEDGE AND SKILLS

<b>focus on methods and techniques</b>	They will help you each and every time and are the basis of your craft, be it in art or science. Although many people hate statistics, it is the most powerful tool in your arsenal (and can be devastating if you use it on the works of others).
<b>plan and prioritize your learning</b>	Get an overview of the domain and tackle the subjects one after the other. Find out what is the groundwork and to which depth you need to know the information. An outline of the topics to learn (cross out each topic after you have learned it) is extremely helpful (not only for exam preparation).
<b>learn from everything</b>	No matter the domain, you usually find exercises, stimulation and problems in almost every situation. If you are interested in photography take your camera everywhere you go (there are postal workers who stop and take pictures when they find an interesting motif) and analyze each photo you see.
<b>look beyond the domain's borders/ from different perspectives</b>	Be open to connections/input/perspectives from other domains. If you see something that might work in yours, try it out. Some of the best ideas and inspirations in science and art came about by transferring something from one domain to the other.
<b>start a project</b>	You learn a lot by applying the knowledge/skills you have learned to real situations or small projects (e.g., a small computer program, or a small study) — and you should. Learning is not a game, you have to achieve something with it. If the project is small enough, realizable, if you invest serious effort, and get help, it will be a highly motivating goal.
<b>learn to be critical</b>	Always question what you learn (GIGO <sup>3</sup> applies everywhere), but dismiss it only if you have good arguments to do so and know a — working — better way. Do not blindly follow others, but have a look for yourself where you are going.
<b>learn to deal with feedback and criticism</b>	Feedback (see page 160) is needed in creativity, including criticism. Learn to deal emotionally (see page 168) and constructively with feedback (see page 172). Find out how you can convey your ideas (see page 167 and 176ff) to get better feedback.

## DEVELOPING KNOWLEDGE AND SKILLS

<b>learn in real contexts</b>	While book learning is often necessary, only real world experiences — with all the fine nuances that are not represented in books — can give you realistic feedback. It will face you with real practical problems, real successes and also real failures. Get your hands dirty and get practical, real world feedback of what works — and what does not.
<b>when experiencing failures always remember that you are learning — all your life</b>	Do not expect proficiency or top results easily. You will have failures, make mistakes and experience defeat — no matter how good you are. That is part of learning — it shows you that you are doing something difficult that is worth learning.
<b>allow yourself to be a beginner</b>	Especially as an adult it may be hard to start learning something new — you are mature yet you know so little. There might be children knowing more than you and performing better. But how could you know more — you are just beginning to learn. Look at it not from the perspective of your own age, but of the time you have invested in the topic. And enjoy learning like a beginner — and use your experience to optimize learning.
<b>never be afraid to make mistakes — or to make a fool out of yourself</b>	You cannot learn if you are scared of making mistakes. That is part of learning. Ask questions, try out, find out. In a good place, this is honored, only in a bad place do they laugh about you. Never be(come) afraid to say that you were wrong.
<b>never be afraid to say "I don't know ... but I will find out."</b>	Do not hide your ignorance. Be courageous enough to say when you do not know something (except in an exam) and that (and how) you will find it out.
<b>differentiate between learned knowledge and your own contribution</b>	Understanding something (e.g., the ideas of great philosophers) has merit, but it is not equal to coming up with something creative yourself. For this you have to work with the acquired knowledge and build something on your own. Snobbish arrogance is rarely helpful and usually unwarranted.
<b>persist</b>	Learning is drudgery and often hard work. Nowhere is persistence needed more than here. Even with interest you will experience phases where you do not want to learn. Persist, change your strategy if you run repeatedly into a wall, but follow the goal.

## DEVELOPING KNOWLEDGE AND SKILLS

<b>focus</b>	Set a clear focus of what you want to learn. Your time is limited and the time of polymaths is over. Decide on what is important for you and how much time you want to invest in it every day — and stick to it. See pages 55 and 56f.
<b>observe others</b>	You can learn a lot by observing others, your peers, as they try to learn the same, and masters of the craft. Luckily, the Internet gives you access to a lot of them. If it is anything that can be seen, chances are that there are already some videos of people doing it on YouTube (e.g., painting).
<b>learn the right thing</b>	There is a lot of pseudo-science out there that uses scientific language, but not scientific methods (the Internet also unites the wackos). Also many would-be experts of art will tell you with absolute confidence absolute bullshit. Be sure to get the real deal and inform yourself about courses, projects, etc.
<b>prepare for long-term learning</b>	Learning until you become advanced or even professional takes <b>years</b> (see page 54) of hard work (see page 53). If it were easy, everyone would do it. Take care to track your progress and do not be discouraged if "instant <i>continuous</i> success" is not an option.
<b>note that you are responsible for your learning</b>	Even in school it is pretty much "sink or swim" — and you are responsible that you stay afloat. Do not wait for others to take care of your learning or expect them to impart it to you.  Put your learning in the best hands available — your own.

<sup>1</sup> Bereiter, C. (1999). In Search of High Impact. In L. Harasim (Ed.), *Wisdom & Wizardry: Celebrating the Pioneers of Online Education*. (pp. 8-9). Vancouver, BC: Telelearning, Inc.

<sup>2</sup> Did you know that it is usually the incompetent ones who do not ask for help, or if they do, ask others to solve it for them? The good learners who turn out to be competent later ask for instrumental help — help that enables them to solve the problem themselves. They do not want the solution but support in getting it right themselves.

<sup>3</sup> GIGO = "garbage in, garbage out", i.e., if the input is bad, the output will also be bad.

## DEVELOPING KNOWLEDGE AND SKILLS

## TESTING YOUR UNDERSTANDING OF THE DOMAIN

Once you think you have learned something, you need to make sure that you have really understood it. The following points might help you in verifying this:

<b>look for tests and formal exams</b>	Exams are your friend. They provide you with a deadline and strong motivation — and they give you a chance to show what you have learned.
<b>apply it</b>	You can learn by starting a project and you can test your knowledge/skills by starting another one after you have made progress. Other ways to apply it are, for example, talking to native speakers when learning languages, or writing a text when learning to write well.
<b>transfer it to a different context</b>	To avoid that your knowledge is context bound, apply it to another context. For example, in math, try problems that require the same processes in another application domain.
<b>talk to other experts</b>	It will show you whether you can understand them and hold your ground, and provide you with more information and ideas of what you can learn.
<b>explain it to others</b>	Teaching something will clearly show you whether you have understood everything, whether the knowledge is really there (and not just the illusion of knowledge).
<b>take part in a contest</b>	In some domains contests are offered. Participate. It will provide you with a challenging project and sometimes give you valuable feedback.
<b>avoid the "Big Fish — Little Pond" effect</b>	You get a false sense of competence when the test is too easy (e.g., the questions are simple/graded benevolently or the competition is stale). Take a look at the difficulty of the test and your competition. One reason why working up your way from national to international contests is really helpful.
<b>avoid discouraging (con)tests</b>	Competing with the best and seeing them work can be very stimulating, but also detrimental to your motivation if you do not think that you, too, can achieve this level one day. Make sure you compete on a level where you can learn something.



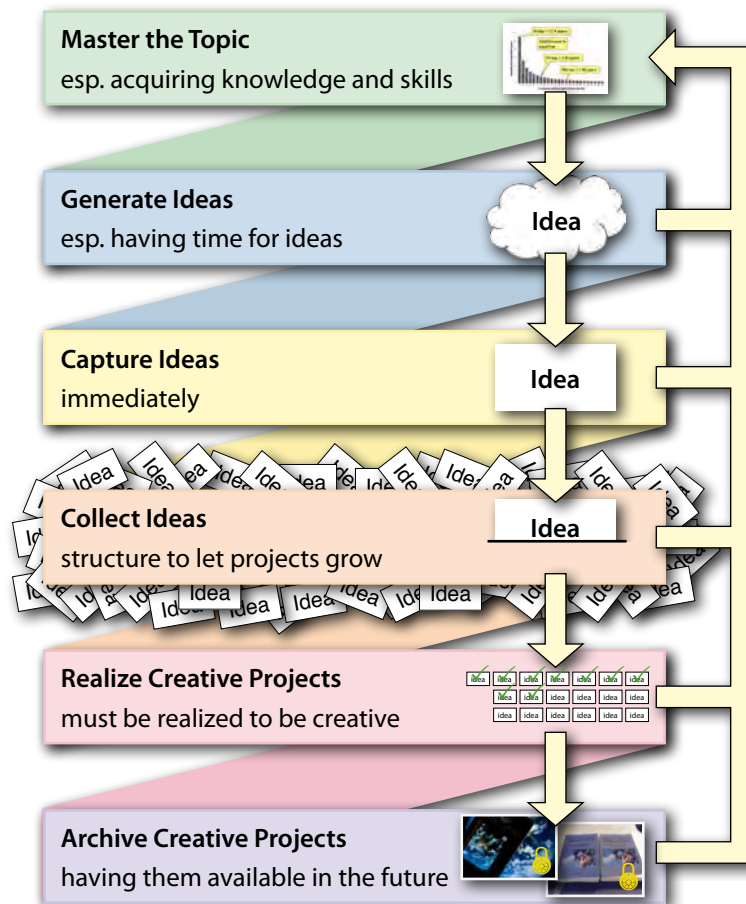
# Organize Creativity!

## II. GENERATE IDEAS

## PREREQUISITES FOR GENERATING IDEAS

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**Organizing Creativity = Creating the Infrastructure to ...**



Creativity is often seen as "having ideas" and many books focus on this step by providing creativity techniques. However, creativity involves much more (see pages 31 and 44, or the figure on the left) and generating ideas is not even the first step of it.

Before you start generating ideas, the following aspects must be fulfilled:

<b>clearly defined aims</b>	Unless you know what you want to achieve and have specified the problem, you cannot hope to find solutions for it, nor would you recognize them as solutions if you saw them.
<b>necessary data available</b>	For many situations and problems you need to have an understanding of the situation. E.g., you need to have data available about the situation.
<b>necessary knowledge and skills available</b>	Knowledge is the basis of creative ideas and unless you have that knowledge, you cannot hope for (good) ideas. And without the necessary skills, you cannot hope to realize them.

Usually, ideas come while or after learning about a topic (see page 66ff). However, you need to have time for incubation (see page 74f). You can use techniques to help you generate ideas (see page 76ff), and there are some things you can do to find problems (see page 93ff).



## TIME FOR INCUBATION



To generate ideas via incubation, you must have the knowledge available in your mind (people who are famous for their Eureka moments usually thought long and hard about the problem), but not focus consciously on it. To do so you need time where you slow down and are open for any insights you might have.

While this usually does not look like much (you are doing 'nothing'), these moments are scarce today. There is this need to use time efficiently (it *is* the most precious commodity), and that you *are* using your time (for incubation) is usually hard to convey.

However, there are some activities you can do that will give you this time — and which are either socially accepted or hard to notice.

walking	Go for a walk, e.g., after lunch, or walk to your workplace if you live close. It will also improve your health and give you time to wind down from work. Make sure you have something to write/record with you (see page 111f).
bathing	You are essentially sitting around, relaxing, letting your mind come up with ideas. Just make sure you have a ready infrastructure to capture ideas (see page 119f).
shower	Shorter than the bathtub, but also a good place for capturing ideas (see page 117f).
toilet	Strange as it may seem, for some people its the only time at work or at home they have when they can relax for a moment. Don't read a book or a magazine, be open to ideas (see page 122).
before falling asleep/standing up	Lying in bed (alone) is a great time for ideas, but you need to capture them, because you will likely forget them in the morning — and there are ways to do so (see page 115f).
meditation/Yoga	The socially accepted and healthy form of doing nothing and great for ideas.
midday sleep	Socially accepted in some contexts and very helpful to regain strength and process information.
presentations and meetings	Great time for ideas, you sit around, do nothing <sup>1</sup> (much), and you usually have something to write (see page 121).
daydream	Relax your muscles, become calm and focus on yourself. Try to allow yourself all kinds of silly thoughts.

## TIME FOR INCUBATION

classical concerts	While writing is a problem (use the program leaflet), it is a time when people sit around and do nothing besides listening — and a good place for ideas.
traveling alone/as passenger	You combine stimulating changes in scenery with time to focus on yourself and your projects. Travel by train is especially recommended (see page 113).
spending time alone	Social engagement is good and social ties necessary, but you need time alone to hear your own thoughts.
endurance solo sport (e.g., jogging)	If your body is busy with motions it could do while sleeping, your mind is free to get to ideas. Jogging and other forms of endurance sports (e.g., home trainer) are very good times to get ideas. Choose a suiting speed, which your body can keep without effort, and capture ideas while doing sports. Also see page 120.
driving the car	Not really recommended as you need your attention for the road, but possible if you usually drive the same route (don't hold me responsible if you cause a crash, and see page 112).



<sup>1</sup> The meetings of the “kill me now!” type, to quote Merlin Mann’s presentation: <http://www.43folders.com/2010/10/06/broken-meetings>

## CREATIVITY TECHNIQUES

Creativity is much more about shaping the infrastructure and the context to be creative, to learn, generate ideas, and implement them, than about specific 'techniques'.

And creativity techniques are not silver bullets. They cannot work miracles and they still require the necessary knowledge and skills. On the other hand, they give you an excuse to spend time thinking (you are not wasting time, you are "*applying a technique*"; see page 74). They also force you to break the routine and thereby give you a way to reach the same goal in a different way.

The best creativity technique is the one that *suits you most in the given situation* — there is no "absolute" best technique, as people are different, working styles are different, circumstances are different, and areas are different. Try out what works for you in the given situation — like in other contexts, it is like fairy princess searching for her prince: You have to kiss a lot of frogs until you find the one that is right for you<sup>1</sup>.

Here is an overview of different techniques, sorted into general categories:

1. Structural Techniques (page 77f)
2. Perspective Techniques (page 78ff)
3. Inspiration Techniques (page 82ff)
4. Getting Help Techniques (page 84ff)
5. Distance Techniques (page 86)
6. Change of Options Techniques (page 87f)
7. Changing Yourself Techniques (page 88ff)
8. Just do it Techniques (page 91)
9. Use the Collection (page 92)



The focus on the process described here does not mean that there is no place for serendipity in creativity. Take care that the "creativity techniques" do not get in the way of achieving beautiful works, deliberately planned or not.

◀ Something I have found in my cup of coffee one morning — turned out to be a nice photo opportunity (got terrible feedback, though).

<sup>1</sup> And depending on what you urgently need and what the technique delivers, a lot of this kissing is French kissing involving a very long tongue and leaving you with the taste of dead flies.

## CREATIVITY TECHNIQUES

## 1. STRUCTURAL TECHNIQUES

*"The Way You Work in General"*

<b>keep your independence</b>	Do not identify yourself with only one thing, one method, or one perspective. Do not let mass movements tempt you — they might be on to something, or it is just presumed safety in masses. Keep your options open and your interests your own.
<b>a time for ideas</b>	It is hard to have ideas when you are in action 24/7. Make sure you have time for ideas, regularly, every day of the week.
<b>seek solitude</b>	Find a place to be alone with yourself for a while. Reduce the influence of other people and look at the problem yourself — what do you see?
<b>be open and prepared</b>	Have the infrastructure ready to capture your ideas.
<b>do your own thing</b>	People often constrain us — authority, traditions, the voices around and inside of us. So focus on your own thing.
<b>ignore authority</b>	The key with authority is to ignore it, not simply to try to defy it. Striving for the opposite conclusion is not creative, it is simple opposition. If you are looking for a new idea, ignore what the authority wants and look for yourself. Or to put it differently, find a third way.
<b>ignore tradition</b>	Tradition is only the intangible authority of the past, reaching into the present. But the past is over — ignore it. You are searching for a new solution and tradition for tradition's sake has no merit.
<b>follow your inner voice</b>	Follow your quiet inner voice when it asks you to try out something, even if it is very faint. It is even more important to do so when the voice is very loud, but the people around you scream "No." Do not do what everyone does, but follow your own intuition.
<b>break the routine</b>	Many strategies try to induce change by travel, different perspectives, etc. A change in the routine or structure you work with might give you the stimulation you need.



## CREATIVITY TECHNIQUES

**follow the ideas**

Follow a random thought and see where it leads you. If it can't shake you off or mislead you, it might lead you to some working solution. Even if you do not gain a solution for it, if you sketch your ideas out as far as possible, they give you more to work with later on.

**2. PERSPECTIVE TECHNIQUES**

*"See a problem differently to solve it."*

**challenge assumptions**

Unquestioned assumptions give the illusion of knowledge and are the bane of experts. While they free resources, you are likely to see only your expectations, thereby overlooking important details and working under false premises. Make your assumptions explicit, challenge your assumptions and expectations — and test them. You can see the power of assumptions in analyzing magic tricks, which usually misuse assumptions your senses take for granted (e.g., that a ball is solid and not some kind of flexible material).

**challenge the assumptions you like**

Challenging assumptions might lead you to focus only on the assumptions you do not like (e.g., your opponents'), but often it is assumptions you hold dear that you have to challenge.

**challenge false dichotomies**

We have a tendency to reduce problems to either-or solutions. But there are often more options available than "take it or leave it", "sink or swim", etc. Find a new approach that contains both extremes.

**redefine the problem**

Can the problem be solved differently than it was presented to you? Take the 9-dots-problem on page 43. It is only possible to solve when you stop seeing the outer points as the work area. Bypass the problem, redefine the borders, turn it upside down, or use the cliché: "Think outside the box."

**re-estimate the difficulty of the problem**

Is the problem really as difficult as you assume it is? Or is it easier (and you overthink the issue/too powerful tools) or harder (outside your class of tools)? Sometimes simple solutions are overlooked because they are simple<sup>1</sup>.

<sup>1</sup> See the TED talk by Rory Sutherland (2010) about behavioral economics and the power of simple solutions: [http://www.ted.com/talks/rory\\_sutherland\\_sweat\\_the\\_small\\_stuff.html](http://www.ted.com/talks/rory_sutherland_sweat_the_small_stuff.html)

## CREATIVITY TECHNIQUES

**simplify**

Focus on the relevant function, or aspect you want to convey, and leave out any superfluous details.

**consider the exceptions and fuzzy borders**

Many discoveries were made when extreme cases, outliers, issues that do not fit in current theory, are considered. Do not ignore them as distraction.

**focus on the goal, not the past solutions to reach that goal**

Mechanical means of doing what humans can do, but faster/stronger/more efficiently, often do not look like the human equivalent. A forklift does not look like the human hand and a sewing machine sews differently than a seamstress does. It is important to know what was done before, but do not be bound by past solutions in finding new ways to reach the same goal.

**change your approach**

You have a specific goal and while the way to this goal must have some constraints (like doing it without cheating/plagiarism), the way is usually quite amendable to change. Don't be the inflexible chicken standing in front of the fence. Persist in wanting to reach your goal, but accept the losses in time and effort and step back to find another way.

**question your methods**

The methods you use can skew your view on the world, and they can limit what you can achieve. Look at the powers and limitations beyond their reputation as established procedures or methods, use methods from different domains to get a more complex, complete, and concrete picture, develop your own methods and styles, and test new technological advances for their usability for you (beware of their usual teething troubles).

**physically change your perspective**

Often the easiest, but also a very powerful, way — look the world from a different physical perspective.

**look where no one else is looking**

Most scientists congregate to the issues that get funding, but these issues are not necessarily the most important ones. Same with art, what is supported is not always what should be said. Sometimes the real issues are disguisingly trivial, and people overlook it because they do not seem worthwhile. Yet they can contain gold.

**consider the details**

Theories simplify. Have a close look at the details to see what was smoothed out. Sometimes these wrinkles hold the solution to your problems — or new problems to work on.

## CREATIVITY TECHNIQUES

<b>look at the world around you with a sense of wonder</b>	Keep your amazement when looking at the world. Keep a naïve position and do not take things for granted. To quote William Blake: <i>To see a World in a Grain of Sand And a Heaven in a Wild Flower Hold Infinity in the palm of your hand And Eternity in an hour.</i>
<b>turn the situation upside down</b>	Can the problem be turned into an advantage? Can it at least be described as one, e.g., the lack of advanced functions make it very user friendly? Sometimes trying to see a disadvantage as an advantage (for the same or another target group) might lead you to a creative solution.
<b>lay it out before you</b>	Sometimes you have to lay the information you have in front of you, or pin it to a wall, to see the big picture and the connection between the different parts. Leave it on the wall for a few days, it will give you an overview that might get you back on track.
<b>ask questions and be careful with answers</b>	Remember the W-questions (which, what, whose, who, whom, what, which, where, whence, whither, when, how — okay, no W in the beginning, why, wherefore, whether)? Ask them to yourself regarding the problem at hand.
<b>look at the big picture</b>	You might not be able to improve a given object, but perhaps you can place it in a different context, or work on a different scale. Ford's success was not to build an individual Model T, he found a way to build hundreds of them, thousands. Look beyond the individual object at the big picture. Place it in the larger context and see what you can do.
<b>look at the core of things</b>	One of the keys to flexibility and creativity is to see what is really there, what an object is capable of doing when we take it out of the context we normally look at it. Try to have a look at the things around you and look what they do, what they can do, beyond the name that was assigned and the function it was designed to fulfill.
<b>take the perspective of someone else</b>	Try to see it which different eyes: How would a child see the world? How a foreigner? How someone from a different century? What is changed, and why, and what can it tell you?

## CREATIVITY TECHNIQUES

<b>describe it differently</b>	Describing the problem in a new way might give you the perspective to see the solution to the problem, or at least, push you in the right direction. This will force you to recollect the facts you know, the relationships between the facts, and find a way it can be displayed with that medium to the audience. Tools can help you here, e.g., MindMaps (see page 228), Magic-Charts (cf. page 211), outlines (see page 230), or conversations (cf. page 84).
<b>look at the data</b>	Get a feeling for the data, not only the values in the table but how it was gathered. Playing with the data, just trying a few tests and looking what can be done with it, can stimulate ideas.
<b>use a different visualization</b>	Play with the data and use different visualizations. Especially visualizations that show the similarities and differences, aggregate the data, or show selected dimensions of it (including progress over time).
<b>look at an individual case</b>	An in-depth study of a singular incident with all its nuances might get you ideas.
<b>go further</b>	If you think it is worthwhile, go beyond where other people went — or dared to go. But remember that creativity is not only new, but also useful.
<b>break it down</b>	A complex problem is often only complex because it was not sufficiently broken down. Breaking down a complex problem into its subparts, keeping them separately and switching back and forth between them, while keeping the big picture in mind, is often a working solution for complex problems.  You still have the complexity that will be apparent in the final work, but take it step by step, not simplified, but still as complex as it was, in manageable packets. The Wright Brothers solved the problem of flight by breaking down the complex problem into different, separately easier to handle, sub problems (e.g., aerodynamics, weight, power, etc.). Writing a book also works best if you break it down into individual chapters of an outline.

## CREATIVITY TECHNIQUES

## 3. INSPIRATION TECHNIQUES

*"Lighting the knowledge you have about a situation."*

<b>look for analogies</b>	There are a lot of stories about inventions being made by analogy, e.g., Whitney's cotton gin (cat who tried to catch a chicken through a fence), Morse's telegraph station (stagecoaches changing their horses after each stop), Kulele's benzene ring (snake trying to bite its own tail). Whether these stories are true or not, analogies can be a tremendous help understanding problems. However, if the important aspects are not equal, they also can distract you from the solution.
<b>look at science/art</b>	If you are working in science, look at art, if you are working in art, look at science. These two major areas for creativity are closer than they appear <sup>1</sup> .
<b>associations</b>	Write down/sketch whatever comes into your mind regarding the topic. Check synonyms of central terms in a thesaurus or in Google. See what develops and where it leads you.
<b>ask your collection</b>	Creativity is easy if you do not have to be creative in that moment. If you plan ahead and explore scenarios before they come into existence, you are not forced to find a solution within a very short time frame under tremendous pressure, but can simply pull it out of your drawer (i.e., your idea collection).
<b>force relationships</b>	Find relationships between the aspect you are dealing with and a randomly selected word. It might get you new ideas.
<b>look at different disciplines</b>	Great discoveries were made by transferring the ideas from one area to another, e.g., Darwin did draw upon geology. Artists often merge existing styles or revisit earlier stories (e.g., many writers are retelling the same classic tales).
<b>browse the internet</b>	While googling for a solution will not work, browsing the web might give you some ideas. Make sure to time-limit this strategy.

<sup>1</sup> See the TEDtalk by Bantjes, M. (2010) about Design, why it's a worthwhile pursuit in life, and that "inspiration is cross-pollinating" — that art can inspire science and vice versa. [http://www.ted.com/talks/marian\\_bantjes\\_intricate\\_beauty\\_by\\_design.html](http://www.ted.com/talks/marian_bantjes_intricate_beauty_by_design.html)

## CREATIVITY TECHNIQUES

<b>oblique strategies</b>	A series of cards with questions. A card is dealt and the problem is considered in the light of the question on the card.
<b>unfinished works</b>	In science every paper raises new questions (make sure they matter), and in art, great works remain unfinished. These open questions and unfinished works can be a great inspiration for own ideas (e.g., how to tackle these questions or how to continue this work).
<b>existing works</b>	Re-visit great works or worlds with your own ideas and methods. Where can your ideas and methods go beyond the past work? The whole area of fan fiction is based on this.
<b>consider the natural world</b>	Nature is one big laboratory, in which trial and error combined with natural selection create astonishing works (e.g., cockleburrs lead to Velcro; the tortoise to the tank). Look beyond 'pure' nature (e.g., forests and rivers) and also take into account what has developed in our "civilized" environments (e.g., cities and sewers).
<b>visit an inspirational environment</b>	Sometimes it is hiking, sometimes it is the museum, or a trip to the relatives. But there might be some environments that you find stimulating. It not only gives you a break, or the time off you need to think about the project, it might even provide you with ideas.
<b>travel</b>	If it works for you (for some it is only distracting), traveling can bring a change in perspective and can be very stimulating. You break your routine, are forced to try out different things, and become more flexible in your actions. Crucial for artists who work by "seeing" interesting objects to use for their creative work.
<b>look at your mistakes</b>	It hurts when you have to look at your mistakes, the failed experiments, the grotesque monstrosities that grew out of your canvas or in your lab. But your mistakes can give you a lot: You can learn from your errors and they can inspire you to do better.
<b>improve the infrastructure</b>	Make sure you have a working infrastructure that supports you in being creative and stimulates you to get new ideas. Some require a world of clutter, others nearly an ascetic cell, most are somewhere in between.

## CREATIVITY TECHNIQUES

<b>surround yourself with different people</b>	Talk to different people, read materials outside your own field, accept that others hold perspectives different from your own, and try to see the advantages of those and the limitations of your own. It can help you to challenge assumptions and stimulate you to do things differently than the mainstream in your field.
<b>have a close look at things you consider ridiculous</b>	We miss a lot because we consider it trivial or ridiculous. For example, series like Star Trek or Doctor Who look silly on the surface, but below the alien costumes they convey deep meaning. If you shrug them off as ridiculous or childish they cannot inspire you, so have a look whether they cannot be inspirational if you examine them closer.
<b>get new tools</b>	The tools you use not only allow you to create creative works, they can also stimulate it. If you ever bought a new computer, got a new program (or new version) which opened up new options, or even got a new box of crayons, you know what I mean. Suddenly you have all the options and it is an inspiring moment. Take a look if your tools cannot help you to get ideas.
<b>learn more about your tools</b>	What you can achieve with a tool depends on the power of the tool and the knowledge and skills of the user. Learn to handle your tools better and find new methods to use the tool. For example, one way to use the Serial Letter function of Word is to create a tear-off calendar, as it does not matter for Word whether you use it to write letter addresses — or dates and quotes on a small calendar page.

## 4. GETTING HELP TECHNIQUES

*"Other people can be a great inspiration"*

<b>surround yourself with smart/creative people</b>	You can learn a lot from smart/creative people — they are an excellent stimulation. Join clubs, find forums, build a real virtual community, avoid the trolls and strike bonds with the few interesting ones. Look for scholarships, visit conferences, look beyond the borders of your department for interesting colleagues to have lunch with regularly, and join societies that suit your needs. But remember to evaluate the time spend by the products you create, not by the fun you have.
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## CREATIVITY TECHNIQUES

<b>retreat with colleagues</b>	Schedule a holiday and retreat in a hotel with interested colleagues (e.g., like computer scientists do in Germany with Schloss Dagstuhl). Cut the connection to the outside world (e.g., turn off your cellphones) and concentrate on the problem. Intersperse with relaxing activities to keep motivation high and to regain you energy.
<b>work in heterogeneous teams</b>	Seek people who are dissimilar to yourself and the rest of your team. It introduces different views and conflict, which can lead to great ideas if solved positively. Make sure that each member is valued for his/her contribution and that they can communicate (understand) each other (see also Interdisciplinary Communications on page 296f and group work on page 289).
<b>talk to the ones who work at the critical spot</b>	For example, in R&D, talk to the ones who actually produce the units, or to the sales people who meet the customers. These people, who work "where the rubber meets the road", can tell you a lot about your products — from a practical and from the customer perspective.
<b>expert opinion</b>	Despite the risk of narrow-mindedness and some serious failed predictions, experts are usually right (they <i>are</i> experts). Ask them and listen to them, even if you do not follow their suggestions.
<b>talk to a layperson</b>	Explaining something complicated to a layperson can give you new ideas. You have to really get to the core of the issue to explain it to someone who has no expertise in the topic. It will bring a lot of implicit assumptions out in the open and show a lot of contradictions.
<b>get a (project) partner</b>	Given it is someone who is equally interested and trustworthy, a partner can be a great help.
<b>argue</b>	Keep the respect, but argue for the better ideas. This works best if you use the Wright Brothers technique of switching the sides every few minutes. After arguing for A for a few minutes, both change the sides so you have to argue for B. This has the huge advantage that each person can find arguments for all ideas and that no one is "adopting" a particular idea — the argument for a solution does not become a matter of pride or defending "one's child" (as it is often the case). If you have a partner, try this technique to focus on the worth of ideas, not the strength of oratory or personality.



## CREATIVITY TECHNIQUES

**brainstorm  
(with care)**

**Operation:**  
Brainstorm  
**Status:** Mission  
Accomplished

A vastly overestimated technique, because brainstorming cannot substitute a lack of knowledge — all participants have to know the facts (sorry). Rules like no criticism and giving wild ideas with quantity over quality do not work if participants know each other well enough to read “What a stupid idea!” in each others *faces or gestures*. Improving ideas that were stated by others is also problematic, as participants might feel a certain ownership over the ideas they state, or refuse to help ideas from others “win”. For brainstorming to work you need colleagues with whom you can be open and share ridiculous ideas, and who really want to work on the problem. Usually, individuals working alone deliver better ideas, so do not expect too much of it. Other techniques — like the Delphi method — can lead to better results.

**Delphi-Method**

The Delphi technique avoids the shortcomings of Brainstorming by preventing social loafing (by accountability), and by allowing for proposing ideas without criticism and preventing irrational defense of ones own ideas (by anonymity among the participants). To do this method you need a moderator who does not participate. This person gets participants who are experts for the topic at hand. She poses the question and collects the answers privately (e.g., via eMail). Then she deletes irrelevant information, anonymizes the contributions, sorts and redistributes them to the experts, who then comment on it and develop the ideas further. The process is repeated until a solution is agreed upon/found.

For things to consider when working with others see also „Group Work“ on page 289 and „Interdisciplinary Communication“ on page 296.

## CREATIVITY TECHNIQUES

**5. DISTANCE TECHNIQUES**

*“Sometimes the distance to the problem is the problem.”*

**take a step back**

Don’t run repeatedly into the same brick wall. Take a step back, get some distance, and let in some fresh air, by doing something different, hitting the books, or the drawing board, or simply by laughing about it. Humor is often regarded as the last thing you need, but especially when the company is nearing bankruptcy, or when five people are trapped 60m below the earth in a cave-in, and the emotions are derailing every thought, a joke can help you to get creative ideas (or get you ostracized or fired).

**punch through**

The opposite often works as well — if you think that stopping to work is the easy option, because work is boring at the moment, then punch through. Remember that the great masters of the past did not have the luxury to say “I got nothing.” or “I don’t feel creative today, I would rather stay in bed.” — they got up and worked hard, because this paid their private projects *and* their rent.

**6. CHANGE OF OPTIONS TECHNIQUES**

*“Freedom and Limitations are both useful.”*

**reduce the  
options by  
constraining your  
creative work**

Complete freedom brings paralysis. Constraint brings focus and ingenious solutions.

Set yourself artificial limits in your work to give you a place to start with. Classically, you would take a dictionary, flip through the pages and pick any word — what ever you want to paint or write has to do with it (you can repeat this process to make it easier/harder). Or instead of facing a blank page, draw some lines or write some words. Reduce the materials you want to use. Take up remittance work and accept the limits of the clients. You can also take part in contests or missions (like Mission 24 on flickr, where topics are given and participants have to take a photo illustrating the topic within 24 hours).

## CREATIVITY TECHNIQUES

<b>reduce your options by constraining your field of activity</b>	Ask yourself what you want to do, or say. What do you want to produce — a product like a book, a statue, a painting? In which area? Which setting? A process to make things easier? For whom? Where are your talents, where can you be creative and make a difference (see also page 264)?
<b>enlarge the options by deviating from reality</b>	Do you really need to do an actual reproduction or a view on the current world? Sometimes deviating from reality, introducing new aspects that are not currently implemented, can help to stimulate ideas. While this might not be usable for (all) scientists, artists can profit greatly from this technique.
<b>enlarge the options by changing your Materials &amp; Methods</b>	Artists and scientists can get great results when they use materials and methods that can do more than our human senses are capable of. They can enhance colors (e.g., HDR photography), details (e.g., magnification) or display information differently (e.g., false colors). Methods from other disciplines can help greatly, and even if they are not accepted by the field of the domain, they can at least stimulate ideas. Sometimes it is just a small thing, like turning the paper around and drawing without checkered boxes that guide your drawing to specific forms, than can lead to new ideas.

## 7. CHANGING YOURSELF TECHNIQUES

*"Sometimes the problem is you – or a part of you."*

<b>use your mood</b>	If your mood is changing much, try to choose the tasks you do according to the mood you are in. You may not change your mood, but you can use it to do the tasks that suit it. If you are (hypo-)manic and you have a lot of ideas, jot them down. Do not censor, do not criticize, just write them down. When you are in a bad mood, it is time to have a look at the ideas. Throw out the bad ones. Tidy up your writing. Do menial tasks.
<b>get in a positive mood</b>	Some people need to be in a positive mood to be creative. There are actually some things you can do to achieve this. Reward yourself, take a shower, take a bath, put on your favorite music, slip in your favorite clothes, eat your favorite dish, scent your room with a perfume you like.

## CREATIVITY TECHNIQUES

<b>dream</b>	Some people try to use dreams for ideas by training to remember dreams. Even if you think that you cannot remember yours, try writing down even the smallest bit of information you have about your dreams immediately after you wake up. If you do this regularly you will likely remember dreams more often, and in time develop a new source of ideas. Using dreams is not limited to the ones at night. Even daydreams and a nap during the midday can be used for this.
<b>use Lucid Dreams</b>	Lucid dreams are dreams in which you know that you are dreaming — and can control what happens in the dream. They allow you to try out things that you would otherwise not have the means to do so. One musician, for example, uses lucid dreams to compose music by dreaming up the instruments and playing them, or by dreaming a radio and changing the station until he finds a tune he likes. You find information on lucid dreaming on the web, but common strategies include remembering one's dreams every night (see previous point) and noticing typical elements. The more often you do this, the more likely that you recognize them in your dream. Another way is to make reality checks every twenty minutes during the day for a few weeks (use your alarm clock on your wristwatch/cellphone, or a vibrating wrist watch). A reality check can be done by moving your eyes quickly (something which does not work as well in dreams), or by touching yourself at a specific point of your body (e.g., your lower left arm). If you do this regularly, it will creep into your dreams where the reality checks will not work, signaling you that you are dreaming.
<b>stay awake for a long time</b>	Staying awake for a long time is similar to being mildly drunk, but with the difference that you do not damage your health (as much). Some people think that after 24 hours they become more creative, because the short daydreams provide rare connections between topics. The downside is that it is hard to force yourself to write down the ideas when all you want to do is sleep. Take care to avoid important tasks, as well as machines (esp. driving a car), when you have stayed awake for more than 24 hours.

## CREATIVITY TECHNIQUES

<b>keep an untidy mind</b>	Be interested in many things, no matter whether they are related or not (but see page 55). If you have wide interests you have a wide selection of odd bits of information that you can combine. If you look at the amount of ideas that were made by transferring one method or principle from one domain into the other, there is something to it.
<b>let your madness run free (on a leash)</b>	If you have a streak of madness in you, try to follow it for a while (Runco refers to it as "controlled madness"). Remember that being mad is not enough, because the goal is not only to be original (that is easy), but that others attribute creativity to your work. To achieve this, the work must not only be new, but also be good for something.
<b>keep a paracosmos</b>	A paracosmos is a little world inside ones head. It takes some phantasy to build one, but it can be a nice relief from the daily world to retreat into ones inner world for a while. You can lead imaginary dialogues with teachers, mentors, and even adversaries <sup>1</sup> . It is a good exercise for creativity and you might transfer ideas from the imaginary world into the real world.
<b>drugs (not recommended<sup>2</sup>)</b>	While drugs are commonly associated with creatives, they usually come at the end of the artistic career, not in the beginning.  The problem with drugs is that while they might loosen inhibitions and produce links between usually unrelated aspects, they damage your health, become addictive (i.e., competing with your time and resources for creative works), and the ideas usually fail a reality check (seem good in the drug haze, but terrible in the harsh light of the day). And — most importantly — they only work on "having ideas", and do not support the realization. And given that creativity is hard work and drugs are very seductive, you might have a few ideas, but it is unlikely that you can do anything with them.

<sup>1</sup> It sounds a bit "Hannibal Lecter", but it can actually be very interesting.

<sup>2</sup> See also „Depression, Drugs, and Creativity“ on page 270. The question is whether the famous drugs users needed the drugs to be creative — or whether they did not use it to raise the spirits of creativity, but to drown its demons (and yes, these demons can swim, to misquote H. Jackson Brown, Jr.).

## CREATIVITY TECHNIQUES

## 8. JUST DO IT TECHNIQUES

*"Fuck it, let's do it."*

<b>stop thinking and do it</b>	Sometimes we overthink problems. Trying to find a suitable tactic prevents you from actually doing it, from trying it out. This becomes a serious problem if you think you have your reputation to protect, e.g., because you only did successful projects so far. Do not be intimidated by your past successes or your untarnished record (the occasional fuck-up is very helpful). Without trying it out, we do not get new data and we cannot improve. So just do it. Name it test, or prototype, or "examining a failure under close supervision", or whatever to remove the burden of having a successful trial. You have more information afterwards.
<b>produce a lot</b>	Try to keep the quality control for producing ideas as low as possible. You never know what might lead to a great idea if you work on it, rework it, re-rework it — and you can always sort out bad ideas later. While it seems that great artists had only excellent ideas, you do not know what never got beyond a mere sketch — or what got produced but never left the studio. Many results of studies end up in a drawer, or the experiments fail to produce any (usable) results. Even if an idea turns out to be as bad as expected, working on it might improve them or lead to new ideas. One of the reasons that some artists are great is that they never stop producing, and if you produce a lot, you can sort out the crap and keep the pearls.
<b>experiment</b>	One way to produce a lot is try out a lot of different options. Test different alternatives from the same core concept, gather data, make sketches. Many artists made countless sketches before doing the actual painting (now much easier with digital drawing where you can use layers). You do not see these experiments, and from the perspective of the later product they seem like a waste of time. But in art and science they force you to really see what happens/how it looks instead of trusting your (even with unmatched expertise often fallible) assumptions and imagination. And especially in science, while experiments are time-consuming, there is no substitute for real data.

## CREATIVITY TECHNIQUES

## 9. USE THE COLLECTION TECHNIQUE

*"Creativity is easy if you do not have to be creative."*

Personally, I prefer capturing a lot of ideas and hitting my idea collection when I want (or need) to be creative. It is well stocked and I have ideas for projects that would keep me occupied for more than one (normal) lifetime. Once I restructure the notes to realize a project, new ideas usually come pouring in during the realization phase to fill the remaining gaps.

But when there is no suiting idea in the collection, you might want to try out the strategies described here, until you find the one that works for you in the given moment.

## FINDING PROBLEMS

Finding problems is usually harder than finding the solution to an existing problem. In most cases you do not see naturally where you can improve a given situation.

<b>find out in which world you want to live and work to create it</b>	Find something to live for (see page 264). It will give you a mission, leading you to problems you want to solve. See what is there, be discontent, do things differently, stay, because you love this world and want to change it.  However, do not try to rescue the world. Tackle problems that are manageable by yourself during your lifetime (or beyond, if you can set up a foundation or institute, see page 186).
<b>change the domain</b>	If you do not have any ideas in a given domain, change it. For example, switch from drawing to photography or vice versa. Your background will give you ideas, because based on your past history you will see things differently. Keep in mind, however, that this is a major career change and should be well thought out. You will be older than your colleagues, but know less than them about the domain. This might not be as relevant for artists (e.g., switching from photography to painting) as for scientists (e.g., switching from psychology to biology), but in any case it should be carefully considered. There are some examples of great artists (change of style or media) and scientists (e.g., Darwin, Freud, Piaget) who did this and did profit by it.
<b>look at the past</b>	Methods, knowledge and resources change. You can look at the past to find works that could not be realized as they should with yesterday's methods, and try to use today's methods for it (useful for science, but also for art if, e.g., the colors, casting methods, or funding were not available at that time). Perhaps some of these questions remained unanswered, but could be solved with today's technology. Look for projects that artists have abandoned and try to adapt them to today's taste.
<b>continue previous work</b>	Similar to looking in the past, you can not only recreate previous work, but continue it. Most scientific papers list open questions that have to be solved, some artists died before their time (i.e., before their work was finished).

## FINDING PROBLEMS

<b>continue where others have failed</b>	Many creative projects fail and the ones involved are often too demotivated to try again. Choose a project that failed and that you think you can make it work. Starting afresh where others failed might lead to useful results.
<b>think different(ly)</b>	Thanks Apple Inc. for that one. Look at things the society takes for granted and reject them. Try to improve them, e.g., society relies heavily on cars (and this causes problems), so how could this be solved differently? Which functions do cars provide? What is important in a car? What other ways are there to solve the functions without the problems?
<b>satisfy a need</b>	To find a need you can look at the three components of creativity: the individual, the domain, and the field. Ask yourself if there is something that you want, that you want to have changed. You can also look at the domain, are there open questions, some blind spots or fuzzy ends that pose problems that could be solved? Lastly look at the field. Where is it going? Where is the social pressure going? However, finding a genuine, wide-spread need is not easy. Companies use expensive analysis to do so, and sometimes even they fail. To make matters worse, future customers might not recognize the need until they try it (or opinion leaders tell them that they should like it).
<b>make it easier</b>	It is an old saying that "Progress doesn't come from early risers - progress is made by lazy men looking for easier ways to do things." Have a look at something that takes a lot of effort (or just medium amounts of repeated effort, even small effort adds up quickly over time) and find ways to reduce it. The solutions are usually quite simple here, for example, using the escalator itself to clean the glass walls of it <sup>1</sup> .
<b>deal with customers</b>	If you are in it for the money, you need customers, paying customers. Customers who have a need which they might not even be aware of, but that they notice once they see your product. They lack something that you can serve better than others out there. You can strive for a large customer base that will pay your services with advertisements. You can also strive for the long tail and demand specialized prices for specialized products.

## FINDING PROBLEMS

<b>take part in a contest</b>	Taking part in a contest can not only give you a subject (if the contest is under a certain motto), but it can also stimulate you to do your best. Even better, you have judges who will see a lot of good work and who consequently have a lot of experience to judge your work. However, make sure you know and like the contest rules — some organizations hold contests to get new material or ideas, and by participating you agree that they may freely use your work. Read the guidelines closely and make sure that you like them.
<b>go beyond analogies (e.g., beyond "nuclear steam engines")</b>	Many inventions are "just" the transference of existing principles to another setting or the combination of different existing principles. There are spiders that roll down hills, being a perfect example of a wheel in nature. Cars itself look like mechanical animals with wheels for legs. And even the hallmark of mankind's control over nature — nuclear power — is essentially nothing more than a nuclear steam engine (radioactivity heats water that drives steam engines, wood replaced by something with a little more "pep"). Try to go beyond mere analogies and find something new, unencumbered from previous "the same but different" solutions. In the case of energy something that converts radiation in energy directly without going through heating water.

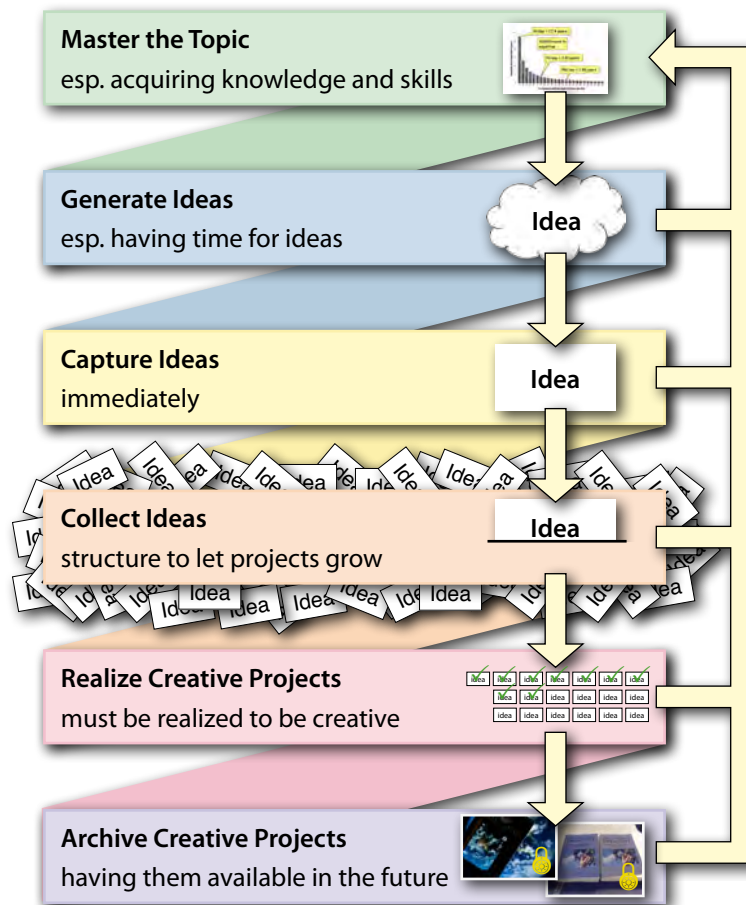
<sup>1</sup> See <http://www.youtube.com/watch?v=IvWy2BYXj44>



# Organize Creativity!

## III. CAPTURE IDEAS

Organizing Creativity = Creating the Infrastructure to ...



### III. CAPTURE IDEAS

### THE PROCESS

## WHY CAPTURE IDEAS?

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A lot of people have ideas, but only a few capture them immediately — e.g., by writing them down. Given that a creative project needs more than just one idea, you should capture an idea immediately after you had it. It will help your creativity in a number of ways:

<b>nothing gets lost</b>	Creative ideas are fleeting, they might be gone in an instant, especially if new ideas come, or an external disturbance occurs (e.g., a conversation demands your full attention). Know the situation when you think about a problem all day long, and when you finally sit down all your previous thoughts are gone? Capturing can prevent that.
<b>it frees up resources</b>	You can only remember a limited number of ideas at the same time, so additional ideas might get lost or prevented. Capturing allows you to use all your resources on other tasks.
<b>it can stimulate new or better ideas</b>	Written down ideas can be the starting point for new or better ideas (e.g., at a later time).
<b>conscious and deliberate quality control</b>	If you capture ideas automatically, no matter your mood or energy levels, you can decide later whether the idea has any merit.
<b>cartograph the river of your thoughts</b>	It prevents yourself from running in circles, by enabling you to take a different direction at a previous step. You see where you are going and where things are still uncharted.
<b>it makes larger projects possible</b>	Large projects consist of more than just one idea and capturing ideas ensures that you have these ideas available when you need them. A small idea might not be much, but it accumulates quickly in your collection. Also you stop being at the mercy of your memory when you realize a project.
<b>very ensuring and stimulates new ideas</b>	A working capturing system allows you to relax and have ideas, because you know that you can capture them when you need to. It will increase idea generation.

## WHY CAPTURE IDEAS?

Some people do not capture their ideas. However, the arguments against capturing ideas do not hold.

Argument Against Capturing Ideas	Rebuttal
<b>too much effort</b> <i>"That's too much work!"</i>	The right infrastructure vastly reduces the effort needed, and habits further reduce effort as the required processes become automatic (e.g., quickly opening the text editor).
<b>emotional reasoning due to bad mood/low energy levels</b> <i>"I am too tired and it's not that good anyway."</i>	Emotional reasoning is usually biased and often wrong (sorry) — and even if the idea is bad, it can serve as the seed for a better idea.
<b>stigma of a snoop</b> <i>"What will people think of me when I take out a notepad and write things down."</i>	If they ask, answer truthfully and politely that you just <i>thought of something you have to do</i> — you have nothing to hide. Trust and love your creativity, and believe that an idea is worth noting. Be in control your actions, do not let the crowd decide what you may or may not do. There are also some inconspicuous ways to note ideas.
<b>others can read it</b> <i>"Thoughts are free, but I get into serious trouble if I write what I think."</i>	Free thoughts are usually free to get lost and never be thought again — jot them down. You can protect your writings and you can always say that it is an idea for a story you are working on ( <i>"I would never do this, but my evil sadistic bitch of a character totally would."</i> ).
<b>(false) trust in own memory</b> <i>"I remember them anyway."</i>	Are you sure, or have you not only forgotten the idea, but also that you had it? Nobody has a perfect memory and trying to retain a memory costs resources — which you could use to generate more ideas or to implement them.
<b>unconscious quality control</b> <i>"Only a remembered idea is a good idea."</i>	So, all your remembered ideas were really good? And how would you know that the forgotten ideas would not have been great, perhaps with a little more work?

## WHY CAPTURE IDEAS?

Argument Against Capturing Ideas	Rebuttal
<b>fear of appearing unprofessional/absent minded</b> <i>"This is my job, I should be able to remember this."</i>	Even professionals with decades of experience jot down ideas, e.g., Helmut Newton (photographer) or Robert A. Heinlein (sci-fi writer). You are not one of these people who have <i>one</i> original idea in a year, you have bursts of ideas, and you cannot remember them all. Your memory is not bad, you just have <i>more ideas</i> than others to remember.
<b>errors in remembering improve the idea</b> <i>"Remembering improves the idea."</i>	If you first want to remember the idea without notes, do so, and compare it with the ideas you wrote down. You can still deviate from the original idea, but at least it cannot be lost (and you can always go back to the original idea).
<b>ideas are too cheap to write down/remember</b> <i>"There are always more ideas."</i>	Ideas vary in quality and while you may have more ideas, for larger projects you need the right idea at the right time. It's like building with Lego blocks and you need one specific stone to finish your building — it is just so very tiresome to wait (again) for the right idea.
<b>fear of looking silly</b> <i>"I look stupid doing it!"</i>	Walking and jotting down ideas looks strange, but if you focus on the capturing you can ignore the people around you that you will most likely never see again (or that will quickly get used to your style). Also see „Dealing with Social Pressure“ on page 104.

### TRY IT

Capture your ideas for a while (e.g., half a year), then make a deliberate decision, if

- you have the personal capability to do so,
- you can train yourself to do so,
- your ideas are more frequent,
- your ideas are of a better quality, and
- you think it is worth the effort.

After all, you have a clear criteria for its success: higher quantity and quality of ideas.



## HOW TO CAPTURE IDEAS

To capture an idea you need to do it **always, immediately, fast, effortless, without sorting** and with **low quality control**, by using **simple, flexible methods and techniques** and in a way you can **understand the idea later**.

<b>always</b>	<p>Reinforce your mind for producing ideas and valuing them enough to use them. Make sure you always do something with the ideas, even if it is only the first step — capturing them. This is hard in a situation in which you want to relax, but in which a lot of ideas come, e.g., in a bathtub/bed. But with the right infrastructure you can make this easy on you.</p> <ul style="list-style-type: none"> <li>• Always carry something to capture with you. This strongly favors paper over digital. Given that you can easily find something to write on, no matter where you are (in a ditch, your skin will do), keep a pen with you at all times.</li> <li>• Have something to capture readily available in the places where you often are (e.g., bed, shower, bathtub, toilet, car, work). Notepads work well — you can tear out the written pages and leave the pad there. Always keep it well stocked.</li> <li>• Use a rugged tool that you can use anywhere. Usually this favors pen and paper. I have dropped my notepads on the ground and into the bathtub, and used them in the rain and in the desert. The writing did survive (well enough). Damaged notepads can easily be replaced (I always have a few lying around), mobile devices — not so much.</li> <li>• Use something you dare to use when others are present. For some, this is a mobile phone (using a notes app or saving an SMS as draft for later retrieval), others have no qualms wiping out a notepad or jotting down an idea. Other people usually adapt quickly to this kind of behavior, once they realize you do it anyway and that is has nothing to do with them.</li> </ul>
<b>immediately</b>	<p>Always interrupt a menial task and get the idea down immediately. Do not wait until you have finished the current task (you will think about the next one, which might kill the idea). Always jot it down before you enter a new setting, otherwise something in the new setting might kill your idea (e.g., if you have an idea in your car, write it down in the car — if you enter your home the affordances of that setting — the mail, or the dog, or the family — will kill the idea (What's this in the mail? ... Where are the kids? ... Nice dog! Good boy! Are you glad to see me! ... I wonder what's for dinner?).</p>

## HOW TO CAPTURE IDEAS

<b>fast</b>	<p>Ideas are fleeting and come when you are doing something else, usually something important, so capture them fast — i.e., below 5 seconds. Time is a high barrier here as you might not want to interrupt the important task for too long to capture your idea, so use the quickest and most suitable way for the context.</p> <ul style="list-style-type: none"> <li>• For some this means shorthand on pen and paper, for others a text file with 10-finger writing, some use a paper notepad, and a few are fast on a mobile device.</li> <li>• Don't go searching for your tool in your bag, have it available without looking for it in an easily accessible side compartment that is reserved for that purpose. Once you capture an idea, the next one is usually a few seconds behind it. If taking out the tool takes effort, you will stop quickly.</li> </ul>
<b>effortless</b>	<p>The lower the barriers (and effort is a major one) the higher the likelihood that you actually capture your ideas. You must be able to use it even when you are lying half asleep in your bed, or when you are in a highly distracting environment. Try out different ways to find a way that you can do with minimal effort.</p> <ul style="list-style-type: none"> <li>• Note that waiting periods caused by the startup time of a digital device, or an app, are highly aversive over time and thus costs a lot of effort using them. Digital devices are also inconvenient for text entry (and voice recording is not always practical and hard to transcribe), although the background lighting has advantages in some situations.</li> <li>• Make sure the tool always works perfectly — without exceptions. Pens that do not write clearly, or not in all positions (e.g., lying on the back), are a nuisance, as are electronic devices that are slow and unreliable. It undermines your motivation to capture ideas in the long run. If you do not see this as a factor, you're doing it right.</li> </ul>
<b>without sorting</b>	<p>Organizing is important, but only after you have captured the idea. It doesn't matter that a design for a negligee is sketched next to a funeral dressing, just get the idea down. Think about where you put it after, never before, jotting it down. Otherwise the mental effort to find the right place might make you lose (crucial parts of) your idea.</p>

## HOW TO CAPTURE IDEAS

<b>with low quality control</b>	<p>Don't write down everything, otherwise you get swamped, but keep the quality control low. If you are unsure, get the idea down first, then decide. Otherwise 'low quality' might serve as an excuse not to capture an idea while it's just a dislike of the effort needed to capture the idea. Remember that bad ideas can be used for better ideas (you have to start somewhere). This also means ignoring your inner censor and write down what you think, which gives your capturing tool the quality of a diary.</p> <ul style="list-style-type: none"> <li>• Use easily replaceable, low-maintenance materials. If it costs you much, you might be hesitant to 'waste' a page on a stupid idea. You must be able to waste or burn paper (or electrons) without thinking about it.</li> <li>• Break in the tool immediately to spoil the flawless look or aura. Personally, I cut my notepads from A5 notebooks. They are already "ruined" by the imperfect cutting, so I waste no thoughts on waiting for a good idea to break them in, nor have I any qualms to scribble like hell.</li> </ul>
<b>simple, flexible methods and techniques</b>	<p>The tool should never focus attention — one reason why paper and pencil beat digital devices any time. It's easier to flick open the notepad and look for an empty page (or grab any piece of paper), than to turn on the digital device, enter the password, open the App, create a new page, and begin typing. Also the precision needed in most applications (rough sketches are rarely supported) runs contrary to the quick capture function you need. Ideas can be words, sketches, chords, diagrams, etc. Make sure the capturing method can deal with this input. Again this strongly favors paper over digital.</p>
<b>understand the idea later</b>	<p>Writing in a hurry may lead you to bad handwriting, "innovative" abbreviations, shortened descriptions and other issues that make the idea hard to understand later. Check the text after you have written it to ensure that you can understand it later, and give meta information like the name of the project the idea is for. You will adapt this quality check when you notice ideas you do not understand anymore.</p>

## THINGS TO KEEP IN MIND IN CAPTURING IDEAS

Keep the following things in mind when you think about capturing your ideas:

<b>the right infrastructure</b>	<p>Many of these issues can be addressed by the right infrastructure. Often it is only a matter of making sure that the right tool is available in the right place. Once your workflow becomes automatic, ideas quickly accumulate in your idea collection and larger projects become possible.</p>
<b>there is no "best" tool</b>	<p>Ignore the endless discussions about "the best" paper/pen/app/<i>whatever</i>. The best tool is the best tool for you, the kind of idea, and the situation at hand.</p> <p>An iPhone with backlight display might work well lying in bed. A cheap notepad might be best for jotting down ideas while you are standing in the shower. A voice recorder might work best while driving a car. And a text file might work best when working at the computer.</p> <p>Also, text isn't best for all kinds of ideas, sometimes you need a sketch or a voice recording. Different tools have different strengths in this regard. Only you know what you need.</p>
<b>capturing is only temporary and no collecting or realizing</b>	<p>Capturing is about getting that idea down, that's all that counts. The ideas are only temporary in the medium in which it was captured — they end up in the collection anyway, and they are later realized. So only concentrate on capturing the idea. It doesn't matter how it looks, or whether the notebook cover is really "you", as long as you can use it to get the idea down.</p>
<b>capturing is never a goal in itself</b>	<p>Some people try to capture everything — and often "perfectly" — but never realize anything. This is not creativity. To be creative, you have to realize your ideas, so make sure that you capture what you need for your area, collect it — and then realize it.</p>
<b>evaluation criterion</b>	<p>The sole evaluation criterion for capturing ideas is easy: Do it for a month and then look at the amount and quality of ideas. This is your guide how well your infrastructure supports you in capturing your ideas. Try different methods until you find something (or some things) that work(s) for you.</p> <p>You can always develop or discard a bad idea (and you should), but you cannot retrieve a forgotten idea.</p>

## DEALING WITH SOCIAL PRESSURE

If you make it to your second nature to always capture ideas immediately, you will have to do so in social settings — and other people can be hell in this regard. Humans want to make sense of their surroundings, and when you wipe out a notepad and jot something down, they are likely to attribute it to themselves, as they cannot see what happens in your mind.

There are a few tactics you can use to remove the social pressure and negative social consequences:

<b>make slow movements</b>	If you do it fast, people are probably more likely to connect it to the action they did in that moment. It probably also gets noticed less.
<b>do it somewhere else</b>	Take a walk outside, or go to an empty room (e.g., the toilet — hey, look, free paper!). You cannot do this too often, but if a lot of ideas are coming, which you want to explore, this works fine.
<b>make them believe that they know what you write</b>	Other people are looking for explanations for your behavior, e.g., what you note. So, if you look at a concert poster first, or at the newspaper, they will likely attribute your behavior to writing down something from that poster or article. Newspapers are better in this regard, as the information value of a poster is limited. Take care to have a real look at the poster first, e.g., a neonazi concert really doesn't give a better impression.
<b>use a calendar</b>	Using a calendar to write down ideas will likely be attributed to writing down an appointment. Put post-it notes into your calendar to give yourself more writing space.
<b>use your cellphone/ smartphone/ PDA</b>	Using a device that can be used for communication will likely get attributed to you sending someone a message ("Hello future me, this is an idea you should remember ...").
<b>focus on the task</b>	If you ignore others, focus on the task at hand, on writing down the idea. If you focus, you will appear less nervous and people will become less suspicious — make capturing the idea the most important thing in the world in that moment.
<b>write for longer time</b>	If you are already writing before others come in view, it is unlikely that they attribute the content to themselves.
<b>just do it</b>	Like Nike's slogan — just accept that you are/want to be creative and need to capture the ideas as fast as possible.

## MISSED IDEAS

If you weren't quick enough or you were interrupted you can try to get the idea back. Unfortunately, there is no guarantee that it works, or that you will know that it worked (after all, you have forgotten the idea).

<b>retrace your steps</b>	Do not look at the end, but go back to the situation where the thoughts that lead to the idea occurred. The actions you did, the things you saw, the thoughts you had that determined the idea. If you can retrace the thoughts and emotions immediately before the idea, you might have it again.
<b>reduce the anxiety</b>	Reducing the anxiety of having missed an idea can help you remember it. I tell myself that any idea tries three times to be heard, even if I do not truly believe it. Also great ideas often occur to multiple people (see parallel creativity), so the idea will not be truly lost (you do not carry the weight of the world on your shoulders, so <i>relax</i> ).
<b>try it again later</b>	As you had all the information for the idea, it is possible that it comes back when you work on the project again. There is no need in sitting around for hours trying to remember something that might come naturally when you return to your work.

## WAYS TO CAPTURE IDEAS

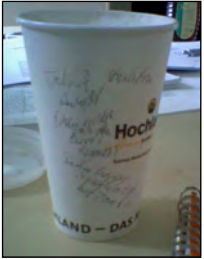
There are a lot of different ways to capture ideas. You find a description of the different tools in the tools section.

Method	Advantages	Disadvantages
<b>Analog Methods</b>		
<b>pen &amp; paper</b> <i>(see tools about Pen &amp; Paper: general notes, variable order and fixed order)</i>	<ul style="list-style-type: none"> <li>fast access</li> <li>price irrelevant</li> <li>without value for others (unlikely to be stolen)</li> <li>highly versatile</li> <li>resistant to adverse environments (dust, water, heat, ...)</li> </ul>	<ul style="list-style-type: none"> <li>backup difficult</li> <li>space increases with amount captured</li> <li>can be misplaced easily (nothing of "value")</li> <li>public writing in notepad usually not socially accepted</li> </ul>
<b>stationary writing surfaces</b> <i>(e.g., blackboard, whiteboard, Magic Chart, Pinboard, etc.)</i> <i>(see tools: Stationary Writing Surfaces)</i>	<ul style="list-style-type: none"> <li>highly motivating to use</li> <li>great for continuous work on a difficult problem</li> <li>very high presences as long as there are frequent and significant changes</li> </ul>	<ul style="list-style-type: none"> <li>quickly fades into the background once the changes stop</li> <li>only available in one place</li> </ul>
<b>Digital Devices</b>		
<b>(general remarks see tools: Some Remarks about Digital Tools)</b>		
<b>cellphones/ smartphones</b> <i>(see tools: (Smart-) Phones and PDAs and Apps)</i>	<ul style="list-style-type: none"> <li>close personal possession (almost always carried)</li> <li>multimedia capture</li> <li>touchscreen, audio recorder (mailbox), camera</li> <li>writing socially accepted</li> </ul>	<ul style="list-style-type: none"> <li>input of text extremely slow</li> <li>ideas are rarely transferred</li> <li>risk of damage/thievery</li> <li>risk of data loss</li> </ul>

## WAYS TO CAPTURE IDEAS

Method	Advantages	Disadvantages
<b>voice recorders</b> <i>(dedicated or as an app on a mobile phone)</i> <i>(see tools: Voice Recorders and Apps)</i>	<ul style="list-style-type: none"> <li>1:1 capture</li> <li>usable without looking</li> <li>widely available via cellphone (mailbox) and smartphones</li> </ul>	<ul style="list-style-type: none"> <li>audio only</li> <li>trend to accumulate information that must be transcribed</li> </ul>
<b>(video-)cameras</b> <i>(dedicated or as an app on a mobile phone)</i> <i>(see tools: (Video-) Cameras and Apps)</i>	<ul style="list-style-type: none"> <li>1:1 capture</li> <li>widely available in cellphones (can substitute scanner)</li> </ul>	<ul style="list-style-type: none"> <li>image/video only</li> <li>additional information needed for storage/ search</li> </ul>
<b>personal computers/ notebooks/ subnotebooks/ laptops/public computer terminals/tablets</b> <i>(see tools: Computers)</i>	<ul style="list-style-type: none"> <li>inconspicuous for writing down ideas while working</li> <li>multimedia capture if properly equipped (microphone, webcam, tablet pen)</li> </ul>	<ul style="list-style-type: none"> <li>not always available</li> <li>affordances (e.g., to focus on layout and software constrains options)</li> <li>risk of theft and damage</li> </ul>
<b>Mind</b>		
<b>mind</b> <i>(see tools: Using Your Mind)</i>	<ul style="list-style-type: none"> <li>always available</li> <li>extremely private (unless you talk in your sleep)</li> </ul>	<ul style="list-style-type: none"> <li>reliability unclear</li> <li>availability very limited</li> </ul>

## HAVING NOTHING TO CAPTURE



Sometimes you are in danger of missing ideas because there is an **apparent** lack of ways to capture ideas, e.g., you forgot your pen, or do not have any paper handy. However, as important a good infrastructure is, and as used you can get to it, you can always **improvise**.

Even if there is no-one to ask for something to write, you can usually substitute paper and pens with the following methods:

### SUBSTITUTES FOR PAPER

- napkins (great for sketching ideas of discussions during a meal, e.g., two social psychologists jotted down ideas for groundbreaking studies this way)
- toilet paper (set priorities; a famous singer-songwriter used her lipstick and toilet paper to write down lines for a song in her hotel room)
- leaves (paper also grows on trees )
- Kleenex/Tempos/Handkerchief (do not make a knot in it, write **on** it)
- Paper Cups (can also be used while walking, see top left image)
- Money (priorities!)
- Paper packaging of almost all products (write on the inside, it's usually not coated)
- Clothes, table cloth
- Skin (ever wrote something on your hand to remember it?)

### SUBSTITUTES FOR PENS AND INK

- build a pen from fishbone, bone, metal, plastic, cardboard
- use anything that leaves a trace on paper as ink (e.g., cosmetics, salves, wine, blood, most drinks, even chocolate)
- put something semi-soft below it (e.g., handkerchief, table cloth) and scratch with hard material (metal, keys, fingernail)

### SUBSTITUTE THE CAPTURING METHOD: WHAT ELSE IS THERE?

Make sure that you are not locked-in to find pen and paper when there are other ways to easily capture ideas. Switch to a completely different method, e.g., use a digital device. For example, use your cellphone to write yourself an SMS (save in drafts folder), call your mailbox and leave a message to yourself (works only with some providers), or use a computer terminal and send yourself an eMail.

## CAPTURING IDEAS IN DIFFERENT SETTINGS

Next you find some suggestions of how to capture ideas in different settings. Feel free to improvise and add your own ideas.

The discussed settings are:

- On the Move by Foot (page 110)
- On the Move by Car (page 112)
- On the Move as Passenger (page 113)
- In Bed (page 114)
- In the Shower (page 116)
- In the Bathtub (page 118)
- During Sports (page 120)
- At Work (page 121)
- At Home (page 121)



## SETTING: ON THE MOVE BY FOOT

Walking alone has a number of advantages for creativity:

- You have time to let your mind come up with ideas without being distracted by others (see „Time for Incubation“ on page 74).
- You can easily stop and jot down ideas — or do so while walking.
- Once you become used to it, you can ignore others and let your mind wander (see „Dealing with Social Pressure“ on page 104).
- If you have no ideas, looking around and overhearing conversations can give you ideas.

Make sure you keep enough attention on the road, bumping into a lamp pool is painful, letting a car bump into you is deadly.

### OPPORTUNITIES FOR WALKING ALONE

- If work is nearby by foot (< 30 min) consider walking to and from work.
- Take at least one lunch break a week at a place where you can walk to and from.
- Take a stroll in/after your lunch break.

### CAPTURING IDEAS WHILE WALKING

- Keep a notepad with you at all time. Even if you are just taking a leak, you never know when a new idea comes.
- A notepad in your back pocket and a pen in your side pocket works well. So do coat pockets with the notepad left and the pen right (if you are right-handed). If you do not have these pockets, consider wearing a small belt pouch. Also, small pens can be stored in the wallet (see page 203ff).
- Writing while walking works when you fold the notepad slightly (keeps the paper upright). You can also use a paper cup, or whatever else you have available — a good pen writes on a lot of things. It's not about beautiful handwriting, just good enough so that you can understand it later.
- If you have a smartphone, learn to type while walking. Keep the phone in one hand and type with your thumb. This is usually easier than using both hands.
- Call your mailbox, or use the audio recorder of your cellphone, if you can talk freely (see „Voice Recorders“ on page 222).
- Use something you can use in (light) rain, e.g., you can still use notepads when it's raining, but digital devices usually only work once. „Rite in the Rain“ Notepads can even be used in heavy rain.
- You can write with an umbrella in one hand if you use a digital device that

## SETTING: ON THE MOVE BY FOOT

you can use with only the other hand (use the audio recorder, or type with your thumb). You might even be able to hold a notepad with your umbrella hand and write with the other — the hand-acrobatics will probably mean using your mouth at some point to hold either the notepad or pen for a moment.

- If you were surprised by the rain and are already soaked, let it pour. Use thick paper, or a „Rite in the Rain“ notepad, to capture the ideas — at least there comes something positive out of the rain (and enjoy a nice shower or bath afterwards). You can also try to write blindly in your pocket or backpack, if you know that it will protect your notepad from the water and you know exactly which page is free.



## SETTING: ON THE MOVE BY CAR

If you drive a route regularly and the driving has become automatic, you usually have the capacity for a lot of ideas, because you have “nothing to do”. However, you also have to steer a ton of steel faster than anyone could run, and that could kill you (or anyone you hit) in an instant. So whatever you do, make sure **that capturing ideas never focuses your attention.**

## CAPTURING WHILE DRIVING

- **Never** use pen and paper or type on a digital device while driving. It takes too much attention — you are essentially driving blind. If you have to write down or sketch an idea, drive to a parking lot and do it there.
- Make sure you have an voice recorder easily available that you can use without looking or call your mailbox (see page 222). Transcribe the ideas immediately after reaching your destination.
- If you have a headset, put it on before you start the car. This way you can easily record ideas.
- If you have a passenger you can trust, ask him or her to write down the idea — or keywords reminding you of it.

## MOTORCYCLES: NEVER

There is no room for error when driving a motorcycle. Any mistake is likely to kill you. Don't write your suicide note, or turn your mailbox black.



## SETTING: ON THE MOVE AS PASSENGER

Being on the move as passenger gives you time to think and have ideas. You can also capture them easily, as you are not responsible for anyone's safety. You can enjoy the changes in scenery, and you are at leisure to focus your attention on your writing. You can also use larger notepads, or even use a notebook. You can also access research materials. No wonder that travelling *can*<sup>1</sup> stimulate ideas.

## OPPORTUNITIES FOR TRAVELING AS PASSENGER

- When you travel, check whether you can do the trip as passenger in a car, a train, a bus, or on a plane.
- If you are commuting, check whether you can do the trip more easily per bus, subway, or train. You can use the time better if you do not have to keep your eyes on the road.
- Take a music player with you — if the other passengers are annoying, listen to music on the headset to drown them out. Earplugs differ on how well they drown outside sound, and how well they keep your music silent to others. Put the music on a volume you like, take them out, and listen whether you can hear the music. If you can hear it, others may as well if you wear them.



<sup>1</sup> Some people just **bloody hate** travelling — what works for one person does not necessarily work for another.



## SETTING: IN BED

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Ideas are common when you try to shut down in bed, or in the morning before you get up. Often people want to record them later, but it is unlikely that the idea is remembered after a night's sleep with its many dreams. Thus, invest in an infrastructure that allows you to capture your ideas without getting up, turning on the lights, finding something to write, turning off the lights, lying down, and enduring the anger of the person who sleeps next to you.

## CAPTURING IDEAS IN BED

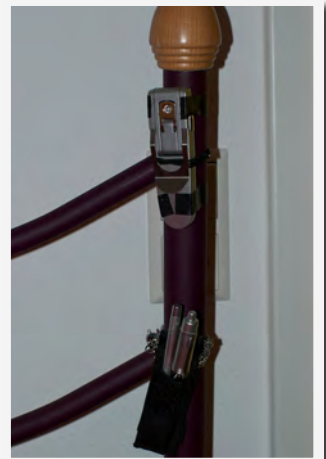
In bed, you need low barriers (fast, usable in the dark, quiet), be able to quickly get a routine, so that future capturing becomes more or less automatic, and that is unobtrusive (turning on the lights will not only wake your partner, but also be very aversive to your eyes). These are high demands, but there are a ways to achieve this:

- **Book reading light taped to the bed post**

They are unobtrusive light sources with spot lighting. Can be discretely switched on (see photo on the right side).

- **Light-pen with a space pen mine in a knife sheath**

Light-pens have their own light source, the pressured mine ensures that it works against gravity (e.g., lying on your back), and if you keep it in a knife sheath taped to your bedpost, you can easily reach for it without having to see it (and without the pen poking out your eyes while asleep, see the photo on the right). Make sure you always keep the pen there, no matter what — it's frustrating to reach for it and find it gone. Keep the notepad at the edge of your mattress.



- **Use red light**

Red light doesn't screw up your dark adaptation as much and hurts less.

- **Use a light fixed to a headband**

You can use a light that was made for having your hands free while walking/exploring. Taped above the bed, it can deliver spot lighting. Good headlights have lights in different colors and the first one should be red, which is an additional plus.

- **Get focused ceiling lights**

You can get ceiling lights that were designed to deliver spot lighting over larger distances to allow you to read without waking your partner. If you have enough light to read, you have enough light to write as well.

## SETTING: IN BED

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- **Use an electronic device with backlight display**

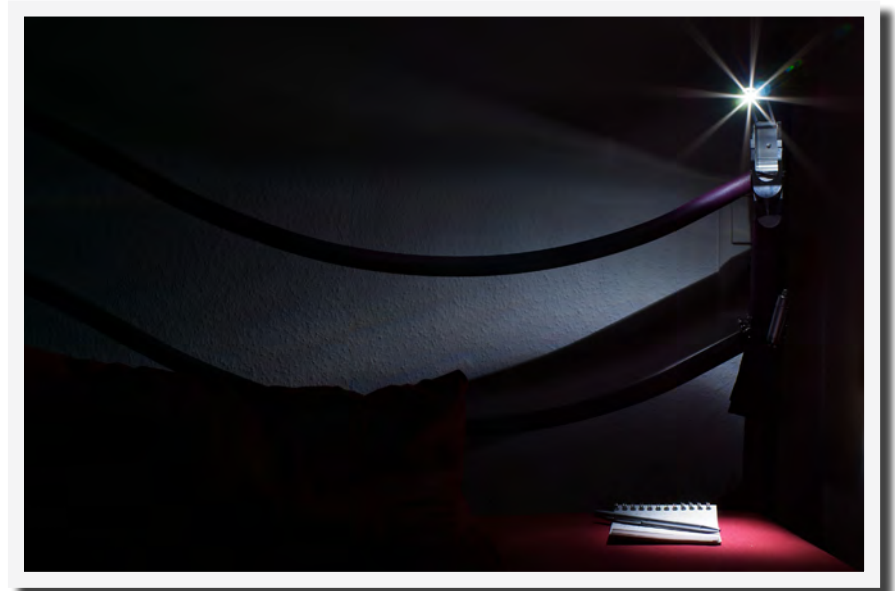
An iPhone or iPod touch works well to capture ideas when it's dark. The backlight display adapts to the available light (depending on the setting, you can also manually reduce the brightness), and the typing is without sound, albeit slow.

- **Use a voice recorder**

If you have the questionable luck of sleeping alone, a voice recorder can be used to capture your ideas. You can operate it in the dark, even with your eyes closed, but transcribing the ideas takes extra effort.

- **Computer with external monitor and remove keyboard**

If you spend a lot of time in bed (thinking), you might want to invest in an external monitor on an monitor arm, and an remote (Bluetooth) keyboard. You can type lying on your back and have the monitor in view, and with the cableless keyboard, even if you fall asleep, you cannot tear down your computer. Make sure the screensaver with password protection activates quick enough, so that *when* you fall asleep, all keyboard commands get caught by the password protection.



*The book reading light switched on. The light is focused and is just enough to see the whole notepad area without disturbing the partner, or hurting the eyes, as the main light would do.*

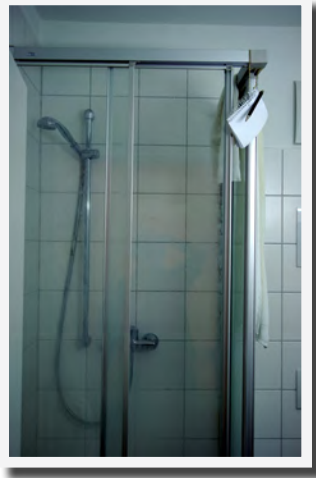
## SETTING: IN THE SHOWER

The shower is an amazing place for ideas: You can't go anywhere until you are finished, and the stimulation is pretty basic (but stimulating!). Lingered dreams, thinking about the day — ideas are very likely.

Unfortunately, this is also a time when capturing these ideas is somewhat difficult. You can not interrupt your shower every time you have a good idea (especially if the ideas start pouring like rain), and your expensive notebook will not be of any help. But as you are probably standing in your own shower, you can equip it with some tools that allow you to capture your ideas without turning off the water, or ruining your notebook.

## CAPTURING IDEAS IN THE SHOWER

- Do not interrupt the shower — otherwise you will never finish and getting ideas there will become aversive. Thus keep your solution easily reachable.
- Hang a cheap notepad on the outside of the shower (see image on the right). Keep it attached to the curtain bar of the shower with a cord that is short enough that it does not fall on the floor (or into the water), but long enough so that you can write easily. Use a soft pencil (2B) that works on wet paper to write down the ideas. Mechanical pencils often work best, and they can be tied to the cord as well, or stuck into the notepad rings.
- Tear off the pages after the shower and leave the notepad in place.
- Use a scuba dive clipboard that can be used under water. It consists of a plastic clipboard and soft pencils. Something designed to withstand the pressure and full enclosure of water will also work in the shower. One disadvantage of this solution is that you have to take the whole clipboard out of the shower and back inside after you transferred the ideas. If you do not have the time to do this every morning you have an idea, you end up with either the clipboard missing, or already full of ideas.
- Use a standard plastic clipboard and sheets of white plastic foil (e.g., the back of a plastic ring-binder). The plastic will work like paper. This works as well as a diver clipboard, but allows you to take out the "pages" for transcribing them.
- If you need to record sound, a water-proof recording device can be used. But make sure you can hear your voice over the rushing water.
- Whatever you use, keep it well-stocked/available after you have used it. It



## SETTING: IN THE SHOWER

is very aversive to have an idea and be unable to record it, because all pages are full, or the clipboard is on the desk.

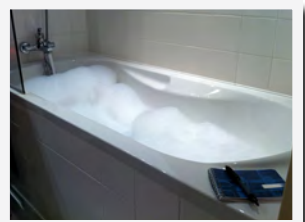
- Use an all-weather notepad like "Rite in the Rain All-Weather Notebook" that can be used even in the rain, i.e., in the shower (see image on the right).
- Even if the idea comes at the end of the shower, capture it immediately. Whereas it might be easier to capture the idea after you leave the bathroom, the amount of possible disturbances that could lead to a missed idea are too great (e.g., people or pets interrupting, having to concentrate on your shave or make-up).



## SETTING: IN THE BATHTUB

Taking a bath is an ideal place to have time for incubation and generate ideas ("Eureka!").

You can relax, have no access to the telephone (steam kills it), computer (same, just faster), or other distractions. It is also an acceptable way to spend time on 'nothing'. Even better, you can shut down, yet remaining awake enough to capture ideas. You can relax in the hot water and open your mind to your ideas.



## HAVING FUN WHILE BATHING

- Make bathing a regular part of your life. Learn to enjoy it (but beware the water bill).
- Use the bath specifically for relaxation — take your time (at least an hour) and enjoy the setting (e.g., by putting up candles and soft music).
- If the water gets cold, pull the plug for a while (cold water sinks lower than hot water), and then refill with hot water.
- There are a lot of things you can put into the bathwater: oils, bath balls, lotions, etc. Indulge yourself — bathing is a luxury, and if you can afford it, you should *really* afford it.
- Keep something to drink nearby — if you stay for a few hours in the water you will appreciate it. Essentially, you only need a glass, as you can refill it from the faucet.
- If you want to listen to music, get cheap speakers (e.g., passive speaker without own power supply for PCs), put your music player outside the bathroom, the cable below the door (there is usually a small gap), and the cheap speakers inside the bathroom (but well away from the water!). Steam kills electronics, but with these cheap speakers you can enjoy the music (kind of) without exposing your music player to the steam.
- Normally a no-brainer, but never use anything with a power cord in the bathroom while you are emerged in water. Accidents happen.



## CAPTURING IDEAS

- Use a notepad and pen specifically for this setting. Tear out all written pages from the notepad after the bath. If the notepad falls into the water during the next bath, you'll hardly lose any ideas.

## SETTING: IN THE BATHTUB

- The rods of a radiator (if it is off!) can be used to hold a notepad during the bath. Never keep paper near something that generates heat!
- A cheap notepad and soft pencil (2B) will work even if the paper is somewhat wet. As will your usual notepad and a pen with good ink, e.g., a uni power tank pen. All-weather notepads (see page 117) will also work fine.
- A divers notepad will also work fine, but is probably an overkill in this setting (see page 116).
- If you write less legible due to the relaxed setting, write larger. A page per idea on a cheap notepad is a steal.
- Electronic devices (smartphones, voice recorder) usually get broken fast in this setting. The steam of the hot water kills your device, even if you do not drop it into the water *and* you dry your hands before touching it. Trust me, I have lost two cellphones this way.

## CONCEPTUAL WORK

- If you work with paper, you can use the tiles of the bathroom for conceptual work. Write the concepts on small pieces of paper with a waterproof pen, wet the backside of the paper a little, and stick it to the tiles (see photo below).
- **Caution:** Make sure that the paper can be removed without leaving any marks first.



*Conceptual work in a bathtub. I was working on some concepts and notepad paper dipped into the bath water combined with the tiles worked well.*



## SETTING: DURING SPORTS

Sports are great times for incubation and ideas, especially the kind of sport in which you go through routine motions, like jogging or swimming. Your body is working automatically and the mind is free for ideas.

## CAPTURING IDEAS DURING SPORTS

- Keep something to capture your ideas where you keep your sports clothes, and keep it well stocked. For example, keep a pen and paper in your jogging shoes as a landmine for when you next use them (see photo below).
- Often it is possible to jot down keywords while doing sports, even if you have to slow down a little. And whereas people react 'strangely' if you overtake them while jotting something down, it is possible to jot down ideas while jogging (and after a while, the joke of people shouting "eggs, bread, butter ..." gets old).
- Capturing ideas is easy if you stay in one place, e.g., in a fitness studio. Simply keep something to write next to the machine. If sweat is a problem, use a waterproof notepad like an All-Weather Notepad (see page 117).
- Electronics and sweat (water) do not mix, so stick to pen and paper. However, check whether your music player can record sound if you carry it around anyway (there are armholders for these devices that are useful). You can also get waterproof casings for many electronic devices, e.g., the "Lifeproof" cases ([www.lifeproof.com](http://www.lifeproof.com)).



*Make it easy for you — keep something to write in your jogging shoes (yup, these shoes are brand new, I did not have time to jog yet, I was working on a book).*

## SETTING: AT WORK

Depending on the tasks, work can be great for generating and capturing ideas. Routine tasks give your mind the necessary resources to generate ideas, while the environment can usually be structured to quickly capture ideas. There is no reason why you cannot capture your ideas while doing gardening, delivering pizza, working in a factory, during meetings, or sitting at your desk.

- Check the other settings for the ones that apply to your kind of work, e.g., on the move by foot/car/as passenger, probably not in bed (unfair to the guest), or in most of the other settings.
- **Note that you are paid for your performance:** Your employer does not pay you to work on your own projects, and developing an idea at work can lead to serious legal trouble regarding ownership of the idea. Make sure that your work performance does not decrease. First learn to do the job in a way that you have resources left, then start jotting down ideas. Keep it fast and continue working.
- Keep your co-workers in mind as they might become suspicious if you write down ideas during work — it might look like you are a snitch. Use less-snoop-like-looking ways like typing an SMS for yourself.



*Work-Settings allow capturing ideas in a lot of ways, and given that you spend 8 hours per day there, you should use this to your advantage.*

## SETTING: AT HOME

As your home is (mostly) under your own control, you can make it very easy for yourself to generate and capture ideas. Find ways to spend time alone and let your mind relax (e.g., bathtub, sunbathing, sauna if you are good enough to have one, etc.).

### CAPTURING IDEAS AT HOME

- Place a notepad and a good pen where ever you spend some time (e.g., kitchen, toilet, bed, desk, couch), but also keep something to write with you at all times.
- Get in the habit of leaving the notepads, but not the ideas. Tear out the pages of the notepad. If you leave written pages in the notepad, other might read it and misinterpret it. You must be willing to write down your ideas and ignore your inner censor — if you always fear that others can read your ideas, this will not work.

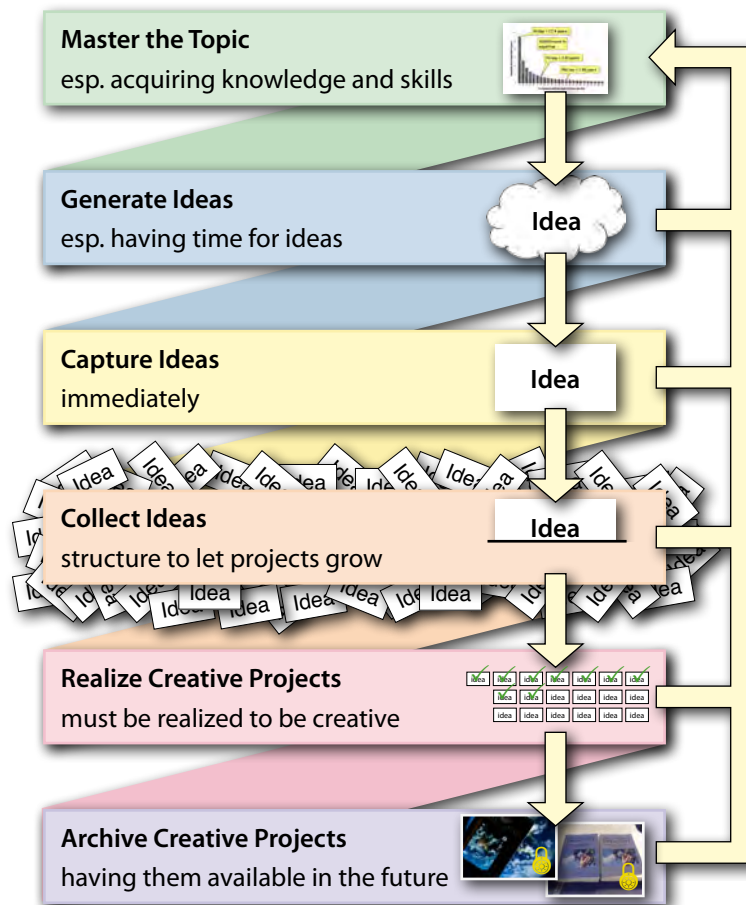


*Who says you cannot have a bath island instead of a couch in your living room? Based on the "play rooms" at the MinD-Akademie (these students combine engagement with interest and creativity — that is hard to top).*

# Organize Creativity!

## IV. COLLECT IDEAS

Organizing Creativity = Creating the Infrastructure to ...



## DIFFERENCE BETWEEN CAPTURING & COLLECTING

Many artists in different areas collect inspiring items, e.g., found objects, news clippings, or sketches — and science is not possible without collecting published works on which the own work is build (the "shoulders" of Newton's Giants, see „Academic Work“ on page 324, „Reference Management Software“ on page 346, and „Reading Research Literature“ on page 348).

But it is not enough to capture ideas — you have to select, aggregate, build upon the ideas to reach higher levels. Otherwise you become buried beneath all the data — and remember that the person who captures everything cannot realize anything.

The difference between a nut-job, who captures ideas and places them into his drawer full of "important" ideas (that he will "one fine day" realize), and a creative person, who realizes his/her ideas, is the way the captured ideas are **collected**.

The key term here is "collection" — which implies not only a way of storing ideas, but refers to a **systematic, structured, and ordered way of collecting ideas**.

The aim of the collection is **to foster the development of ideas and creative projects**. Ideas are stored in the collection to grow and to be connected, while keeping the ideas flexible to be useful for other projects.

To achieve this, you have to think about how you collect your ideas, and invest the time and effort needed to build and maintain the collection.



## WHY COLLECT IDEAS?

Why should you collect your ideas? An idea collection is the center piece of organizing your creativity — it allows you to:

<b>aggregate related ideas and thus makes larger projects possible</b>	Unless you work on only one project in your life, you will have ideas for different projects. The collection ensures that ideas that belong to the same project are easily found, giving you an overview of the status of the project (Can be it realized? What is missing?).
<b>work with your ideas</b>	There are many people who have drawers full of ideas, but no way of realizing them, because the ideas are not easily available and cannot be aggregated. The collection gives you a way to deal with your ideas, to work with them.
<b>have the ideas readily available whenever you need them</b>	You might be able to remember your ideas if you are in the mood, or if that memory is triggered, but remembering all ideas related to a specific topic on demand? That's hard to impossible. A collection will make all ideas available without any effort, meaning you can use all your mental resources to improve or realize the ideas.
<b>be creative more easily, as creativity is easy if you do not have to be creative</b>	Ever wanted to do something creative, but you had no idea what to do? Ever had a problem you could not solve? Ideas in the collection are readily available, making it easy to be creative <i>when you want to be creative</i> , not only when you are having ideas, <b>making being creative a matter of craft, not of inspiration.</b>

## MAIN CRITERIA OF AN IDEA COLLECTION

A good idea collection has only one goal: **to support the realization of your creative projects.**

To achieve this it must fulfill the following five core functions:

1. Remembering Ideas
2. Generating Ideas
3. Finding Ideas
4. Expanding Ideas
5. Restructuring Ideas

<b>remembering ideas</b>	<p>It must help you to remember ideas — if you collect a lot of ideas you will lose sight of them.</p> <p><b>Presence:</b> The collection should remind you of your ideas. Paper does this automatically by its physical presence. With digital solutions you can use a table of contents of your core project and central projects (see page 56), or create overview pages of projects you would like to realize.</p> <p><b>Happy Accidents:</b> The collection should allow you to stumble over your ideas, e.g., when searching for a specific idea, other ideas (that can be totally unrelated) are brought back into consciousness.</p> <p><b>Remembering the central projects:</b> Specifically the central projects (see page 56) should be remembered, e.g., by putting them on an overview page.</p>
<b>generating ideas</b>	<p>The collection must stimulate new ideas, either by making it very easy to work on the ideas (see enlarging) or by easily seeing ideas in a new context. It might take some time to reach the “critical mass” (Luhmann) necessary that the ideas stimulate each other.</p> <p>Essentially, browsing the collection and seeing what you have will likely stimulate you to add new ideas. Existing ideas in the collection work like “condensation nuclei” — only instead of rain they lead to a windfall of ideas.</p> <p>This also means that you should enjoy spending time with your collection. Play around with it, browse through it — in short, the collection needs to have a nice look and feel for you.</p>

## MAIN CRITERIA OF AN IDEA COLLECTION

## finding ideas

Nothing wears you down as fast as an idea collection where you take ages to find the item you seek — it is so adverse you won't use it for long. You must be able to find the ideas quickly, i.e., less than 10 seconds, otherwise it becomes an idea dump, a black hole which sucks in ideas that are never used.

- Use a dedicated ordering system, at best one that uses top down (clear structure) and bottom up (tags, see page 317) principles at the same time. Tags and tag clouds can be used to cut through your collection easily, esp. if you search for multiple tags.
- Skim the collection occasionally to get a feeling for it.
- Create Table of Contents/Indices to remind yourself of your core project and central projects (see page 56).
- Create shortcuts to the most frequently used ideas (e.g., a link on the start page of your Wiki or a post-it on the index card).
- Use bookmarks to quickly find the ideas you often use.

## expanding ideas

It must be easy to add new information to existing ideas to let them grow. This strongly favors digital collections, as you can change digital text easily and quickly.

- Flesh your ideas out. You can go over ideas and write in the missed details, relevant for realizing the ideas.
- Make the ideas you want to flesh out central projects (see page 56) and make links to them in your idea collection, or use landmines to remind you of the ideas (see page 268).
- Browse the collection when you are in a creative mood to expand ideas you already have and to make association between existing ideas. Easily finding ideas that match your current state is one of the main advantages of an idea collection — you are not forced to work on the ideas that you currently remember. Instead you can quickly flick through a lot of ideas until you find the one you can work with (expand the ideas, i.e., add notes to them, the realization comes later).
- Use creativity techniques to flesh out ideas, e.g., research or look at it from a different perspective (e.g., by using Google or Wikipedia).

## MAIN CRITERIA OF AN IDEA COLLECTION

## restructuring ideas

It must be easy to change the structure of the collection, move ideas or rearrange them, as the necessary order usually becomes clear later in the project, and you should not be stuck in a given structure. You will continuously have to update the structure when your collection gets larger.

- (Re-)structure the information in the/a logical order from time to time. Given that the collection grows naturally you will prune it occasionally and re-establish the order you need, esp. regarding fast growing entries.
- Include higher-order information regarding what the entry is about and how you plan to use it. This will help you to generate additional ideas and not get lost in the desert of words.
- Restructure the relationship of the entries to each other by using links, creating higher order entries (mini table of contents) that refer to all ideas relating to the same project or by using tags (see page 317, e.g., project\_x tag for all entries relating to that project).
- You can use existing keywords (e.g., "party") to search for all instances and update them with more specific additional keywords (e.g., age of participants, season, etc.).
- Occasionally you might want to split entries that became too large and unwieldy. Use links or references to connect the new entries to each other and the larger project they belong to.

Make sure **you can easily work with the collection**. It is a tool, not a creative project in itself, and consequently it should occupy only little amounts of your time to collect the ideas.

If you want to try out different ways of collecting ideas, it helps to have usability criteria for **evaluating a possible collection method**: Keep in mind that there is **only one** criteria a good collection must fulfill: **to support the realization of your creative projects**. This is the criteria against which you must and can evaluate any method to collect your ideas.

## MAIN CRITERIA OF AN IDEA COLLECTION

### USABILITY (FOR YOU)

In usability terms, the following criteria are relevant:

Ease of Use	
<b>speed</b>	Make sure that you can use the collection without delays. Some programs get slow when the collection becomes larger (especially when saving). If you have the collection running all the time (e.g., you use a notebook and sleep mode) long startup times are not really a problem. But if you have to wait a minute each day before you can use your collection it becomes a problem. Speed is highly subjective and a half-second until the page is loaded can be long for some people. If you do not notice speed as a problem, it is a good sign.
<b>backups</b>	Regular backups are necessary, so make sure you can do this easily. <b>Do not neglect this!</b> Only one copy of your idea collection is a recipe for disaster.
<b>look and feel</b>	Do you like the solution? Does it put you at ease? Do you like working with it? You will work often and for a long time with it, make sure you like it.
<b>flexibility</b>	Can you easily add (to) ideas? Can you shift the content? This is a very strong argument for a digital collection.
<b>supported media</b>	Can you add different media, at the very least images? How about video or audio files? You might not think you need them, but this might change over time.
Availability	
<b>power</b>	Can be problematic for digital collections at times, although batteries last pretty long today.
<b>additional programs</b>	Are additional programs needed to access your ideas? Is this program available for multiple operating systems? Will there be new versions of the program available in the future (when new hardware and new operating systems prevent the old program from running)?
<b>accessibility of files on the move</b>	Can you access the collection easily on the move? Is it transportable? Can you access it on your notebook?
<b>security</b>	Ideas often cannot be reproduced, so security should be a major concern of the collection. It is not so important that others cannot access your ideas, but more that you can still access them in the future.

## MAIN CRITERIA OF AN IDEA COLLECTION

<b>future-proof</b>	<p>Is the collection still accessible in a decade?</p> <p>For digital this means: Is there a strong development team behind the software? Will the company survive for decades?</p> <p>Keep in mind that software can easily become unusable when hardware failure forces you to buy a new computer which only runs a new operating system and which the software does not support.</p> <p>In any case make sure that you can easily export the data, e.g., in text/RTF files, image files (jpg, png), etc. Never trust your ideas to a data island with a proprietary file format from which you cannot export them to a generally readable format.</p>
<b>access control</b>	<p>Ideas can be very private and you might want to use encryption. Most encryption is a feel good measure — especially for Microsoft Office files (see page 312). More secure solutions are PGP and TrueCrypt. However, keep in mind that you lose all your ideas when you lose the password (files) and that <b>there is no perfect security</b>. A trojan on your computer can easily allow others access to your data. Personally, I use weak encryption I myself can break, because I am only interested in keeping the accidental snoop out. Otherwise, I think that the danger of losing ideas, because I cannot decrypt the file, is too great for the advantage in security it might bring.</p>
<b>data security</b>	<p>Data security means <b>backups</b> (see page 306). Hard for paper-based collections, but easy for digital ones. The danger here is neglecting the backups, which is deadly if a crash of the program takes the data file with it (happens with Word). If you use an online solution (e.g., a webservice), find out what happens when data is lost and never delegate backups: Do and keep them <b>yourself</b>.</p>
<b>data control</b>	<p>Besides legal ownership of the data, who can prevent you from accessing your data? Even if you have the upper hand legally, it will not help you if the webservice you used to store your data goes out of business (remember the "dot-com" crash?). Always make sure that you have direct access to your data, and if it is only that you make your own backups from time to time.</p>

## STARTING AN IDEA COLLECTION

When you begin to collect your ideas, consider following these steps:

<b>test different kinds of idea collections</b>	Look at the criteria for an idea collection (see page 127) and try out different methods with a few ideas until you find a collection method that suits you. Be extremely careful regarding the <b>speed</b> of the solution. If you think that it takes long to use it, but you “don’t mind”, choose something else, because <i>soon you will</i> . Keep making <b>backups</b> (see page 306) in mind — and make sure you can switch to another method when needed.
<b>try out only one method at a time</b>	If you try out different methods, try out one method, then transfer all the ideas into the next method you try out. If you have ideas in different collections, things become very confusing very fast.
<b>start by entering new ideas in the collection (transfer old ideas during droughts)</b>	You will likely have a lot of ideas floating around, either in your mind or in a drawer, your notepads, or somewhere else. But when you start a collection use the collection to collect your new ideas first. Make a cut and from now on transcribe all your new ideas into the new collection. Refer to your prior collections (notepads, desk drawers, etc.) during draughts, when you have no ideas, and transfer them into the collection during this time. It will also stimulate new ideas, likely ending the drought.
<b>transfer new ideas to the collection ASAP</b>	Get into the habit of collecting your ideas. <b>Do not leave them in the capturing tools</b> . It is easy to be misled that the capturing method can also hold ideas, but they are made for quick capture, not for collection (which requires your, for example, to relate ideas to each other).
<b>salt it</b>	If you want to start collecting ideas, immediately put some ideas into the collection to “salt it”. Bringing your formerly unordered, unstructured ideas in a collection can stimulate seeing links between the entries and the entered ideas work like “condensation nuclei” for new ideas. Start with the ideas for the core project and the center projects (see page 56).
<b>give it structure</b>	If the collection has a flexible degree of structure, do not wait too long to decide on a preliminary structure. The structure will help you to see in which area of your work you have many, and in which you have few, ideas. It will also stimulate new ideas.

## WAYS TO COLLECT IDEAS

A lot of things can be used for collecting ideas. I strongly suggest using a digital collection — it is the only way to effectively deal with large amounts of information.

You find more information about the specific tools in the tools-section starting on page 197.

method	advantages	disadvantages
<b>paper: free collections</b> <i>e.g., index cards in a box, file folders, loose-leaf books</i> <b>see page 207ff</b>	easy to stumble over your ideas due to physical presence no power necessary easy to restructure	backup extremely difficult (scan/photographs possible but not searchable) manual search audio/video difficult takes up a lot of space
<b>paper: fixed order</b> <i>e.g., notebooks, diaries, calendars</i> <b>see page 209f</b>	chronological order no power necessary	see free collection integration of new information difficult
<b>Stationary Writing Surfaces</b> <i>e.g., blackboard, whiteboard, Magic Chart, Pinboard, etc.</i> <b>see page 211ff</b>	easy to stumble over your ideas due to physical presence no power necessary (variable only) easy to restructure	backup difficult manual search no audio/video takes up a lot of space physical space limited enlargement difficult restructuring difficult
<b>files and folders</b> <b>see page 225f</b>	very unlikely to be lost due to software crash accepts all file types wide variety of programs to store ideas in usable formats (e.g., documents, spreadsheets, etc.)	very hard to keep an overview very hard and time costly to search inconvenient to add ideas (have to create a file first, name it)
<b>text files</b> <b>see page 226f</b>	unlikely to crash future-proof extremely fast	no additional programs available file size becomes unclear no inherent ordering limited ways to structure no audio/video/image

## WAYS TO COLLECT IDEAS

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<b>mind maps/ concept maps</b> <i>paper, MS Office, Keynote, dedicated tools like Cmap, Free Mind, MyMind, Omni Graffle, NovaMind, Mindjet, etc.</i> <b>see page 228f</b>	excellent way to see the structure	become unwieldy fast much space needed (even if virtual, the screen size is limited) software can break down if amount of information gets too large (too) strong focus on structure additional program needed
<b>outliners</b> <i>OmniOutliner, NeO, etc.</i> <b>see page 230f</b>	excellent for hierarchical structuring excellent for dealing with complex information strong focus on structure	rather for one project additional program needed
<b>digital notebooks</b> <i>e.g., Circus Ponies Notebook, Microsoft OneNote</i> <b>see page 232ff</b>	familiar metaphor like a highly flexible paper notebook supports multimedia excellent outliner	often proprietary format additional program needed
<b>notes management systems</b> <i>e.g., DEVONthink, Evernote</i> <b>see page 236ff</b>	very powerful functions (usually compensate what is missing in the OS)	often commercial software additional program needed
<b>visual notes management systems</b> <i>Tinderbox, Curio</i> <b>see page 242f</b>	visual way of working lot of freedom	difficult to leave if used for a while often high focus on structure (many actions necessary to enter/deal with content)

## WAYS TO COLLECT IDEAS

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<b>wikis</b> <i>DokuWiki, MediaWiki, etc.</i> <b>see page 244ff</b>	flexible structure .txt-Wikis: fast access via normal editors and all advantages of .txt-files integration of media files possible without changing their data format	installation somewhat difficult structure must be provided by the user
<b>word processors</b> <i>Microsoft Word, Pages, etc.</i> <b>see page 252</b>	easily available can handle media files	proprietary file format slow become unstable with increasing file size
<b>databases</b> <i>MS Access, File Maker, etc.</i> <b>see page 254</b>	clear internal structure speed	content often limited proprietary file format (often OS specific)
<b>spreadsheets</b> <i>MS Excel, Numbers, etc.</i> <b>see page 253</b>	clear structure ideal for date-related data	cannot handle media files proprietary file format content length often limited
<b>eMail programs</b> <i>Mail, Thunderbird, etc.</i> <b>see page 256</b>	widely available and accessible	hard to edit structure difficult
<b>blogs</b> <i>Wordpress, etc.</i> <b>see page 257</b>	media integration accessible over the Internet	difficult to secure structure difficult
<b>mind</b> <b>see page 258</b>	always available very secure against theft (unless you talk in your sleep)	highly unreliable, especially for details



# USING AN IDEA COLLECTION

Keep the following things in mind when you use an idea collection:

## only one collection



If you put all your ideas in a single collection, then flicking through your collection can lead to links between (seemingly) unrelated topics. Spreading your ideas and references over multiple collections leads to unnecessary effort and makes searching for ideas, connecting ideas, and backups more difficult. It creates different pools, and not one common pool where all ideas are available.

## only one version of the idea collection

If you keep copy of your collection at different places (e.g., home and office) it will become very hard to synchronize the ideas and to enlarge the ideas that are spread over multiple sites. Use capturing tools to get the ideas down no matter where you are, but use only one version of the collection, and — besides for backups you do not use — do not transfer it over multiple sites.

## separate from the capturing tools

It makes sense to use different capturing tools, as the criteria differ for capturing compared to collecting. You can use the tool that fits best in the situation, and you will likely use different tools. However, they should all converge onto the same structure — the collection.

## do not over-organize

When realizing ideas becomes difficult or boring, it is tempting to invest huge amounts of time and effort on organizing ideas. Don't. It's a service, a tool — it should help you realize ideas, not become a project in its own right.

## easy access to the collection

If you need to access your collection at multiple sites, e.g., at home and at the office, consider using a digital solution that you keep on your notebook, or synced via a cloud service (note that not all files can be synced).

## use the collection only for ideas, not for products

A collection keeps the ideas until you decide to realize the project. Then you extract the ideas and put them where you need them. However, do not put the finished products back into the collection, unless you need them as building blocks for new ideas. A collection is about easy access to ideas that are captured in sufficient quality, but archiving products is about storing the objects in the best quality — and the size alone will make your collection harder to use.

# USING AN IDEA COLLECTION

## be very flexible regarding media

An idea collection should be able to deal with most media types. Even if you only want to store text, you might find a video or image that inspires you, and it is helpful if your collection can deal with it. As computers can deal with all media formats (except touch/smell/etc.), a digital collection is strongly recommended.

## focus on collecting, not realizing

The collection must be very well suited to collect your ideas. You do not need to realize them in it — and should not. Do not use it to collect your ideas — that decision might change over time (e.g., you find out that Scrivener is better than Word for writing novels) and the final program might have different affordances. It will also force your ideas to a concreteness that makes using them for different projects difficult. Use a dedicated collection that is optimized for collection and that helps you to develop your ideas — and keeps them flexible.

## be very conscientious in using it

An idea collection needs order and maintenance to function — which only *you* can provide. This is laborious, it is not the drawer where you can simply put all your ideas in, but it is this structuring effort that makes it possible for you to actively use your ideas and realize them. If you omit the structure, you do not know what you have. You might imagine you have great ideas, but this is not creativity — it is pseudo-idea-gathering, without any merit. Ideas must be implemented to be creative. They must be realized, otherwise it is “just” an idea.

## adapt it to your needs

You will use your collection often and for a long time. If you do something repeatedly and it takes effort, search for a quicker way to do it. One change that takes some effort can greatly improve and simplify your work for months and even years to come — and quickly pays for itself in time and effort to find the solution. Especially digital collections can profit from plugins or scripts that allow you to do small, repetitive tasks much, much faster. If you cannot write them yourself search around online — most tools (e.g., DokuWiki, DEVONthink, etc.) have communities that share useful scripts. There are also ways to personalize physical collections — look around on the net and ask others.

## USING AN IDEA COLLECTION

<b>flip through it and expand your ideas</b>	The great thing about an idea collection is that you can easily add to the ideas you have. Just flick through your ideas and whenever an idea resonates with you, make the idea more detailed, or write additional ideas to it.
<b>create and maintain a workflow</b>	Make sure that you establish a workflow to collect your ideas. It takes a few weeks to build up a habit, and the easier it is for you to add the ideas to the collection, the easier you will build this habit. A collection inbox (see page 139) can help here.
<b>careful not to accidentally duplicate information</b>	Normally, an information should be in the collection only once, however, you can easily end up with duplicates if you are not careful: You transfer an idea captured in another tool (e.g., an notepad page), get interrupted, and you later transfer the idea again. Or you had the same idea twice. As this makes it harder to develop ideas, cross out/delete the idea in/from the tool you have captured it in — immediately after transferring the idea. And make sure you have a clear structure in the collection to spot duplicate entries. An exception is when you want to develop two separate projects from the same idea, e.g., an image in your mind that might become a painting and a short story. In this case, it might make sense to duplicate the information.
<b>find an easy way to digitize information if you work digital</b>	If your collection is digital (and in most cases it should), you have to digitize information (text, images, audio). See page 319 for ways to achieve this.
<b>maintain structure</b>	Structure is needed both within an individual entry (see page 140) and within the whole collection (see page 141).
<b>only mark ideas for deletion, do not actually delete them</b>	Even bad ideas can be the basis for better ideas, stimulate other ideas, help you find out how you think, you might realize it in a different ways (see page 187), etc. pp. Just add a tag "removed" to exclude them for your searches or move them into a different folder.
<b>watch the core function</b>	An idea collection should help you to accumulate ideas. For this, you must use it, it must be available and the five key usages (remembering, generating, finding, expanding, restructuring, see page 127) must be supported and used by you.

## COLLECTION INBOX

A very important help in collecting ideas is the collection inbox. It can be a real box if you capture ideas on paper (tear out the written pages and put them into this box), or — better (or rather the next step: digitization) — a text file on your computer (e.g., inbox.txt), in which you transcribe all your ideas before you sort them into your collection (you can also use this file for capturing ideas).

This collection inbox has a couple of advantages:

<b>you have more freedom in capturing ideas</b>	It doesn't matter where you capture your ideas or with what, as long as the flow of information leads them into your collection inbox.
<b>you see how much you have to transfer</b>	If you use a notepad you might not realize how many ideas you have already written. The pages in the physical inbox, or lines in the text file, will point you to the fact that you should transfer them into your collection, before the amount becomes too unwieldy.
<b>you reduce the risk of losing ideas</b>	It moves the ideas from your capturing tools (pages of a notepad, text from an eMail, etc.) to another place. If you lose or damage your capturing tool, the loss is reduced.
<b>allows you to transfer the ideas to the collection in one go</b>	Putting ideas into a collection takes time and effort. You cannot simply dump them into the collection, you have to connect it to the other ideas. Using the collection inbox gives you a way to first collect a couple of ideas fast, then transfer them into the collection by copy and pasting. It also parallelizes the process and frees up your capturing tool.
<b>if digital collection inbox: you can quickly do the hardest step: digitalization</b>	Capturing usually works better on paper, but digital collections are more powerful. Thus, you have to digitalize your ideas (see page 319). Typing the idea from a notepad page into the collection inbox takes care of the hardest step — digitalizing the information. Afterwards you can simply copy & paste the information into the collection.
<b>if digital collection inbox: it is included in the backup cycle</b>	Given that it can take a while until the captured ideas end up in the collection, it is advantageous if the captured ideas are also backed up (see page 306). Using a digital collection inbox and doing backups can ensure this.

## STRUCTURE OF INDIVIDUAL ENTRIES

Essentially, there are two ways to structure an entry in the collection:

- **Templates:** Predefined sets of information, like a typical form you fill out. Templates are often available in programs. If you use a paper collection, simply photocopy or print the information on each page. If you want to use a notebook, use a ring binder and print each page with a template.
- **Free format** are empty pages you fill in with the information you think the entry should have.

structure	advantages	disadvantages
<b>templates</b>	entries share a common structure entries share common information types easier than rewriting the same information over and over again	some ideas might not fit in a predefined structure in physical collections the areas for the information might be too small for the entries
<b>free format</b>	fast tailored to the entry	might omit important information different standards for entries make it hard to search for specific information

## INFORMATION EVERY ENTRY SHOULD HAVE

Every entry should have the following information in the same place:

<b>title</b>	Used to refer to the idea. Needed in digital collections (file or page name). Title should be short and to the point. Important for search results — should give you an idea about the content without having to read the entry.
<b>tags</b>	Very useful to make sense of the content and to find it quickly. See tagging on page 317 for more information.
<b>unused/ used marker</b>	Mark where you have used the idea. You might want to reuse it (e.g., in a different form), so there is no need to delete the entry, but you should know where you have already used it.

Make sure this information is always in the same place. It will make working with the collection much easier. This is very important in a physical collection (e.g., index cards) — it makes it possible to quickly flip through the collection.

If you include images to the idea in general (not to a specific line of text), put them together at the end of the entry. It makes reviewing the images much easier.

## STRUCTURE OF THE IDEA COLLECTION

The entries of the idea collection can be sorted according to different principles. Some ways of collecting information require specific principles (e.g., a notebook usually leads to a chronological collection).

The advantage of most digital collections is that multiple sorting principles can be used at the same time. You might want to use a thematic approach to differentiate between work and private ideas, for images vs. videos, then use an alphabetical approach for your media files, combined with a thematic approach in each folder (e.g., `videos\m\mass_effect\`). If you have a lot of instances of a specific media type (e.g., pdfs of scientific articles), think about how you store them — and how you name the files. For example, it makes sense to use a clear naming convention for the pdfs of articles (`authorname_[authorname2_authorname3_...].year.pdf`) and an a–z index to store the files. You cite the articles this way and you will easily see the duplicates.

The point is: **Think how you store your ideas.** Remember that you have to find the ideas quickly and easily. I strongly recommend using a top down (indexes and links) and bottom up (tags/keywords, see page 317) approach at the same time — and a constant re-evaluation whether you can work with it.

## PRINCIPLES

<b>alphabetical</b>	<b>advantages:</b> clear, logical, future proof <b>disadvantages:</b> name usage must be consistent (synonyms are problematic), no structural relations in the way the information is stored Give each entry a title and sort them according to the title. Careful with synonyms. Using an a–z/0–9 index helps to avoid having too many entries in one folder. You can also use the same index for the subfolders, e.g., with three levels, <code>abbe.jpg</code> ( <code>a\b\b\abbe.jpg</code> ) ends up in a different directory than <code>apple.jpg</code> ( <code>a\p\p\apple.jpg</code> ).
<b>chronological</b>	<b>advantages:</b> good for tracking the course of a project regarding its ideas <b>disadvantages:</b> time often unrelated to content/topic, if ideas for more than one project are collected, time often has no information value for the idea, difficult to refer to an idea The default with paper notebooks as the order is fixed. If you (have to use) chronological order, give each idea an index number (see next) to allow for easy referencing of ideas.

## STRUCTURE OF THE IDEA COLLECTION

<b>index number</b>	<p><b>advantages:</b> each idea can be clearly referenced to, easy to implement, allows you to make references lists regarding to topics even with chronological ordering, easy to find information as the numbers are consecutive</p> <p><b>disadvantages:</b> index number must be supported by an additional list (e.g., index number and title of the index card or entry)</p> <p>Entries simply get consecutive numbers. This is done automatically in databases in which each entry has an unique identifier. In paper collections make sure that the entry is easy to find (always in the same place, in the same color, circled) and use an external list where you write the title/content information next to the number to quickly find the ideas. If you want to use index numbers in digital collections where it is not supported (e.g., text files), write the number in #. Using #23# instead of 23 will allow you to search for #23# and find only this index number, not also 230 or 123 and the like.</p>
<b>thematical</b>	<p><b>advantages:</b> individual order, links within thematic categories are easy to find</p> <p><b>disadvantages:</b> difficult to create thematic categories without knowing which ideas will (one day) be in the collection, thematic categories can change (but are hard to change in the collection), one idea can belong to different categories, links between different categories are hard to find</p> <p>Create folders for your own categories, e.g., <code>private_projects</code>, <code>work_projects</code>, with subfolders like <code>books_non_fiction</code>, <code>paintings</code>, etc. Although intuitive, it gets problematic quickly when the same idea can belong to different categories. It is often more beneficial to use tags (like <code>private_project</code>, <code>work_project</code>, <code>painting</code>, etc.) to create categories on the fly — the same idea can then easily belong to different categories.</p>
<b>multiple principles</b>	<p><b>advantages:</b> best of multiple worlds</p> <p><b>disadvantages:</b> more effort, easy to omit one ordering principle</p> <p>Typical example would be using names for the ideas, seeing the creation date for chronological order, and tags for thematical order.</p>

## STORING REFERENCE MATERIAL

References are the ideas of others that help you to generate, improve and realize your own ideas (the shoulders of Newton's Giants). You can store references within your idea collection or in a separate reference collection. Both solutions have advantages and disadvantages:

stored	advantages	disadvantages
<b>within the idea collection</b> (e.g., using a wiki for ideas and references)	use of existing infrastructure connections between ideas and references are easy to make	collection gets large quickly (size of backups/storage space) number of ideas is difficult to estimate easy to confuse references (other people's ideas) with your own ideas (plagiarism)
<b>as a separate reference collection</b> (e.g., using a wiki for ideas and iPhoto for images and a folder for websites saved as PDF)	backups can be made independently idea collection stays smaller references can be content specific (e.g., photo library for images)	link from idea to reference is more difficult takes more time to access reference material references can get lost more difficult to export (print/copy) the idea, as the reference material is somewhere else

## WHEN STORING REFERENCES, KEEP A FEW THINGS IN MIND:

<b>keep references explicitly marked as such</b>	If you collect ideas for years, it will become increasingly difficult to remember which ideas were yours and which are ideas of others. Unintentional plagiarism is easy!
<b>connect it with the source information</b>	Have the exact source available if you plan to use the reference. Otherwise it will be hard to state on whose work you build. Take care that the information is not lost (e.g., you export the data without this field).
<b>choose an adequate quality level (keep it small!)</b>	Decide on what you need to do with the reference. If you want to use an image for a printed book, better store it somewhere else in very high quality. An idea (reference) collection should make the information quickly available and remind you of ideas — small file sizes, e.g., via quick and dirty scans with high compression, are usually better suited than large file sizes.



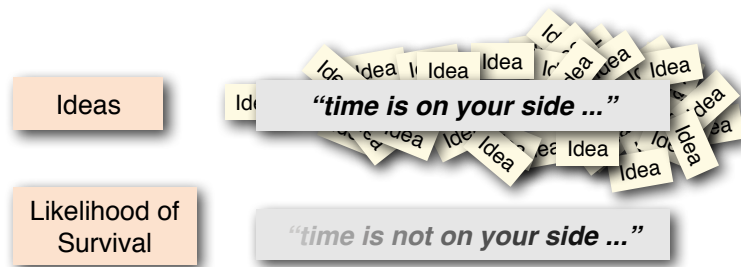
## PROTECTING YOUR IDEA COLLECTION

Ideas (usually) do not come back. Digital data is great, but it is also ephemeral. And while losing your programs and settings is annoying, losing your ideas is a catastrophe.

The problem is that time has two different consequences for your collection. Over time ...

... the amount of ideas in your collection will increase, *but*

... the likelihood that your ideas will survive will decrease.



### GENERAL DANGERS TO YOUR COLLECTION

<b>accidents &amp; theft</b>	Accidents kill your collection in one instant: Water, lightning, fire, a cat spraying the competition or a short drop — there are many things that can instantly kill your collection, esp. digital ones. Be it a too thorough spring cleaning, a misplaced box while moving, or theft — even other people can kill your collection without meaning to do so.
<b>decay</b>	The physical lifetime of any medium is limited. It is not a question of <i>if</i> but <i>when</i> a medium will become unreadable, inaccessible, or simply non-existent. This is especially a problem for digital media. Not only will paper probably last much longer than a floppy disc, or a CD, or a hard disc, it will also show much clearer that its lifetime comes to an end. The ink will fade, the paper will get brittle, or it will host primitive life-forms. A floppy disc or a CD might look like it is in pristine condition a decade from now, but the data might be completely inaccessible.

## PROTECTING YOUR IDEA COLLECTION

### SPECIFIC DANGERS TO YOUR COLLECTION

Paper-based Tools	
<b>only one copy</b>	The problem with a collection based on paper is that there is <b>only one copy</b> . If this copy is destroyed, all ideas are lost. Backups would help, but unfortunately, paper takes up a lot of space and any copy will take up the same (unless you make digital copies, or go for microfilm). Given that the collection is usually stored in one place, this places the collection at a terrible risk. If an accident happens, there is no safety net.
Digital Tools	
<b>data loss</b>	Digital data is ephemeral. You have to store it in different places on different media — again, and again, and again.
<b>user error</b>	Computers were made to handle large amounts of data quickly: finding, sorting, and — yes — deleting goes very, very fast. You would notice when you put 5000 pages into the trash, but with digital media, an user error can kill your collection in the blink of an eye. While there are often ways to retrieve deleted data (the trash bin was developed for this purpose), be sure to have regular, independent backups (see page 306). If you wipe your system you can still access your data on the backup DVD or external hard disc.
<b>loss of access</b>	<p>Digital changes quickly and you can lose access simply because either the data medium or the file format becomes obsolete.</p> <p>A page written in 1920 can still be read today, but a file stored on a 5¼ or 3½ inch floppy disk is almost impossible to read today. It is only a matter of time until CDs, DVDs, and USB-sticks will follow suit. And even if you can read the files, you might not be able to use them if the program you used is not available anymore or does not run on your computer anymore.</p> <p>This is usually only a problem if you do not use your computer for longer periods of time. If you follow the development of computer technology, you usually see when something drastically happens (e.g., floppy discs are no longer supported). Make sure you transfer your data to the current storage media before you have to buy a computer that does not have the capability to read your old data media.</p> <p>And never trust your data to a data island — always make sure that you can export the data later.</p>



## PROTECTING YOUR IDEA COLLECTION

## WAY TO PROTECT YOUR COLLECTION FROM DECAY AND LOSS

<b>backups, backups, backups</b>	Save early, often, incrementally, and externally. Mind the rules of backups (see page 306).
<b>rejuvenate the data</b>	Keep your data alive by copying it from time to time to a new drive. If you use an archive of your works, keep it on the hard disc and include it (albeit more infrequently) in your backup cycles. Keep in mind that any backup DVD you burn will fade out after some years, so you better make a new backup from time to time.
<b>accident protection</b>	Accidents will happen, the key is to limit their impact. If you make regular backups and store them in different places, a (lightning) strike that destroys your computer will not kill (all of) your idea collection. If you make sure that you have never ever all of your data and backups in the same place (e.g., house, city, country), a catastrophe or a thief cannot (likely) get it all.
<b>theft protection</b>	There are a few things you can do to protect your hardware from theft (see page 310) and to get it back if it was lost (see page 311).
<b>misuse protection (encryption)</b>	Encryption is sometimes recommended, but it is difficult to do correctly (e.g., password protection of an old Microsoft Access database could be bypassed with a program in less than a second)—and it can backfire massively! See page 312 for more information.

**Remember: What you now use will not survive.**

Regardless what you now use, the media you use to store your ideas will not survive. Keep this always in mind and make sure that when the physical media is gone you still have the ideas stored somewhere else.

Imagine any media like a building built on sand in the deep desert. Over the time it sinks. Sand piles up, then it is gone. Any media you use for your collection or your archive will sink and be gone, it is just a question of how long it will take.

## PROTECTING YOUR IDEA COLLECTION

## WHEN THE COLLECTION IS TRULY GONE

If you cannot restore your files, and the last backup is ages old, you have to deal with the fact that your collection is *gone*.

A complete loss of data is like the orchard burning down. All your work, all your effort, all your fruits (ideas) are gone. But it can be rebuilt. And given the amount of ideas you had, the ground will probably very fertile.

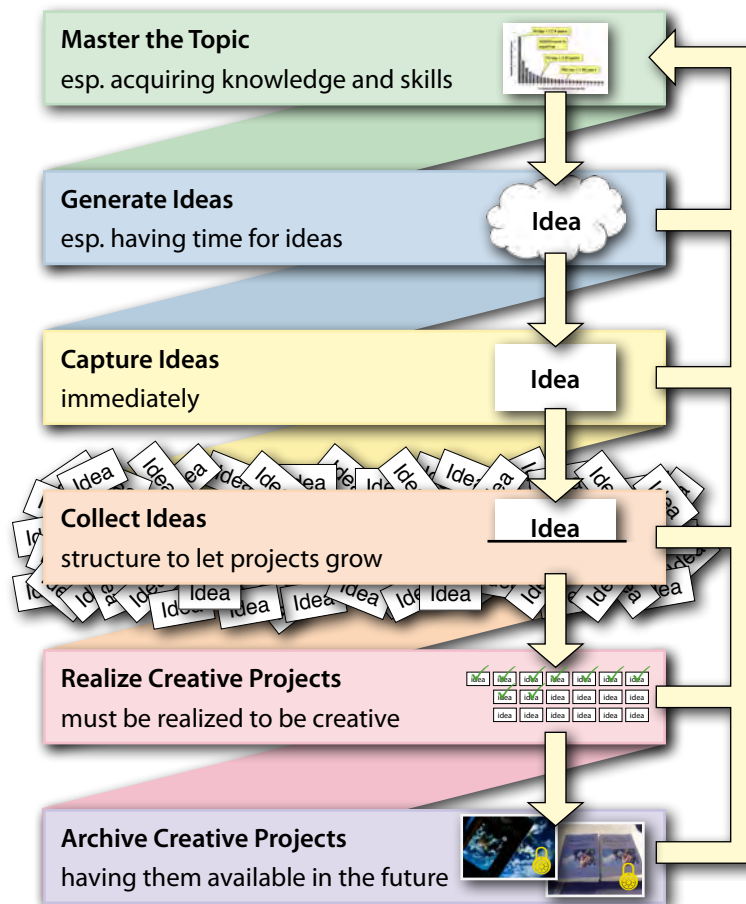
Here are a few things you might want to do:

<b>save the core project</b>	Write down immediately what you need to do to finish the core project (see page 56). It is the one you are currently working on and the one of which you can most likely remember enough to realize it as planned.
<b>get some distance</b>	Deal with your emotions. Take a walk, scream, go running, but what ever you do, deal with the anger and frustration.
<b>rebuild what you can</b>	Make an idea dump and capture any ideas you remember, any projects, everything you remember about the collection. You will not remember everything and this will be painful, but writing down all ideas you remember gives you a starting point.
<b>change the idea collection</b>	As you currently have no ideas in your idea collection, this is the time to change to another collection method if you want to. Have a look whether you find a method that is better suited than the old one. Be careful about major changes (e.g., switching from digital to paper) as you lose your expertise. Usually small changes are sufficient.
<b>set new priorities/change projects</b>	Having lost your collected ideas, you are free now to start anew with a different focus, if you like. There is nothing that ties you to your old ideas so ask yourself: Which project do you want to restart? Are there any aspects you would have done differently if you had not already invested a lot of effort in them? Use the one advantage of a lost collection to completely change your projects if it makes them better.
<b>prevent a similar loss in the future</b>	Lightning can strike twice, so find out what went wrong, how it could happen, and prevent it in the future. Ask yourself — why you did not have any working backups? Were they too laborious to do? Automate it and make sure you include it into your routine. Were there on the same site and it burned down? Consider putting the backups on a server in another country, or in a secure deposit box at a bank.

# Organize Creativity!

## V. REALIZE CREATIVE PROJECTS

Organizing Creativity = Creating the Infrastructure to ...



## ABOUT REALIZING CREATIVE PROJECTS

You are not creative until you have realized your ideas. Only then do you know whether your ideas actually work, and whether they get accepted by your target group (see field on page 32), whether they are new and useful, i.e., have value for others (see page 31).

Learning the domain, honing your skills, generating ideas, capturing and collecting them — all these steps will leave you with a lot of ideas that grow and become more refined the more time and effort you invest. This leads to the moment when you have enough ideas to realize the project.

Having an idea in your mind, playing around with it, even capturing and collecting ideas is very easy. But once you want to cross that chasm between imagination and reality more work is needed.

Realizing a project will be **take a lot of effort**. Planning can make it easier and even fun, but this is the second time where you will have to invest a lot of hard work (see page 53) and time (see page 54).



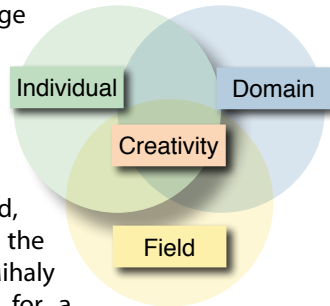
*If all creative ideas were effortless to realize, we would need a few statues more — if creativity would still be honored that much.*

## SELECTING A SUITABLE PROJECT TO REALIZE

The advantage of using a dedicated idea collection is that you can *freely* and *consciously* choose the project that is "ripe" for realization, i.e., a project for which you have enough ideas to realize it. Most likely this will be one of your central projects (see page 56), but what happens if it is an idea autumn and you have multiple projects that are "ripe" (ready to be realized).

### CRITERIA FOR SELECTING A PROJECT

If you have multiple projects that can be realized, for which the way to realization is clear, the following criteria based on the distinction by Mihaly Csikszentmihalyi might help you in deciding for a specific project:



#### INDIVIDUAL DIMENSION: SKILLS & MOTIVATION

- knowledge and skills available for the project
- sufficient resources (time, money, information) available for project completion
- high motivation for the project
- project Important for further career

#### FIELD DIMENSION: HIGH VALUE OF PROJECT

- field expects and values the project
- field needs the project (e.g., there is an urgent need that the project can satisfy)

#### DOMAIN DIMENSION: HIGH QUALITY OF PROJECT (READ: OF ITS IDEAS)

- idea is/ideas are really new
- idea is/ideas are powerful (i.e., simple, elegant)
- high likelihood that the idea/ideas will work
- project in general is complete (no loose ends or missing steps)
- project can be realized quickly

## SELECTING A SUITABLE PROJECT TO REALIZE

### DECISION STRATEGIES

If cannot decide on a project, try the following:

<b>argue</b>	Argue for different ideas with a partner and switch sides often to avoid becoming emotionally attached to an idea (see arguing as a "creativity technique" on page 85).
<b>keep a meta-list/someday-list</b>	If you feel the pressure of the ideas you do not realize <i>right now</i> , keep them as central projects (see page 56) on a special list (someday list, meta-list). This way you keep them in mind, make the decision a first-second, instead of an either-or, decision, and the ideas will grow quickly and be ready when you have finished the current project.
<b>tag projects according to their evaluation criteria</b>	If you have a lot of ideas, use the criteria as tags (see page 317, e.g., <code>skills_available</code> , etc.) to quickly sift through the ideas and get an overview of what is available for realization.
<b>make sure the world is ready for your idea</b>	Make sure that your idea can be and will be accepted by the target audience. For example, if your idea runs in your computer environment, but the technology needed will become standard in a few years, do not realize it yet. There have been many examples where the first developers went broke, because the world was not ready for the ideas (e.g., the first virtual 3D environments, many of the first web shops). Make sure that the timing is right when you realize an idea.

### AVOID PAPER SOLUTIONS

Some ideas only look good on paper, because you have not yet encountered the important conditions, prerequisites, consequences or facts needed to realize them. In general, be skeptical (see page 280).

The following tasks may help you weed out paper solutions:

<b>get the numbers</b>	If you work involves some kind of calculation, get the exact numbers and see if it stands on a solid foundation. You can make a quick calculation (see page 281) as a first check, but especially if you want to convince others, make sure that the numbers are right.
<b>define the terms</b>	In the beginning an idea might be vague — tie it down as soon as possible. Define the terms, be as clear as possible. What do you mean, where is it applicable?

## SELECTING A SUITABLE PROJECT TO REALIZE

play it through	One of the best tests of an idea is to play it through. Consider every step: Is this possible? Is it realistic? Did you forget something? Use a flowchart to make the steps as explicit as possible.
talk to experts	One of the quickest way to find out the merit of an idea is to talk to experts of the domain. Sure, they might favor their own solutions, or the status quo, or in extreme cases even steal your idea, but if they can also tell you reasons why the idea will not work. Consider them carefully (but also see page 302). Are they right? Are their arguments good? Can you refute them? Patent offices are very good to weed out non-working ideas.
make a prototype	No matter whether it is a new propulsion system, or a new kind of school, try to realize it at least as a prototype. This will tell you how well it works (if at all), and where you can improve the idea. It will also give you something to show when you try to convince others of your idea.
imagine what happens after the project is finished	Often we neglect that creating a solution for a problem (or satisfying a need) changes the situation and has (unintended or neglected) consequences (see page 34). What would happen if your project is finished? Would its consequences really be beneficial to you? Or would you open a can of worms? Be responsible (see page 35).

## MAKE DEFENSIBLE MISTAKES

In realizing a creative project you move beyond the established and known. It is normal that things turn out differently than imagined. These deviations are often called mistakes, e.g., when a project does not work (although it “should have”).

Many experts (senior researchers in science or famous artists) fear making these “mistakes”, because they think that it puts their expert status in question. However, based on what you knew and expected and without the benefit of hindsight — knowing how it actually turned out when making the estimation whether it works or not — you did the right thing, even if it turned out wrong.

It is a *defensible mistake*.

If you fear appearing foolish, write down what you expect and why — and ask other experts for their opinion, and write those down too. If the project turned out differently, you are in a perfect position to defend your “mistakes”.

## REALIZING A CREATIVE PROJECT

When you try to realize a project, make sure that you *work only on one project at a time* (see page 56). While you can gather and develop ideas for the central projects and the periphery projects whenever you like, realizing a project usually takes so much effort that you are probably best suited if you concentrate only on one project at a time: **the core project**.

When realizing a project, keep the following things in mind:

finish what you started	Unless the project has gotten impossible to realize, do not start to realize another project until you have finished your current core project. Otherwise you are in danger of switching to other projects when things get tough and need dogged determination.  Remember that it is normal that realizing an idea is hard, that there will be phases when your projects makes you want to <i>vomit</i> , and when you get <i>stuck</i> . It's easy to see other projects as better or easier in these situations and in the beginning you might be right. But every project will pose challenges and unless you punch through them (or walk through hell for a few weeks), you will not realize any project. You continue starting and never finishing.
avoid escalating commitment	At times you have no choice, but to quit working on a core project. For example, when it becomes impossible to realize, someone beat you to it, or you discover that (superior) alternative solutions exist (see page 184 and page 187). If you are <i>really</i> sure that there is no merit in your project (e.g., it has other advantages), avoid escalating commitment and quit working on the project. The difference to hopping to another project when things get tough is that you are really <b>canceled</b> the project, <b>you will not get back to it</b> .
avoid identifying yourself with only one idea	Realizing only one project at a time should not make you think that you are defined by the idea you realize at the moment. Otherwise your self-esteem will suffer if the project runs into difficulties or even fails. You have a lot of ideas and this is only one, realize it, and move to the next. Never become one of those bores who talk about “their” only idea all the time like a broken record. And never put all your self-confidence and self-worth on a single pillar — always have at least two other things that keep you up <b>when</b> (not if) your creative project becomes hell on earth.



## REALIZING A CREATIVE PROJECT

<b>document what you do</b>	<p>Usually neglected during the realization phase is a good documentation. While this might appear superfluous, a good documentation will help you remember what you have done. Especially with complex projects, or projects that take longer time-frames, this is needed. It also helps you to use the same approaches years after completion of the project (e.g., using the same color to paint with).</p> <p>Also, in science and engineering, an accurate documentation is essential for writing the paper or report about your work or getting that patent.</p> <p>If you are unsure whether your notes are complete enough, ask a colleague, who does not work with you, to repeat your experiment based solely on your notes, and refrain from correcting him if he does something different. Just watch and notice where your notes are not clear enough. You will be surprised.</p>
<b>invest in project management</b>	See the information on page 290 regarding project management in teams and the other related tips on time management (see page 58) and task management (see page 62).

## STEPS IN REALIZING A CREATIVE PROJECT

If you plan to realize a creative project, the following steps might be helpful:

<b>get an overview and create a structure</b>	Curb your desire to start immediately with the project. First plan the realization. Make sure you have all the ideas for the project in a logical order so that you can get a handle on the project. Creating an outline or a MindMap is helpful in most cases and will show you whether you have missed something, a content outline is also often helpful (see page 338).
<b>review the scope of the project</b>	Check the scope of the project — can you realize it in time? Make a quick time/effort calculation (see page 353) and remember that you can always use the ideas for future projects.
<b>play it through</b>	Go through all steps needed and really ask yourself if you have considered everything. In many cases, projects will change during realization, but make sure that you have not neglected something important. If you do an empirical study, for example, make sure that you check whether you can analyze the data you plan to gather (often neglected due to "time constraints"), and whether you have everything you need to present your results in a paper.
<b>deal with deficits</b>	Whereas you will learn a lot during the realization of your project, make sure that you have the necessary skills and knowledge to start with. Make a few studies or smaller trials to see where you stand and to specifically focus on improving your skills in that area.
<b>get the right tools/update them</b>	Before starting a major project, make sure you check whether your tools are still the best for you and the project. Especially with software there are huge advances in short time. Check online in forums/blogs whether another tool might be better suited.
<b>brace for reality</b>	As Neil Gaiman once wrote, there is a wide gulf between conception and execution. When you realize your project, don't be surprised that you might have to make a few attempts or push through obstacles or circumvent problems. You might also notice areas where your idea needs clarification or improvement. You might modify your idea. These problems are normal and they make creative works praiseworthy.



## STEPS IN REALIZING A CREATIVE PROJECT

<b>steady, regular work finishes the project</b>	If you can realize the project in one go, go for it. For longer projects however, make sure to work regularly and steady. This will help you to continue when the project gets tough, when it is not all fun, but requires tedious work, and when you repeat failure after failure. However, you might want to make sure you have an extra amount of time for starting the project. See also time management on page 58.
<b>evaluate the project</b>	Few projects turn out exactly as imagined, nor are they always accepted as imagined. After completion you should evaluate your work and learn from the deviations between imagination and realization, and you should ask others for their opinion (see feedback on page 160ff). The advantage with a realized project is that you can easily show it to others, the disadvantage is that it is hard to change (see „Feedback: Timing and Kind“ on page 162).
<b>select a new project</b>	Once the project is completed (really, really completed in a way, that no modifications are necessary anymore and it is used, sold or given away), you can choose a new project from the collection and restart the whole process. In some cases it might help to revisit the project a second time (which is what archives are for, see page „About Archiving“ on page 191). You have learned a lot during the realization and a second go at it (from the start) might be helpful to improve the quality.

## PROBLEMS IN REALIZING A CREATIVE PROJECT

If you experience problems because your idea does not work as planned, analyze the problem:

General Issues	
<b>minor error, gaps, and problems, i.e., something does not work as planned (limited to a specific aspect of the project)</b>	Usually easy to solve as you have a clear cut problem to solve. Check carefully whether you have realized the idea as planned. Try it for a while, if you do not succeed ask experts in the subject matter (not on the whole project you want to achieve, just on the part that is problematic). You can also try to bypass the problem by going back to a point where you can change the direction of the project so that it does not lead to this problem.
<b>major errors, gaps, and conceptual errors, i.e., problems that put the feasibility of the whole project in question</b>	If you are sure you cannot solve the problem, put the project on hold and archive it (see page „About Archiving“ on page 191), but do not delete it. You might be wrong and a solution might come to you in the future, you might use part of the idea for other projects, or the domain might change and new tools allow you to pass the problem. If possible, share what you have encountered, so that others do not run into the same dead-end, and try to find out why the project went wrong to do it better next time.
<b>manic/blind activism</b>	Sometimes you want to finish a project as fast as possible. However, this can lead to manic activism that does damage the project instead of advancing it. Planning a creative project should provide you with an overview of the necessary steps, which should make blind activism less damaging and even channel manic episodes in the right direction (using them to create and the ‘normal’ phases to evaluate the created works). However, you might need to revise part of your work if you lost that manic feeling.
<b>someone beat you</b>	Parallel creativity is common — a publication with similar content might get published, or an artist becomes famous with a similar project. Check whether you really did do the same, often there are differences that can be stressed. You can also use parts of your project for other projects or continue the project one step further and go beyond the level where the competition has gone (the advantage is that your competition likely does not know you and might celebrate the success — time which you can use to bypass her).

## PROBLEMS IN REALIZING A CREATIVE PROJECT

<b>negative anticipated reaction of the field</b>	Late in the work, when the project becomes more concrete, many people consider their work 'trivial' or 'obvious'. However, make sure that you do not come to this opinion solely because you know your work in and out, and all developments have lead you to this point. Your perspective on your work is likely to be very different from the perspective of the target audience. Ask some people, who are in a similar position as you were when you started the project, but do not know your project, how they evaluate it. Unless they all independently think it is trivial, you have nothing to worry about but your own insecurity.
<b>Blocks</b>	
<b>being overwhelmed by the scope of the project</b>	If you have established that you can realize the project with the effort and time you are able to invest, break it down into smaller chunks/steps. Creating an outline or todo list and then focusing only on the next step is often helpful.
<b>not knowing the next step</b>	This usually means that you have not created/lost the red thread — you do not know what to do and where to go. Go back to the planning phase and work on the structure first.
<b>unable to create the structure</b>	Usually means that the idea is not clear enough, or you lack information. What is your goal and how do you want to reach your goal? Or more specific: What do you want to convey and how do you want to convey it? Sometimes it's best to work your way backward from the goal to the "as is" situation to find a suiting way.
<b>doubt regarding the quality of the project</b>	You are doing something that wasn't done before and that can only be evaluated correctly once it is realized — it is normal to have doubts regarding its quality. If the doubt persists and the investment to realize the project (time, money, material) is high, check whether you have chosen the right project (see "negative anticipated reaction of the field" above). But keep in mind that you have to realize the idea to truly evaluate it.
<b>doubt regarding your abilities to realize the project</b>	Keep in mind that you can always improve — and that you will improve due to the experience you get in realizing the project. If the gulf between imagination and realization is too wide or the project fails, you can always try again. If the effort is too high, start with smaller projects and train your skills continuously.

## PROBLEMS IN REALIZING A CREATIVE PROJECT

<b>prolonged demotivation</b>	<p>Is it just exhaustion, because you have worked continuously on the project? Take a break — with planning and documentation you can resume the project easily.</p> <p>Is it a specific task of the project? Try whether you can do other tasks first (e.g., copy-editing what you wrote so far instead of writing a new chapter).</p> <p>Do you find it hard to resume your work? From the next time you work on it, make sure that the structure is clear and "park on a downhill slope" (stop when you know exactly what to do next). It will make it easier to resume it.</p> <p>Do you miss positive reinforcement (feedback, impression that the work progresses and is meaningful)? Track the progress (e.g., page numbers, photos of prior states of the project). Switch between small aspects and the overall planning. It might help you to keep the big picture in mind, but you still experience small successes whenever you complete an aspect. Imagine the finished project and the reactions of others to it.</p> <p>If the lack of motivation continues, decide whether you want to punch through or put it on hold.</p>
<b>"lacking the time" to continue working</b>	Even with a full-time job, time problems are usually matters of priority rather than a real lack of time (see time management on page „Time Management“ on page 58). Review how you spend your time, and whether the problem is not more motivational.
<b>fear of the final result/evaluation</b>	While it is normal to be anxious about the reactions of the field to one's work, you cannot protect your project forever — and you cannot learn/improve unless you find out what others think of it.
<b>fear of the emptiness after project completion</b>	For some creative people, the creative work is a major part of their life — it gives them something to do, a goal, a purpose. Once they have realized the project, it leaves a gaping hole, an emptiness. If you feel empty and downcast after the completion of a project, try to find something else than creative projects that gives you a purpose in life. Humanitarian work, doing sports in a team, a partner, something else that is available when you finish a project. You can also prepare another project from your idea collection when you are close to finish the current project, so that you can seamlessly follow up another project.

## FEEDBACK

There is one — and only one — goal of feedback:

**The improvement of your work.**

Good feedback does not mean ‘good’ in the sense of ‘favorable’ or ‘nice’. It means good in the sense of **useful for the improvement of your current and/or future work**.

Thus, good feedback indicates something important that you did/could not see, and it can be focused on your current work, or help you to prevent mistakes/recreate excellent aspects in future works. Also, good feedback is usually **specific to you and your project**.

However, it must also be more than that. To achieve this purpose, feedback must not only address a crucial issue, but it must also be formulated in way that the recipient:

1. sees/can understand the point (i.e., is valid and clearly formulated),
2. can agree with the point (i.e., is respectful and sometimes subtle), and
3. knows or is able to work out how to achieve this point (note that this is **not** the task of the feedback giver).

This makes receiving (and giving) good feedback very difficult. And these are only the inherent problems in giving feedback. Other difficulties include:

- **Power-Relationships:** Power-relationships, or fame, make honest, open feedback very difficult. Many people have problems telling truth to power (no wonder many powerful people lose contact with reality and fall). However, it is usually possible to give negative feedback as long as it is done respectfully (otherwise it is a bad place to be anyway).
- **Empathic Pain:** Likewise, empathy can be a problem (friends are great for support, not so much for honest feedback).
- **Lack of trust in the usefulness of feedback:** If feedback was given previously, but the changes were not implemented (and the reasons were not made transparent), people become hesitant to give feedback (and might even stop seeing it). It is simply not *worth the effort and trouble*.

On the receiving side, feedback is also often actively avoided, because it can hurt (if it is negative) and shows where additional work is needed. However, if you do not only want to appear competent, but actually be competent, you **need** good feedback to improve yourself. Feedback does not assault your competence, but (unless being deliberate destructive) shows that the person giving the feedback believes that you can achieve a higher degree of competence — and better work results.

*It challenges you to grow.*

## FEEDBACK

This implicates a few things **feedback is not**:

<b>good feedback is not emotional support</b>	Emotional support is usually appreciated and might be motivational, but it rarely helpful for improving the work. Friends or pets can give the emotional support and devotion necessary, but this is not good feedback.
<b>good feedback is not outsourcing of hard work</b>	Feedback is not outsourcing, and unless you are looking for a collaborator, you cannot expect someone else to do your work for you by also telling you how exactly to solve the issue they see. And why should they, given that they do not get anything for it? And how could they, given that no one knows more about the project than you do?
<b>good feedback is not for public consumption</b>	Good feedback should be private. Otherwise acceptance is harder, because there is the tendency to defend oneself from public criticism. Also, public critiques usually are for another audience (e.g., the readers) and not for the artist.
<b>good feedback is not payback/power play</b>	In some research institutes, departments wage war by criticizing the work of the respective Ph.D. students. If it is a whole workgroup or the climate itself, you might want to look for another job. And if you are laughing/snickering to yourself while you are thinking about feedback you give, stop. The recipient will not laugh about it, but feel every laugh as a sting to the heart. No matter how funny it may appear on the page or how righteous you may feel, it's <i>unprofessional</i> and will not help one bit <sup>1</sup> .
<b>good feedback is not always right</b>	No matter who gives the criticism, this person judges whether the project makes a significant contribution to the domain, and makes predictions of how the field reacts to the project. She might wrong on both accounts (happens frequently). Whether the critic is right or not can only be seen when the realized project is distributed. Do not take the critics word as the final judgment whether what you do is important or will succeed or not.
<b>good feedback is not always possible</b>	Sometimes, success and failure depends on things that are beyond the scope of critics view (e.g., advertisement, competition, changes of taste, zeitgeist, transformative events, etc.). This is very relevant if the critics are only a small part of the field. In this case, only the dissemination will tell how well your project will (or rather: does) fare.

<sup>1</sup> Very painful, "personal learning experience" in an interdisciplinary project.

## FEEDBACK: TIMING AND KIND

Depending on the time you ask for it, you can request three types of feedback:

<b>ex-ante evaluation of the project idea</b>	<p>Getting feedback before you do anything to realize the idea.</p> <p>In this early stage you have the advantage of minimal invested effort, meaning you are able to modify or even (<i>gasp!</i>) discard the idea. On the other hand, you will have a hard time to make another person understand what you are driving at. The lack of anything to show for makes it hard for others to see the idea, its strengths (and weaknesses).</p> <p>You can try to create mock ups, tell a story of things that would be possible with your idea, or put it in context to existing realized ideas.</p>
<b>formative evaluation of your project idea</b>	<p>This kind of feedback aims to improve your work while you are realizing it.</p> <p>If you are currently working on the project and you want input to improve it, you need to find the right time. The aspect you want feedback on must be fleshed out enough for others to understand it, and still changeable enough to actually use the feedback. Make sure you give them an overview first of what you aim at, so that they understand the big picture, before you focus on the relevant aspect you want their input on.</p> <p>If you are working with deadlines for the different stages or your project, plan ample time to analyze the feedback and improve your work. The best feedback is useless (and actually very painful to know), if you do not have the time to realize it, because you have to start the study, or send out the next chapter.</p>
<b>summative evaluation of your project idea</b>	<p>The work may be done, but in the end, it is only one step in your career. The evaluation of your realized project will probably be done by the field (if you are lucky to have one that is larger than yourself). But even now it might be helpful to ask the critic(s) about their feedback.</p> <p>In contrast to public feedback that is rarely directed at the creator, but rather an argument about the qualities of the work to the whole field, or a recommendation/warning for the target audience, <i>your</i> critics might provide you with insights on how to improve your work in the future.</p>

## FEEDBACK: DO YOU REALLY WANT IT?

Do not seek feedback because you think you should, but only because you feel that you cannot improve your work on your own, and you need an experienced, knowledgeable perspective to further improve it. Otherwise you are only hurting yourself and it is unfair to the critic, who takes her time to get to know your work and tries to help you improve it.

### Are you good enough for feedback?

You need feedback early and often. However, make sure that external feedback does not destroy your motivation to create. This can happen easily if you receive feedback designed for a professional, but you are still learning the subject matter. A good teacher will be careful but helpful with the feedback she gives you. Seek the best teacher you can find and do not seek feedback outside the teacher-student relationship until you are reasonably good.



The feedback I got related to this drawing pretty much ended my drawing aspirations.

### Do you really want to use the feedback?

Giving good feedback is hard work and it is very frustrating if suggestions for improvement are not really wanted or used. While no critic can expect criticism to be implemented, it should at least be considered. If you are not willing to change your work, request emotional support or praise, not feedback. Otherwise the critic will likely notice that you did not really want feedback and that his work was in vain — and you will lose a critic.

### Do you fear feedback?

To get good feedback you must convey the idea as clearly as you can. This means putting it into the harsh light of the day. Unfortunately, many people prefer to cloak some aspects in vagueness, because they feel their idea is not good enough. Don't. Show your work as clearly as you can, get a realistic impression of your work, and improve it.

### Do you get feedback on the right level?

If you want to see how "good" you are in a contest, make sure you get a fair comparison. Seek your peers, i.e., those who are in a similar phase of their career. Contest on levels where you can learn something, that are neither too easy nor discouragingly difficult. This usually means working your way up from the local to the international level, while improving your knowledge and skills along the way.



## FEEDBACK: FINDING A GOOD CRITIC

A good critic gives you good feedback, e.g., feedback that improves your work. If you look for a good critic, look for the following attributes:

<b>takes time</b>	<p>A good critic takes the time to have a close look at your work. No matter if the work is complex or (seemingly) simple, she takes the time to understand a work to become able to give feedback.</p> <p>Thus do not drop in on a critic and quickly ask her if she likes your work, or thinks it is any good, but find a time frame that suits your critic, e.g., make an appointment. Tell her in advance how much time you (and she) will need and why her criticism is important for you.</p>
<b>aims to understand</b>	<p>If your work is creative, it is likely to be misunderstood if understood at all. A good critic takes the time to get to know your work, because <b>good feedback is specific to the work</b> — and thus he asks questions about it.</p> <p>We often think of a critic as someone who tells us something about our work, but first we must tell him about the work. The ease with which your project is understood is the first piece of feedback you receive: You will not succeed in creativity if no one understands your work. Thus, learn to communicate your idea clearly (see page 176), and give the critic enough information (e.g., a paper/draft/sketch, see page 352) and enough time to understand it. Let the critic then explain the work back to ensure understanding.</p>
<b>wants you to succeed</b>	<p>This is a hard one: Not only must the person be qualified for giving criticism, she must want you to succeed. She must literally <b>work for your success without getting anything for it</b>. This usually excludes competition working on the same project, even if they are (technically) highly qualified.</p> <p>Look for people who work in the same general domain, but in different sub-domains. The difference might stimulate comparison between your works, which might provide additional ideas.</p> <p>You can also try to find a mentor, someone who has done excellent work, but is retired and who likes to help others with the knowledge and perspective she has acquired over the years.</p> <p>There are usually some people whose motivation is to improve the domain, or the world at large, without wanting to please their ego. Find them.</p>

## FEEDBACK: FINDING A GOOD CRITIC

<b>knows you</b>	<p>Good feedback is always <b>specific to the person</b>, esp. regarding the point in the career the person is, her abilities, and prior works. It makes no sense to use criteria for world-class leaders of the field for a beginner who encountered the domain three weeks ago. Instead, good feedback considers the trajectory the person is on (quality of previous and current works) and compares it with the position where people usually are during this time in their careers (taking changes in field/domain into account). Comparing the work with past works and with the relative field allow for a much fairer, differentiated and helpful feedback.</p>
<b>knows the field</b>	<p>Creativity is attributed to a work by the field. The best theory or experiments are without consequence if they get not accepted by the field. As Seth Godin said: “ideas that spread win”. You need the field for a successful idea or you have to create your own field.</p> <p>Your critic should know the field, channel it, which means discarding people as critics whom you like, but who do not know the field (well enough). This usually includes people who are close to you, but have no knowledge about your work, especially family and friends.</p> <p>Find people close enough to your work to know the field intimately, but who are not threatened by your ideas.</p>
<b>understands the domain</b>	<p>To understand your idea the critic must understand it, thus he needs knowledge of the domain. As with knowing the field this usually excludes family members or friends, because they do not possess the necessary knowledge, their opinion is useless for the judgement and improvement of your work.</p> <p>Find someone who works in the domain close enough to your work to understand it easily with your help, but who has a different perspective to provide you with the feedback that you do not see for yourself.</p>
<b>might not be one of your friends</b>	<p>There is an old Sicilian Proverb: “Only your real friends will tell you when your face is dirty.” Friends usually serve different functions than giving truly honest feedback — as few friends can do it. They know (think) that negative feedback hurts you and they suffer via the empathy they feel for you. There is a reason that counsellors and mentors are not friends, so (also) search beyond your friends.</p>



## FEEDBACK: ONE CRITIC OR MULTIPLE CRITICS?

If you have the choice, do you want one critic or multiple critics? Consider the following three aspects:

<b>invested effort</b>	If there is only one critic and the person knows this, she might feel more responsible for providing good feedback and invest more effort. However, this person might also see herself more as a project partner and lose objectivity.
<b>integration of feedback</b>	Feedback from multiple critics is harder to integrate and might even conflict with each other. Even if it addresses different aspects, realizing feedback from multiple critics might weaken the overall project, if both suggestions do not support each other.
<b>accuracy of feedback</b>	Critics can be wrong, and if you have only one critic, you have only this guide. With multiple critics, you have to find out whom to trust if their opinions differ. Trivial but easily neglected: You should base your trust on the quality of their suggestions, not on your relationship to them. And yes, it is hard to adhere to the advice of a detested colleague over the suggestion of a good friend, but limited to the creative project the colleague might have a better grasp on reality.

Unless you deliberately want a broad opinion, it is usually best to show the project to one critic, improve the aspects you find useful (select and focus on the major issues), and only then show it to the next critic. While this serial approach takes longer than a parallel approach, you can deal with the feedback much easier.

### FEEDBACK IS NOT A SPECTATOR SPORT

Feedback, especially if some of it is negative, should be done without the presence of others. Spectators turn a feedback session into a "saving face" contest — or a public beating. The person who receives feedback will try to defend him- or herself, thus avoiding the whole point of feedback.

Never give or receive feedback while others are present. Ask the person for a private conversation. If you have to criticize an employee, separate this person from the rest first. One of the reasons why I prefer eMail for giving and receiving feedback.

## FEEDBACK: REQUESTING IT

To get good feedback you must **help the critic** — so keep the following in mind:

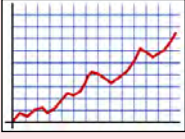
<b>be clear why you seek feedback</b>	The critic should know your motivation for seeking feedback. What do you plan to achieve with it? And most importantly, what are you willing to do with the feedback and the project? This is more general than the next point and refers more to the situation your project is in, and the time/effort/materials you have for improving your project (e.g., you have to submit it in a day). See also page „Feedback: Timing and Kind“ on page 162.
<b>be clear about the kind of feedback you seek</b>	If you ask someone for feedback, make sure this person understands which kind of feedback you expect and can use. While it should be obvious to you, it might not be so obvious to the reviewer (I once got feedback from a substitute professor regarding my thesis that was only about spelling errors instead of its scientific merit — not that helpful). Don't waste your and the reviewers time and make explicit what should be the focus of the critique.
<b>ask specifically to mark the good aspects as well</b>	Most critics indicate mistakes or areas for improvement, while those parts that were really well done are often neglected. While the mind-set "It is great, you don't need to change anything here, so I do not mention it." is economically sound, explicitly pointing out the good parts has two important benefits: You see what you have done very well (motivation), and you know what you should not change without good reason.  Indicating the good parts often works best in a second view on the project, when the parts for improvement have already been indicated and before the critique is given to the creative. You can ignore the mistakes and focus on the good parts.
<b>offer a scheme for giving feedback if necessary</b>	You should know the aspects of the feedback you need and you can give them to the critic as helpful structure. Look for critiques you like and the aspects they mentioned (e.g., deviantART refers to "vision", "originality", "technique", "impact", and "deviousness") or use more general measures like a SWOT analysis (internal: Strengths to be used, Weaknesses to be reduced; external: Opportunities to be exploited, Threats to be defended against/eliminated). But leave enough room for the critic to bring categories she thinks are important — as an expert she should have that room to point out things (and categories) you did not see.

## FEEDBACK: COPING EMOTIONALLY WITH IT

Getting good feedback means getting ideas about how to improve the work. Dealing with feedback, accepting and implementing it, is often hard for creative people. The following possible reactions to concern regarding feedback might help you in emotionally dealing with feedback:

<b>feedback does hurt me</b>	In many cases, it was probably unintentional. Ask the critic how the feedback was intended and how it was perceived. Giving good feedback is hard, and critics need, well, feedback, to learn how to give good feedback. But if the critic delivered the feedback smugly and enjoyed pointing out faults, or it was otherwise intentional without hope for change, ignore this kind of feedback and seek another critic. Feedback should help you, not the critic's ego.
<b>feedback makes me question my talent</b>	It is possible that you have no talent for this domain and that other domains suit you more. However, when you compare yourself to other creatives, consider how long you have worked in the domain and whether you can invest the time and effort needed to reach their levels.
<b>negative feedback is hard to accept</b>	Negative feedback is only a problem if it is the only feedback you get. Most of the time, you have positive <i>and</i> negative feedback, constructive <i>and</i> destructive feedback (if not, ask, you need both). Implement constructive negative feedback, remember positive feedback, and ignore destructive feedback (i.e., emotional attacks).
<b>the feedback is just "wrong"</b>	Reflect whether you discard the feedback because you cannot accept negative (or positive!) feedback for your work. Look whether adhering to the feedback might improve your work. Do not play the role of an "unrecognized genius" — if you were a genius, it should be easy for you to be recognized. Give the feedback a chance. Sometimes 'wrong' feedback <i>indirectly</i> points to critical issues as well, e.g., something that is hard to understand and should be clarified, because if the critic misunderstood it, so will others..
<b>negative feedback means I have wasted my time and effort (and the materials)</b>	Edison supposedly said that he didn't made mistakes, he just discovered ways that did not work. Likewise in any project you will have learned something, you have trained your skills and improved — even if your masterpiece turned out to be only the next training session. As long as you have not failed to get the lesson, don't worry about time, effort, or even materials (yes, learning can be expensive).

## FEEDBACK: COPING EMOTIONALLY WITH IT

<b>negative feedback means that I am stupid</b>	Sometimes you are so involved in the creative work that you overlook the obvious. A critic looking at it from the outside will spot these easy to make and easy to spot mistakes immediately. That is normal, try to catch them next time — and otherwise do not worry about them.
<b>only I make these mistakes (others are perfect from the start)</b>	What differentiates creative work from most other work is that it always retains the possibility that it does not work. You are moving beyond the known, in the "here there be dragons" area of the map. You are the first to discover the cliffs and the shallows, so mistakes and failures are part of the game. Everyone makes them.  Problem is, you rarely see the mistakes of others. They are usually culled, way before they become public. To look at art, you only see the masterpieces in the galleries, the failed ones are hidden in the basement or have been painted over long ago. If you want to compare your work to others, compare it to your earlier works and compete only against yourself.
<b>getting more negative feedback than the last time means I lose my creative ability</b>	Creativity is not stable, and the quality of creative works is never a straight line that increases over time — it fluctuates. It depends on a lot of factors and most of them change. Not only your mood, your skills and your knowledge, but also the field itself and the domain (hopefully with your contribution). Even random factors influence your work. Not all factors are in your favor each an every time, so it is normal that there is a "regression to the middle". But in time, you become better and it will improve again. So, just because your work was not as creative as expected does not mean much — try it again and things will look different.  
<b>getting negative feedback damages my ego</b>	For some people being creative is part of their identity. If their creative work takes a hit, their ego takes the damage. However, getting negative feedback is part of being creative — if you did not get it people would think that you are on a well-beaten path and thereby cheating. Make sure that you have other things that keep your ego stable — friends, family, other hobbies and interests. Keep in mind that the quality of creative works fluctuates. And do not take a rejection of your work as a rejection of your person, or as the devaluation of your worth.

## FEEDBACK: COPING EMOTIONALLY WITH IT

### getting feedback makes the project less mine

Feedback is sometimes seen as meddling. It is your work, your vision — why should you listen to someone else? Doesn't it become their work too? Not necessarily. You might take the critique as co-author or co-worker, but in almost all cases the feedback is a suggestion, not a finished addition to your product. You will still have to accept the feedback or not, adapt it to your work, and change and improve your work by implementing it.

### getting negative feedback means that I have disappointed my audience

Negative feedback is sometimes seen as a sign that we have disappointed the person giving us feedback, or an invisible audience (parents, partners, friends, fans). When the project already went public, there is nothing much you can do — the time to quietly strangle it in the seclusion of your workplace is gone. However, who really matter will likely forgive you your mistakes. And the feedback will help you to avoid these mistakes in the future — something you could not do without this feedback.

### getting negative feedback means I have failed to satisfy everybody

Yes, and you always will fail to satisfy everybody. No matter what you do, your work will never please everyone: Tastes differ, and some people give dishonest negative feedback, because they are envious or disgruntled. Define your audience until you have a homogeneous group and try to suit their needs, and get their feedback only. Never strive to produce something for everyone — it will likely be nothing to anybody.

### negative feedback means I lose my reputation as expert/artist/professional

Delivering perfect work each and every time is impossible and would set unrealistically high expectation that increases with each work. Soon you cannot win, you can only 'not fail' or 'not disappoint the expectations'. The occasional screw up will set the expectations of your audience right. It shows them that you can deal with setbacks *and* continue to produce great works — which is more praiseworthy than a spotless career.

### I have to defend myself against public negative feedback

Feedback is very hard to deal with when it is public. It is not you and your critic, it is an audience that also takes part (and sometimes enjoys the show more than the work itself). However, if you differentiate between attacks on your person and your work, reject the former and deal constructively with the later (e.g., by saying "good idea, I'll think about that"), you should not worry about public feedback.

## FEEDBACK: COPING EMOTIONALLY WITH IT

### negative (or good!) feedback is the final judgment of my work

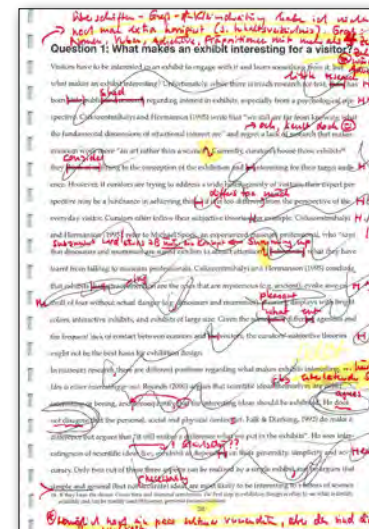
Even with the worst feedback, your work can always improve later — and more importantly, the judgment of your work can also improve. Take van Gogh, whose works were regarded as rubbish during his lifetime. It was only later that he became one of the most famous, most beloved of all painters. Even if you, i.e., your works, face a lifetime of rejection, this does not mean that this judgment is final. One day, when the time is right and the field has changed, your works might be cherished (see also „Hostile Environments: Scientific Community“ on page 302).

### negative feedback forces me to kill part of my project (maiming my baby!)

You do not need to burn it. Keep it in a separate place, an exile so to speak. When you have the resources, revisit the bits that were cut and think about ways to integrate them into a future work, perhaps even as the main object. Or as a writer said to a paragraph that was cut by an (internal) editor: "You are my child. Even if you have no future in my empire, you are still mine, and I protect you."

### I do not have the strength/time/resources/knowledge/skills to implement all the feedback

Tastes and perspectives differ and no critic is perfect. If you get enough feedback, there will be parts that you cannot or should not implement. For example, because it is based on a misunderstanding of the project idea (in this case, the feedback is more why the project was misunderstood and how to prevent this). Keep in mind that you can always refer to good ideas in another project or — if applicable — only mention it in the work.



◀ It feels good to cross out the feedback you have implemented, especially if your work came back in a bloody mess. It shows you that the feedback you have received actually improved the work later.

## FEEDBACK: DEALING CONSTRUCTIVELY WITH IT

Differentiate between constructive (positive or negative) feedback that helps you to improve your work, and emotional support or attacks.

<b>constructive feedback</b> <b>positive:</b> <i>"the contrast between the model and background works very well, probably due to ..."</i> <b>negative:</b> <i>"I wonder how the photo would like if the model would have put her hand on her belly."</i>	<p>Constructive feedback points to aspects that should be kept/changed to keep/improve the quality of your current or future work.</p> <p>Analyze constructive feedback and determine what you can keep/implement in which way. Try to internalize the aspects the critics pointed out to keep the quality/prevent making the same mistakes in the next project. Careful if you consider something as style what the critic sees as mistake — in this case you need to communicate your style more clearly.</p>
<b>emotional support</b> <i>"great pic!"</i> <i>(or not so eloquent: "whoa yur pict is hot! thanks for posting it. did the job"¹)</i>	<p>Emotional support aims to motivate you and cheer you up. It does not offer aspects to improve the work (at least not directly, but you can try to analyze it and ask questions). It is — at best — an indicator that you reach your audience.</p> <p>Appreciate, enjoy, and archive your positive critiques — they might help you when a future project is not faring as well.</p>
<b>emotional attacks</b> <i>"asshole like you shouldn't even own a camera"</i>	<p>Some people are trolls. They enjoy attacking others and — unfortunately — they are often quite successfully. Be it because they are disgruntled, envious, or because they have bad mood management, they attack the works of others, sometimes disguising their attacks as "important" feedback. However, their aim is to hurt the project or the person, not to improve its work.</p> <p>On a public website you can sometimes ban them, or delete their comments, and this is all the attention they should get. They crave attention, so ignoring them is the action that hurts them the most (although this is often hard). Worst case, disable the comments completely or stop reading critiques yourself. Have someone else bring you the constructive (and the emotional supportive) one. This 'filter' works extremely well, esp. if a troll turns into a stalker and continues (trying to) harass you for a long time.</p>

## FEEDBACK: DEALING CONSTRUCTIVELY WITH IT

### ANALYZING CONSTRUCTIVE FEEDBACK

For each suggestion determine whether it is:

<b>critically important</b>	A show-stopper that invalidates your work, e.g., it was already done, cannot be done, or should not be done. You have to address it, or strongly modify/cancel your project.
<b>important but not critical</b>	The project works, but it could be strongly improved. As others will likely see the same point, you should at least address it if you cannot improve it, and explain (esp. to the critic) why you could do nothing about it (e.g., due to time/resources reasons).
<b>true but not important</b>	Not all feedback is important and needs changes. Some things are just nice, or a matter of personal preference, without much influence on the quality of the project itself, e.g., minor errors that only few will see.
<b>false</b>	The critic made a point that would be valid if the project would have been intended as the critic understood it. The important issue is here is not to reject this feedback but to avoid this misunderstanding in the future — somehow you did not get your point across and you should find out what went wrong and why and prevent it in the future. Sometimes this can mean requesting a second opinion, at least of the relevant parts. This is a frequent issue in writing and on closer examination it often turns out to be an (critically) important issue.
<b>useless</b>	Some critiques like to hear themselves talk, but even when it is related to the project, some feedback is simply useless. For example, because it cannot be implemented, or has not direct relation to the project. Give feedback to the critic to avoid this kind of feedback in the future.
<b>unclear</b>	It is easy to ignore feedback you do not understand, especially if you got loads of suggestions. However, you never know in which category this feedback belongs and it might be of (critical) importance. A short question is often all that is needed to get clarification. However, be economic in asking the critic — first go through the whole feedback, then ask them all in one session/eMail.

<sup>1</sup> <http://www.abadcaseofthedates.com/2011/03/i11-be-taking-that-down-now.html>



## FEEDBACK: IF YOU DO NOT GET GOOD FEEDBACK

Sometimes you request feedback, but you do not get helpful replies. Especially when presenting the project before a group, make sure you ask yourself the following questions **beforehand**:

<b>Do you address the right audience?</b>	Public presentations are mood tests, advertisement, getting your name out, and pointing colleagues, or the public, to your work. Feedback is given on the fly — without the time necessary for in-depth analysis. It might show you obvious weaknesses or misunderstandings, but it usually does not provide high quality feedback, unless the audience is specializing in the same specific sub-domain as you are. With a heterogeneous audience, aim for the general idea with a few details and use specialized audiences (e.g., at small tightly defined conferences or a group of colleagues) for the in-depth aspects.
<b>Do you present your idea clearly?</b>	If you have worked for ages on your project, it all seems clear to you (and often trivial). However, your perspective is no longer the same as the audience's perspective. Make sure you communicate your idea clearly. Start with an example or the general idea, and talk with people similar to the audience beforehand to find out how best to explain it.
<b>Do you give starting points for feedback?</b>	To receive critic, your idea must leave your audience starting points to improve your idea. If you describe a project in dead-certain terms of what you will do, what will influence what and why, and why no other realization is possible, then it is hard for a critic to give you any feedback (esp. if they do not want to appear destructive). So stress the aspects you are unsure about and need feedback.
<b>Can you seriously expect honest feedback?</b>	You might have a critic who is more concerned about your mood/not hurting your feelings, than the quality of your work (often the case with friends) or be too powerful to be criticized (power has its drawbacks, and there are no Court Jesters anymore). In this case, you might want to test this person by giving him/her a flawed piece of work. Not shoddy, but with one or two serious flaws. If they find the flaw and strongly suggest you to discard it, good (even better if they have suggestions for improvement). But if they praise your work indifferently from the rest and have no good explanation why the work is good despite the flaw — then it's time to transfer the critic from the "improvement of my work" category to the "improvement of my mood" category (if you still value their opinion).

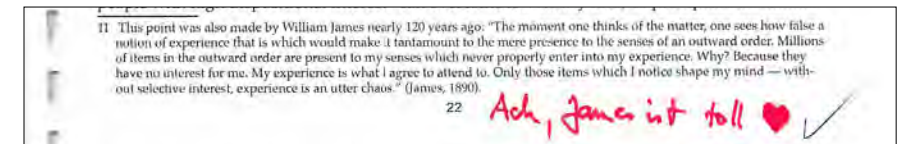
## FEEDBACK: AFTER YOU RECEIVED IT

### GIVE FEEDBACK TO THE CRITIC

Once you have dealt with the feedback emotionally and implemented the aspects of the feedback you want and can implement, give the critic feedback about her feedback<sup>1</sup>. **What was especially useful for you and why.** Compliment her on the things she has seen and **explain if you do not use something**. It is often incomprehensible for a critic if you do not implement suggestions she found crucial — and while no critic can expect that all her suggestions are used, it helps to understand why certain points were not implemented. This will improve future feedback (as the critic can take this into account) and makes giving feedback a more pleasant experience for both.

Personally, the best feedback giver I ever had started with positive feedback (see page 335), marked the same mistake each and every time (because I might overlook it), gave me feedback that she understood what I did, gave me additional explanation when something ran counter to common understanding and general rules, was bold (rather marking one thing too much than to miss one), made me smile (some jokes are appreciated if they are good and distinct from sarcasm and cynicism, see image below), explicitly marked aspects that were good (see left), and also told me how she worked best (e.g., how I should give her my work or request feedback).

*Great !!*



Comments like these ("Ah, James is great") can really help you when you correct your mistakes.

### KEEP THE AIM AND LIMITATIONS OF FEEDBACK IN MIND

Feedback should improve your work — current and future. A creative work must be new and useful and feedback will help you here, but a creative work must also be deliberately created, i.e., it must become a finished work that the field can evaluate. Thus, unless at some point you stop getting feedback and disseminating your project it is not (yet) creative. At one point you must say: enough is enough — and do the project as good as you can, if you want to do it at all.

<sup>1</sup> This is very useful for dealing with proofreaders, a highly specialized form of feedback giver. They usually do not get feedback about their feedback. As a consequence, their work performance can deteriorate over time. Treating the relationship as bi-directional usually improves their performance and work satisfaction. This is also crucial for colleagues who give you peer-review.



## CONVEYING IDEAS

Creativity is determined by the evaluation of the field — they must consider it new and useful. Unless they notice your work, it cannot be creative.

This makes creativity an inherent social enterprise. While works should stand on their own (scientific articles, artworks, products), other people decide whether it gets distributed and included into the domain (see „How is Creativity Determined?“ on page 32).

You are responsible for reaching your field, your audience, or target group — and do not underestimate this task. Even the best, most brilliant idea cannot fight for itself. There is simply too much *noise* in the world. There are too many people and things fighting for the limited time and attention people have. And if your idea is really new, you will have to help your audience to understand it — you have to convey your ideas.

We will look at Distributing Ideas Into the Field, and Convincing Others.

See also the General Tips section about „Working with Others“ on page 282ff, especially regarding „Small Talk“ on page 282, „Remembering People“ on page 283, and „Public Speaking“ on page 284.

## CONVEYING IDEAS: DISTRIBUTING TO THE FIELD

Some things to consider when distributing ideas into the field:

<b>finding the right audience</b>	Any creative project is limited to a specific audience. Clarify who belongs to the target group (e.g., all heterosexual men over 18, all dog owners, all children with an interest in fantasy literature, all social psychologists working on persuasion).
<b>finding ways to reach the audience</b>	Once you have closely defined your audience, find the best ways to reach them. Where do they spend their time? Where do they work? What do they read? What do they notice? You have to do the work, either by bringing your work to the target audience, or by leading the audience to your work. As there are always multiple avenues to the same target group, find as many as you can.
<b>trying out ways to reach the audience</b>	Find out how well you can use the different ways to your target audience. Use different avenues (e.g., different websites/forums) and approaches (e.g., low-key to radical) to find out what works best for you and your project. Keep in mind that getting attention is easy (every troll can do it), but what you need is the positive attention of the audience. To quote Seth Godin, be remarkable, i.e., worth making a remark about/to spend time with. Aim for attention, instant enjoyment, build a bridge to what the audience already knows, and give them something they consider as valuable.
<b>focus on the opinion leaders</b>	In influence, not all people are equal. Some are opinion leaders, whose decision influence a lot of people. Use your time to convince the people whose opinion matters. Go for the shepherd and the guide dogs, not the individual sheep. But keep in mind that, while they can distribute your idea widely, they can also high-jack your project (if they are more popular/influential than you), and that they do not give you direct influence. For this you need mass.
<b>gain mass with followers</b>	The followers make the leader <sup>1</sup> , and you need people who think little of their influence/decisions and defer to you in your creative area (e.g., regarding clothes style/design). Building mass can take some time and needs consistent work (or a stroke of luck).

<sup>1</sup> See the TEDtalk: Siverson, D. (2010). "How to start a movement" for an impressive example. [http://www.ted.com/talks/derek\\_siverson\\_how\\_to\\_start\\_a\\_movement.html](http://www.ted.com/talks/derek_siverson_how_to_start_a_movement.html)

## CONVEYING IDEAS: DISTRIBUTING TO THE FIELD

<b>use weak ties</b>	Include people who you know only marginally. Chances are, they have their own social networks you have no access to and they can bring your work into these networks.
<b>get promoters</b>	The best followers are people who make your cause/project their own, while still deferring to you (i.e., they do not high-jack the project). For example, Charles Darwin had Thomas Henry Huxley as “bulldog” who fought for evolution in a way Darwin could not. Be careful with promoters as your idea will likely be tied to their reputation and if they mess up, they might take your idea with them (seems to be common with religious movements), or distort it beyond recognition (e.g., green movements that turned into a treehugging-festival-contra-thing).
<b>find interpreters</b>	Not sycophants who repeat what you say, but people who actively translate your idea to different audiences, while still ensuring that it is recognized as your idea. A person with high interactional expertise, who understands both sides (yours and the other), can help convey the meaning of your project to vastly different audiences (e.g., explain modern art), or bridge disciplines (e.g., for interdisciplinary work, see also „Interdisciplinary Communication“ on page 296).
<b>evaluate your dissemination strategy</b>	Deliberately try to reach your audience and evaluate your success in doing so. This means keeping track of the efforts you have made — and their outcomes. Even if you do not have sales figures there are usually ways to gauge your impact. If you use a personal website you can use usage statistics (e.g., Google Analytics) to get an impression about the amount of people you reach (and the time they stay on your site). Comments are another way to receive feedback, however, only a tiny percentage of the people who read something leave a comment. Keep in mind that you need the right people, e.g., that in most cases, quality is more important than quantity.

## CONVEYING IDEAS: CONVINCING OTHERS

You need to convince others that your project has merit. At the very least, they must be convinced to invest the necessary effort to give your project the attention needed to understand the gist of it, and to evaluate its newness and usefulness.

Take a look at the following aspects to help you convey your ideas:

<b>find the right time</b>	Convincing others, the promotion of ideas, is not evaluation/looking for feedback. The project must be ready, the kinks worked out, the only thing that is missing now is its dissemination. Do not waste the time, effort and money of your audience and burn your name by distributing half-baked products.  This applies even if you cannot finish the project without authorization by your supervisor. In this case the project must be finished in the sense that you have done everything you could do on your own, and only the acceptance of your supervisor is missing.
<b>never be obnoxious</b>	When convincing others of an idea you love, it is easy to become obnoxious: Repeating the name/title of the project countless times during the day, talking only about the idea, using every conversation to sell it, to spread it. Whatever you do, do not burn your audience. Limit spreading the idea to specific places, times, and audience (only the target group), and make sure you get feedback when you get on other peoples nerves — you might not notice it yourself <sup>1</sup> .
<b>aim for immediate clarity and simplicity</b>	Suppose you were in an elevator with a person you want to convince (e.g., your supervisor) — could you convey your idea? You should. <b>15 seconds</b> are more than enough time to <b>get the gist across</b> . For example, if your supervisor is not a technician it makes little sense to go into the backstory and technical details, instead go for the gist, e.g., “We found a way to produce the central component with less waste, in a third of the time and for 20% of the price, and if you have time, we would like to present it for your approval.” Short, clear and simple for her point of view, with the relevant benefits a clearly defined action for her to do to reap the benefits.

<sup>1</sup> In many ways, creative people can act like first-time mothers to their projects. They are on an emotional high and see only the positive sides, share photos at every opportunity, and talk about nothing else — which can become obnoxious.

## CONVEYING IDEAS: CONVINCING OTHERS

<b>it is okay to bring in the details later</b>	Some people have a problem with reducing an issue to the gist of it, as they feel that they do not mention important information. But reducing it to the gist is not lying, it is the accurate level of detail in most cases. The goal at first is not to convey a complete picture, but to convince the other person of the usefulness of listening to the complete picture (or, simply to accept your judgment and go along with it). The gist can accomplish it, the complete story cannot.
<b>be good with people</b>	It does not matter how brilliant you are in your work, if you are not good with people, you have a serious problem. You can either address this problem (there are social skills trainings available), or you need to find a promoter. Keep in mind that your ideas should be beneficial, but your aim is to convince others of your idea, not to please them.
<b>advertise it by providing solutions to problems</b>	Advertisement often has a negative connotation, but I'm not talking about rabbits singing about toilet paper in the middle of a movie (to quote Serling). You need to make your idea public in the right places, without becoming obnoxious. This can usually be accomplished by focussing on how your idea can help people who have specific problems. This is usually possible for all creative projects, as even poems and stories help people — to escape their lives for a few minutes and see the world differently.
<b>do not spam</b>	Spam is sending messages to people without making sure first whether they might be interested in the content. Never send out spam — <i>ever</i> . Contact only those who are likely to profit from your project, or who would want to distribute it to those who might profit from it.
<b>adhere to the house rules</b>	There are places where advertisements or talking about commercial products is not wanted, where you annoy people by doing so. Most forums that share free information are very bad places for ads, and starting a grass root movement artificially ("astroturfing") will not work <sup>1</sup> . Use these places to be helpful by writing articles or answering forum questions. Point to your project for further information if asked or en passant (e.g., by using a signature with a link to your homepage).

## CONVEYING IDEAS: CONVINCING OTHERS

<b>remember why you did chose the topic</b>	At the end of a project it is often difficult to remember what you were wanting to accomplish in the first place. The topic was interesting and important enough to be chosen, so go back to your thoughts at the beginning of the project. It might help you to see the usefulness of the project and how to convey it to others. The reasons you saw to choose <i>this</i> project might be the reasons others need to hear to buy it.
<b>get positive press coverage if necessary</b>	The press is a double-edged sword: It can spread your ideas, or it can bury you. If you seek press coverage, because the field can be reached by this specific publication, make sure you can check the interview before publication. Not only because it might be (unnecessarily) negative, but reporters often have a hard time conveying the gist without errors (esp. regarding science).
<b>learn to speak in public</b> see also page 284	Speaking in public, e.g., at conferences or literature sessions, is often necessary. But it is also difficult, because ideas that sound fine in your head often sound trivial or boring when said out loud. But if you do not stand publicly to your idea, who else will? As often the case with fear, the enemy is mostly in your own head. Ban that inner censor, accept that you will not satisfy the whole audience, prepare for it, and train your skills, — learn to enjoy the arousal public speaking gives.
<b>be unconventional, but only if it gets your idea across</b>	Look how the process usually works and find ways to deviate noticeably from the process that gets noticed in a positive way. Ensure that the focus stays on the creative work, and it is not your deviation from the process that is talked about later (many brilliant ads have this problem — everyone liked it, but later no one knows the product it was for).  For example, if presentations are usually PowerPoint marathons, distribute mock-ups, or let them test the product for themselves — if this serves your purpose.

<sup>1</sup> For example, stackexchange.com requires you to make your affiliation public when you refer to your own works, and there must be a good reason for you to mention it. Nevertheless, if you think your work actually helps/is good, recommend it (as your work) — I will recommend this book as an answer to <http://productivity.stackexchange.com/questions/2882/what-books-are-helpful-when-im-in-a-rut-creativity-and-productivity-wise> once it is finished (and hope that the community accepts it).

## CONVEYING IDEAS: CONVINCING OTHERS

<b>make them believe it was their idea all along</b>	<p>A painful way to ensure the implementation of an idea is to ensure that a powerful opinion leader takes ownership of the idea.</p> <p>While most (successful) people hate the bleak work they have to do after someone else had a brilliant idea, they will valiantly fight for any idea they think was theirs. It can be achieved by giving a person the necessary information on a silver tablet, but leave out the last (and easy) piece for them to do (and occasionally nudge them in the right direction).</p> <p>This way is not recommended as you get no credit and the other person quite rightfully thinks it was her idea, but for some special situations it might be the only option.</p>
<b>show determination</b>	<p>Convincing others is often about determination. During the course of history, minorities were able to influence the course of all people (i.e., the majority) by being consistent and determined, even if they had to fight for a long time. Individuals have often tried again and again to promote their works, some later best-sellers were rejected again and again<sup>1</sup>. Even movements sometimes took decades to become mainstream, e.g., the Green movement. People have to see your determination, your faith in your idea, without becoming bored by your promotion — so do not be obnoxious.</p>
<b>disseminate only your best works</b>	<p>If you make a showcase of your works, focus on your best works. While you might want to include mediocre works that did cost you a lot of time and resources, they will dilute the overall quality, if they are presented equally with your masterpieces. I suppose one of the reasons why we think of old masters as great masters is that their mediocre work did not survive. Do not be tempted by the unlimited storage capabilities online and set clear limits. It can be very helpful to limit yourself to a presentation of your ten best works and the audience will get a much more positive impression of your skills this way<sup>2</sup>.</p>

<sup>1</sup> A good book in this regard is Bernard, A. (1990). *Rotten Rejections. A Literary Companion*. New York: Pushcart Press. showing rejection letters famous authors received. I got the book cheap online, after it was rejected from the magazine of a large library (no kidding).

<sup>2</sup> Yes, this gives a false impression of creativity, but this one works in your favor.

## CONVEYING IDEAS: CONVINCING OTHERS

<b>use the long tail</b>	<p>Chris Anderson's book "The Long Tail" pointed out that, with the Internet and cheap storage, it is possible to address even the fringe interests of people scattered all over the world — as long as they can find your products. So even if your product is only interesting for a small group of people and could never sustain a physical shop, if you advertise your products in the right places in the right way, you can reach this group. You might not become world famous for your book on 30-years experience in fly-fishing, but you might become a legend in the fly-fishing community.</p> <p>And attention and respect of knowledgeable people beats the blind devotion of the masses any time (if you do not have to live off your creative works).</p>
<b>do not try to convince everybody</b>	<p>You will never convince the person whose life work you will destroy with your idea, nor the disgruntled or envious. If you try to convince, aim for the middle ground: They are usually the majority and they are undecided, meaning they could go either way. Convince them that your idea has merit, and leave your opponents to discredit themselves (see also „Hostile Environments: Scientific Community“ on page 302).</p>

## WORST CASES IN REALIZING IDEAS

Creativity is a risky business — you wade in unknown waters, never knowing what to expect or who might overtake you or invalidate your work. The following things could happen to you — and might become apparent when you realize creative projects:

<b>parallel creativity</b>	<p>Different people can have the same idea, and realize the same (or very similar) creative project. Sometimes it is done ages after the first one disseminated his idea (and likely due to sloppy research on the second party), but often it happens at (nearly) the same time. It is different from plagiarism as no person copies the other, but they start equally from the same foundations/are moved by the same social forces.</p> <p>This happens quite frequently in science if the same data access/literature is available to multiple people (e.g., Alfred Russel Wallace who had similar ideas as Charles Darwin regarding evolution), but also in literature when the <i>Zeitgeist</i> points to the same stories (e.g., Neil Gaiman wrote about a young boy who realizes that he can do magic, gets an owl, and attends a magic school prior to R.K. Rowling's Harry Potter). In engineering it is often the one who files the patent first who wins, in art it's the one with the better PR/distribution. However sometimes the success is shared (e.g., Nobel Prizes given to different workgroups).</p> <p>Parallel Creativity is a good thing for the domain (higher likelihood that good/needed ideas are realized), but very bad for the individual who comes out second. If this happens to you and you lose, try to find out whether you can increase the differences between the works and perhaps even change parts of your work. You can also try so join with the other person/group and collaborate for mutual benefit.</p>
<b>you cannot implement it</b>	See „Non-realizable/Canceled Projects“ on page 187.
<b>creative burn-out</b>	You do not have it in you anymore. See „Dealing with Creative Burn-Out“ on page 275.
<b>too many implementable ideas</b>	If you cannot implement all of your ideas, consider setting them free. This is hard, but better compared to the alternative. I've created a website called "Ark of Ideas" to set my ideas free (see page 188).

## WORST CASES IN REALIZING IDEAS

<b>no money, no job</b>	<p>Some people get so caught in the ecstasy of being creative that they quit their job and try to survive with their creative work. However, few are able to live this way — many apply for social services after a few months.</p> <p>Make a well-thought out and well-trying out decision if you consider going professional. See „Becoming a Professional“ on page 274 for more information.</p>
<b>failure upon failure</b>	<p>Kazuaki Tarumi, a winner of the German "future prize" once said: "research results in failure in 99% of the cases, failure is part of the business". Creativity is working on the forefront of human knowledge and emotion — in uncharted waters. Under these conditions, failures are part of the daily business, sometimes for years until it finally works.</p> <p>Some errors are minor and can be amended, others are major and require more work. However, in rare cases show-stoppers happen that cannot be amended and the project has to be cancelled (see „Non-realizable/Canceled Projects“ on page 187 for more information).</p>
<b>the field is against you</b>	<p>Sometimes you face strong opposition to your idea, e.g., it violates the established moral norms, challenges the status quo, or is a threat to powerful individuals. It can happen to artists and scientists equally. Sometimes you can convince an undecided middle ground and gain support, but sometimes your project will be ignored until the time is ripe. You can try to distribute it outside the established channels to make the project at least public (e.g., direct marketing, fringe science magazines), although this might further damage the standing of your and your idea. See „Hostile Environments: Scientific Community“ on page 302 for more information.</p>



## WORST CASES IN REALIZING IDEAS

**you will never be major league or commercially successful**

If you are creative with the aim to belong to the very best, you may come to the realization that you will not achieve your goal (e.g., after trying to become a professional, see page 274). Likewise if you “only” want to be commercially successful. Few people can live through their creative works, and the place at the top is small.

Make sure that you really use a fair comparison based on the amount of time you have worked in the domain when you compare yourself to others. Did you have the time yet to become great? And remember that the early works of your competition was likely also flawed unless they had a lot of help. In the future with archived works on the net it will be easier to see where great “talents” came from.

Sometimes a change of purpose can help. It is not about being the best, but about having fun. Take running — the favorite exercise of millions, yet most will never win Olympic gold. Or take the man who started playing the violin late in life, but with great enthusiasm, and who brought joy to the people around him, yet he will never play in an orchestra. You might also want to change the playing field, switch the domain, or become a teacher. It is your life and your decision what to dedicate it to.

**death**

As strange as it may seem, plan for your death. This is not a problem in large organizations, in which every employee must be replaceable, and this is (hopefully!) planned for. Likewise, larger projects are usually well documented and people, or the institute, try to keep the funds and are actively searching students who continue the work (e.g., longitudinal studies or space probe missions). Artists can only hope to start a school or influence/inspire others through their publications. Some authors' work was continued by their heirs or authors their heirs liked (e.g., for J.R.R. Tolkien or Frank Herbert).

If you collect your ideas in an idea collection, make sure that your heirs know what to do with it. Formatting the hard drive and selling the notebook on eBay is a likely consequence for your precious heirlooms. Entrusting it (with the passwords!) to your colleagues in your will might prevent the worst outcome. Do not count on it that any of your work is continued — so try to achieve as much as possible while you are still alive.

## NON-REALIZABLE/CANCELED PROJECTS

Sometimes projects cannot be realized, and you (or a person in charge) cancels the project. While the time might not be right for it, or the resources might not be available, there is still something to gain from the situation.

**What were the achievements of the project?**

Few projects fail completely in a way that *nothing* good comes out of it. Even if the project goal was not achieved, some important milestones might have been. Your team might not have developed an in-ear-cellphone, but you have made advances regarding the miniaturization of key components. These milestones, or important steps, might not be as great as the project goal, but sometimes they too have worth. Find out if these achievements can lead to another project, or if they have worth on their own.

**What did you gain from the project?**

Look at the abilities you improved, the skills you have learned, the experiences you have made. Just because the project was a failure, does not mean that it must have been a failure for you or the team involved.

**Why did the project fail?**

It is a trite saying that we learn from our failures, but it is better than doing the same mistake again. Find out why the project did fail. Do not simply follow your first instinct, especially if it is a simple accusation like “*They were at fault.*” (“*they*” being management, coworker, sponsors, competition, etc.). Find out what went wrong and why — and how to prevent it in the future.

**Can it be resumed at another time?**

Sometimes, the time just is not right for a project. Be it that you cannot get the right materials, or do not have the necessary skills. No matter whether you want to finish the project some day or not (you might change your mind), put the project back in the idea collection. Note carefully what you did while trying to realize the project and why you cannot finish it. Even Leonardo da Vinci had to postpone projects, e.g., his huge bronze horse.

**Can you bring it out in another fashion?**

If you do not have the resources to realize an idea in the context, scope, or style you like, try to see if you cannot realize it differently — and make your original purpose known when you publish it. This way you promote your idea and you might set the basis for its realization (by you or someone else). For example, you might not be able to start a school fashioned after your vision of good education, but you might write a story (“*Bildungsroman*”) about it. You might not write the best-seller to the story in your head, but you might be able to write a movie script.

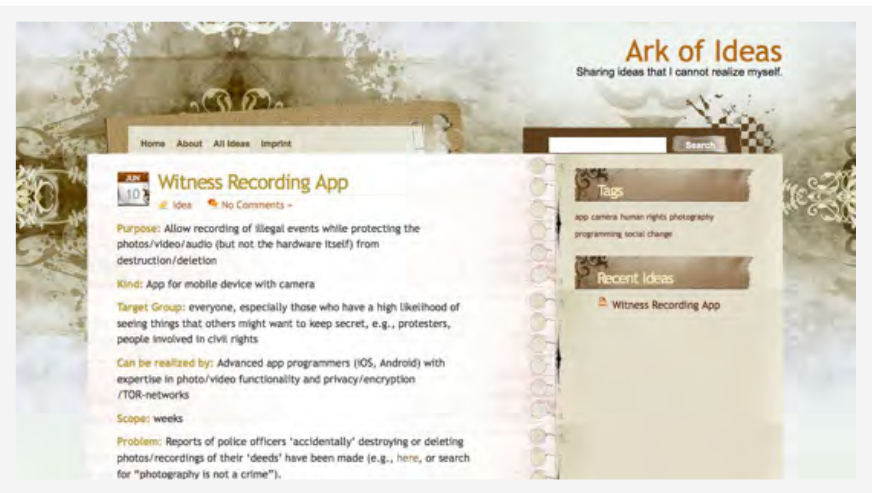
# NON-REALIZABLE/CANCELED PROJECTS

**Can you delegate the tricky/tedious part?**

Sometimes it is only a small aspect of the project that you cannot do — an aspect you can delegate. There is nothing wrong about it. It is not cheating if you are a brilliant designer, but have two left thumbs when it comes to needle and thread, or no time to spend a week sewing — and you can hire a seamstress. Or when another company has perfected a process that is a crucial element in your product — subcontract this process, or start a joint venture. Make sure that you take their expertise into account and that they get a good mental model of the work you try to achieve (legally protect your idea). They might give you some helpful hints.

**Can you set your idea free?**

How well do you like your idea? Well enough, to let it go, to let someone else realize it and get the credit for it? This might be one strategy if you have an idea that you cannot realize. However, getting others to adopt your idea is not as easy as it sounds and simply sending it per mail to someone working in that area will rarely work. Others must a) understand it, b) see its value, c) think they can realize it, d) assume 'ownership' and actually invest the resources to do so, and e) do it in a way you like without distorting your idea. Very difficult, but sometimes an option (see also „make them believe it was their idea all along“ on page 182 and the image below).



One of my blogs: Ark of Ideas (<http://www.arkofideas.org>, template used was created by Ray Creations) — ark in the archaic meaning of "a chest or box" and in the figuratively meaning of "a vessel or sanctuary that serves as protection against extinction".

# SUCCESS

Whereas the focus in this book is mostly on barriers to creativity and how to overcome them, the most desirable case is of course that you succeed in your creative endeavor. And if you succeed, then ...

## Congratulations!

Success, be it the smile of a loved one, a patent, a hit single, or a published work, is the reward for the hard work and time that creative people invest in their projects. Success might not occur often, but given that intermitted reinforcement (irregular rewards) works best, it is no wonder that many creative people continue to be creative no matter whether they are successful or not. It may be an inner drive, the fun of being creative, or simply an addiction — it is hard to quit.

I do not need to tell you to enjoy a successful project, but besides enjoying it, there are some other things you can do:

**analyze the project**

Find out why the project was successful. What can you learn for future projects? Can you take some parts of the project with you for future projects? Some methods or skills? A successful project is your own best practice — treat it like any practice and learn from it.

**document it**

There will be times when projects fail and you do not feel creative (sorry to spoil the mood). Document the successful project to remind you of it when the times get rough. You can also review the documentation when you want to make it again in the same way, in a similar way, or when you just want to copy some parts of it. See „VI. Archive Creative Projects“ on page 190 for more information.

**exhibit it**

Going further than just to document it, exhibit the project in your apartment or office. See „Showroom/Motivators“ on page 278 for more information.

**template it**

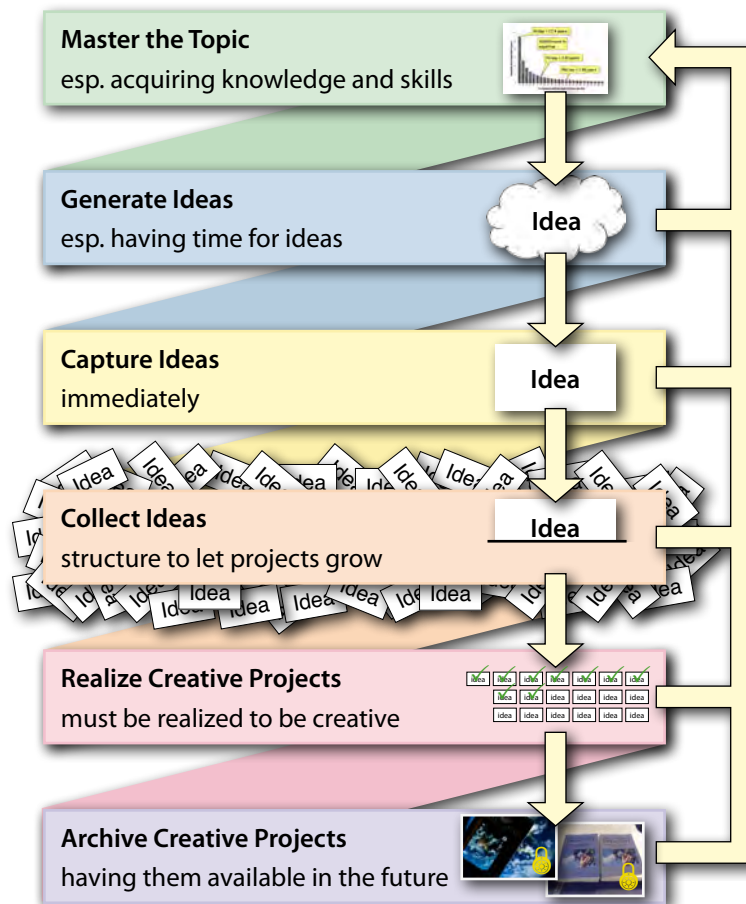
Even if the project was an unicum, if it was very successful you might try to replicate it. Simply treat the unicum as a first version, a prototype. If you have documented the process you can likely produce similar objects quite easily. In any case review the process you need to do to create it, whether there is a quicker way to produce the product (you will have likely made some detours). If you are concerned that it will reduce the quality of your work, include modifications.

# Organize Creativity!

## VI. ARCHIVE CREATIVE PROJECTS

### ABOUT ARCHIVING

Organizing Creativity = Creating the Infrastructure to ...



Many creative projects do not leave traces once they were implemented. They were presents given away, public plays, or stories that vanish over time. Even if your work is published, you should keep an archive of your realized projects. Most people *deeply* regret that they did not archive their past works, because some of their works are not accessible anymore later.

Archiving creative projects has some advantages:

<b>remembrance</b>	A good documentation will help you to remember past projects. While you might remember the general idea, the detailed realization will probably become fuzzy over time, especially after a few decades. This is also crucial if you are evaluated based on your past performance, e.g., in the work context.
<b>motivation and inspiration</b>	If you feel like you have nothing to show for, you can look back at your past projects to change your mind, and motivate and inspire you to start new ones. It is one thing to try to remember what you did, and other to flip through entry after entry of projects at will, complete with pictures and descriptions, or have a showroom (see page 278).
<b>enabling to revisit past projects</b>	Perhaps the tools have changed, the project turned out to be mediocre, or you have new ideas, but for whatever reason, sometimes one would like to revisit old projects and recreate them in an improved fashion. A good archive that does not only include the object itself, but also your notes and ideas makes this very easy.
<b>learning from mistakes</b>	Mistakes are embarrassing, but often we forget that we made them. Archiving not only the successful projects, but also the mediocre ones and the failures, will help you to remember them. Over the time you will see patterns, typical mistakes you make, and this will prevent you from repeating them. It will also soften the blow when another project fails. If you have a documentation of projects that really went south for comparison, a minor setback will not hit you as hard.
<b>portfolio</b>	Even if you do not want to be an artist, or think that scientific journals will be the best reference of your work, keeping your works in an archive will allow you to show others what you have done. This is especially helpful if you just got to know someone who did not see your past works (if they are interested in seeing it, of course), or during for a job interview. The archive is often the only thing that remains if you create things as gifts or as remittance work.

## WHAT AND WHERE TO ARCHIVE

Make sure that you include the following information:

<b>copy/photo of the created work</b>	Depending on what you create, a copy (e.g., of texts) or photos (e.g., statue, tinkering) should be stored. With texts you can also store previous versions, but make sure that you mark them as such. Otherwise you will have difficulties finding the final version after a few years.
<b>an extra version of the project</b>	If you create multiple instances of the same physical object, e.g., you print and hand-bind several identical books, make one extra version for your archive. If you are doing more than one version anyway the effort is often manageable. While photos are fine, nothing beats having the (one) original object in your hands — and let's face it, some things you would love to keep for yourself.
<b>meta information</b>	A project is all clear and trivial when you do it. After some time some information gets lost, so make sure you store sufficient meta-information with your project that places it into a context, e.g., within your life or your career (see below).
<b>idea history</b>	Store every idea regarding the project as they were in the idea collection, the realized and the unrealized ideas (marked differently). This allows you to step back in the creation process and gives the project another direction when you try to realize it.
<b>dissemination history</b>	If you disseminated the project, log the process. E.g., whether it was rejected and by whom, who enjoyed it, etc.
<b>feedback and reviews</b>	If you did receive feedback and reviews regarding the project, be it from the peer review process of science, or just a comment from the person you gave it as a present, write it down. Include the feedback you received during the realization of the project. With some distance their comments might appear in a new light and lead you to further ideas.
<b>personal comments</b>	Write down your thoughts about the project, what you thought during the project creation and afterwards.

## WHAT AND WHERE TO ARCHIVE

## META INFORMATION CHECKLIST

## INSPIRATION

- What inspired you to do this project?
- What would be possible projects that build on it?

## TIME

- When did you begin and finish the project?
- How much time did you spend working on it?

## PURPOSE

- Why did you do the project?
- What did you do with it after it was finished and why?

## PROCEDURE/MATERIALS

- How did you do it and why?
- What did you use for it and why?

## EVALUATION

- If it succeeded, what were the reactions to it?
- If it failed, why did it fail?

## WHERE TO ARCHIVE

If you want to start an archive, you can use your idea collection to do so. The advantage is that you can use the established infrastructure, but the disadvantage is that the collection becomes larger, and realized and unrealized ideas get mixed.

A possible solution is to use the same collection, but separate parts. This is relatively easy with virtual collections and some physical ones (e.g., index cards), but becomes more difficult with any kind of fixed storage.

Putting realized ideas in a separate place of the collection (e.g., a different directory) enables you to backup the collection regularly without the archive, and backup the archive only if something gets added to the archive.



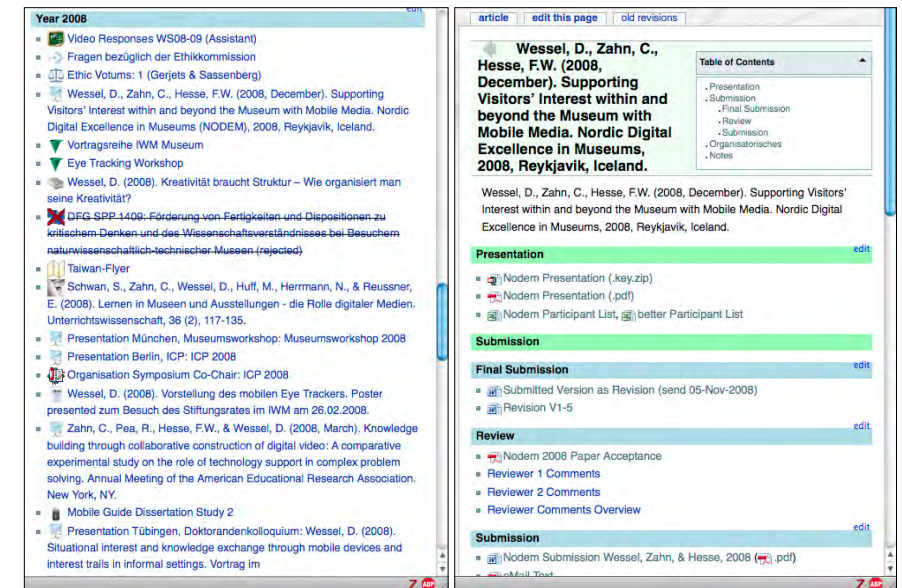
## HOW TO ARCHIVE

Keep the following things in mind when archiving creative projects:

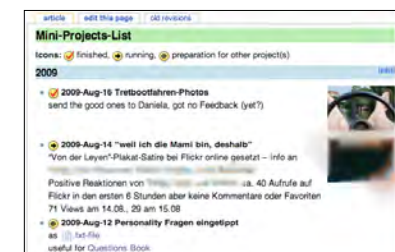
<b>keep the backup alive</b>	Archives are essentially backups made for decades (depending on your life expectancy and the interest of those you leave behind). Thus, all the problems regarding future proof backups apply. The main difference is that an archive is for actual (read-only) usage. Make sure that you update the storage media and file format during the transition phase whenever there are major changes in the way data is stored.
<b>focus on the important files</b>	Even if you use a digital collection, size can become a problem. You do not need to keep all the files. You will want to keep the final version. If you used media files that you cannot extract from the final version, you might want to keep those too. The ideas you noted in your idea collection might be helpful too. Regarding the project history, prior versions might be interesting, but sometimes a photo/screenshot is enough.
<b>keep a good index of your projects or a project history</b>	If you finish (or cancel) a lot of projects, it becomes difficult to find the projects you search for. Make an index containing the name of the project, a clear description of the project, start and end date and other important information you think will help you find the project at a (much) later time.
<b>use the same navigation structure and helpers as in the collection</b>	Using the same structure will make it easier to find the finished projects and move projects that were just finished to the right place. Using the same tags will help you find the projects. You can use an "archive" tag to either include the projects in the archive in your search or to explicitly exclude them.
<b>create a new project out of your finished projects</b>	You can make a project out of your best and worst projects. A book (portfolio) is the logical choice. Books usually last longer than a single digital media and the work on this project will force you to revise your previously done projects. Seeing what creative works you did in the last ten years can be very enlightening — and fun.
<b>distribute your projects widely</b>	If you can gift your projects, distribute them widely. This way the chances are higher that your works survive.
<b>create overviews</b>	For example, a life-newspaper (see page 357) can condense a lot of information on a few pages. Great for an overview of what you did in a specific year.

## HOW TO ARCHIVE: EXAMPLES

The following two examples are from a Wiki (see page 244ff). A wiki has the advantage that you download (copy) files per default, thereby preventing accidental changes in the files.



An example of an archive regarding work tasks in an (Doku)Wiki. One page has links to pages where each major achievement/failure is noted separately (left, icons denote the type of project). All documents related to this achievement/failure are available on that page (example on the right, for a conference presentation, the call for papers, the drafts of the submission, the accepted submission, even participant lists, travel documents, and certificates).



◀ You can also use a Mini-List, in which not every project has a page. Sometimes there is only one file and in this case putting it in a list is usually easier. Take care to write down the reactions to your project, in the long run this is possibly more interesting.



# Tools

About Tools — Considerations Regarding Tools —

Analog Tools — Digital Tools — Some Remarks About

Digital Tools — Web-Based Tools and Cloud

Services — Digital Tools: Hardware — Digital Tools:

Software — Mental Tools

## ABOUT TOOLS

Creativity *needs* organization and this usually requires *tools to organize creativity*. Some tools were already mentioned in the different steps of the progress, but here we take a closer look.

Note that the focus here is not on tools to actually produce the creative product (e.g., artistic colors, musical instruments, different kinds of fabric or marble). That would be beyond the scope of this (or any) book. However, you find information for tools useful for some areas of creativity in the General Tips section on page 261ff and the Resources section on page 359ff.

Here the focus is on tools directly related to organizing creativity, mostly capturing (see page 96ff, see also the overview of ways to capture ideas on page 106ff) and collecting (see page 124ff, see also the overview of collection tools on page 133ff).

Keep in mind that while you can use the tools, the selection also serves to give you an overview of the possibilities available to organize creativity. Similar tools will be available and not all possible tools are covered, so watch for the principles and find your own solution.

The following tools are discussed:

- **Analog Tools** like Pen & Paper (page 203ff), Paper in Variable (page 207f) and Fixed (page 209f) order, and Stationary Writing Surfaces (page 211ff),
- **Digital Tools: Hardware** like (Smart-)phones (page 220), Tablets (page 221), Voice Recorders (page 222), (Video-)Cameras (page 223), and Computers in general (page 224),
- **Digital Tools: Software** like Files & Folders (page 225f), Text Files (page 226f), Mind-Maps & Concept Maps (page 228f), Outliners (page 230f), Digital Notebooks (page 232ff), Notes Management Systems (page 236ff), Visual Notes Management Systems (page 242f), Wikis (page 244ff), Word Processors (page 252), Spreadsheets (page 253), Databases (page 254), GoogleDocs (page 255), eMail Programs (page 256), and Blogs (page 257), and
- the **Mind** (page 258)

with some remarks regarding tools in general (page 200f), Digital Tools (page 217f), and Web-Based Tools and Cloud Services (page 219).

## CONSIDERATIONS REGARDING TOOLS

When dealing with tools, whether to organize creativity with them or in general, keep the following aspects in mind:

<b>there is no "best" tool</b>	<p>There is a huge variety of tools, each with devoted adherents, who are convinced that <i>this</i> tool or <i>that</i> is <i>the best</i>. However, "the best" tool depends on the task at hand and the creative person using the tool. You have to work with the tool and it must fit to <i>you</i>. Avoid being influenced by the image of certain tools, or the weight their famous users might have on you.</p> <p>The criteria is whether the tool helps <i>you</i> best in bridging the gap between imagination and realization, whether you can realize your ideas with it. Everything else is secondary.</p>
<b>affordances and limitations</b>	<p>Tools can help you visualize and manipulate ideas and the data they are based on, but they also limit what you can see and do — and they guide your thinking. Tools have affordances, i.e., they make certain actions easier, but others more complicated. For example, a smartphone might nudge you to focus on ideas that you can capture by typing text. Using a clipart in Word of a circle of arrows to indicate "something happens here" might guide your thinking that it is "really" a circular, sequential process.</p> <p>Tools can also urge you to use certain functions, whether they make sense or not (for example, the early websites with blinking text, or most PowerPoint effects).</p> <p>Notice how the tool influences you in your work — and whether you really want to act this way.</p>
<b>adapt the tools you use to your needs</b>	<p>The best tool users usually adapt the tools to suit their needs<sup>1</sup>: they create or modify their tools (e.g., using a frame to facilitate data entry in a Wiki, see page 247). Just take care that it does not become a goal in itself. Use the quality and quantity of your creative works as a success measure.</p>
<b>tools vs. knowledge/training/expertise</b>	<p>Tools are no substitute for knowledge, training, or experience. You need to understand the basics of the area you are working in to be creative, and you need to be able to handle the tools. This usually requires training until the tool becomes an extension of yourself. And while tools can correct some mistakes, they are blind and need an educated and creative mind behind them<sup>2</sup>.</p>

## CONSIDERATIONS REGARDING TOOLS

<b>replacement tools</b>	<p>Make sure that the tools do not trap your creative work. Tools that are hard to replace (e.g., due to their price or their rarity) might bite you in the back if (when!) the tool gets broken or lost. For example, if you are using an expensive DTP software, or a video editing software, that stores the works in application specific file formats, you essentially lose access to your works and cannot continue to work on the projects if you lose access to the software.</p>
<b>start with cheap materials</b>	<p>Cheap (or rather: affordable and usable) materials have a number of advantages:</p> <ul style="list-style-type: none"> <li>• You can experiment with them without risking much.</li> <li>• You can see if the idea works, before using valuable materials.</li> <li>• While working you might get other ideas your final work might profit from.</li> <li>• If you have just started the hobby, you have not invested much and can easily drop it if it is not to your liking.</li> </ul>
<b>limit the options</b>	<p>Tools, esp. professional ones, can paralyze you with their options. For example, professional cameras can "overburden" their users with countless options and buttons, possibly distracting the photographer from the motif. You have to reduce the options to make the tool an extension of yourself.</p>
<b>build your own</b>	<p>Of course, you can always build your own tools. The Hipster PDA is a nice example of people building their own tools. Likewise, many programmers create their own software solutions.</p>

<sup>1</sup> This can be a problem if you **recommend tools**. For example, few people I have recommended a Wiki (see page 244) picked the idea up. Main reason was probably that I continuously adapted the Wiki (e.g., via the Ferret Frame, see page 247), but they could not (it required a working knowledge of HTML and JavaScript, see page 249). Likewise tools that work well for you, can be useless for others if they do not see that they also have to change their other tools to accommodate it. For example, if you are doing data gathering with three sheets of paper per participant, then adding a digital tool is impossible unless you also modify the way you collect the data on the sheets (e.g., by combining them into one and using a clipboard to hold both, see page 305).

<sup>2</sup> Or how stickers made for powertools say it beautifully: "This machine has no brain — use your own." and "The only difference between 10 digits and less than ten is one mistake." (sources unknown)

# PEN & PAPER

Do not underestimate the most basic tool of all — the pen, and the paper it writes on.

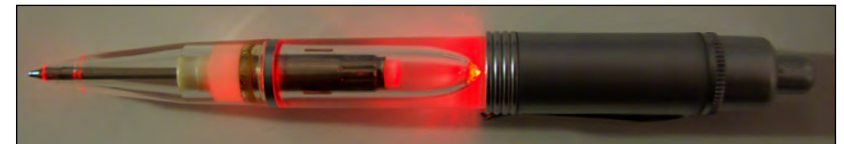
## PENS

While it is not about the pen you use (even if there *are* beautiful ones available), find an affordable, high-quality pen you like writing with. Have it always with you. It's extremely practical, and there are huge differences between pens:

- "Fisher Space Pens", "uni PowerTanks", and any pencil write on almost all surfaces and against gravity — a factor when you are lying on your back or pressing a piece of paper against the wall.



- Lightpens have their own light source, a small, directed flashlight, built in. You can write without turning on a lamp, e.g., during presentations or while lying in bed.



- Collapsible pens (e.g., "Fisher Bullet Pen") fit into a wallet. Put some post-its there as well, and you will never be without something to write.
- Pens with a metal mine write almost forever (e.g., "Fisher Millennium Pen"), although not very well.
- Ballpoint pens are way faster than anything with a cap, and can be used with only one hand.
- If you like pencils, try a mechanical



## PEN &amp; PAPER

pencil. It does not need to be sharpened, it can write longer, and can easily be restocked.

- A pen for a keyring can easily be turned into a |:pen:|dant. Just use a band of leather and you can keep a pen with you no matter whether you have pockets or not.
- There are smartpens that work like normal pens, but simultaneously digitize the writing (e.g., from Livescribe or Wacom). Thicker than normal pens, but they save you work and might be the best of both worlds.



A |:Pen:|dant

## PAPER

The amount of differences in paper are similar to the huge differences in pens:

- The texture of paper for notepads and notebooks differs between brands. Personally I like Clairefontaine paper for its smooth texture and cheap price.
- “Rite in the Rain” notepads (see page 117) have special paper that is unaffected by water, so you can write in the rain (or while standing in the shower, which is essentially the same thing).
- Spiral bound books will continue to lay open on a desk, whereas stitched books often close themselves. If the spiral is in the way of your writing hand, simply turn the spiral bound book upside down. Spiral bound notepads are easier: the spiral is always on top and they stay open by themselves.
- Use cheap good quality materials that do not intimidate you — and keep it fast and simple. While leather cases and Hipster PDAs (index cards held together with a clip or rubber band) might look nice or interesting, they probably slow you down.
- Use plain paper, unless you *really* need lined or checkered paper. Plain paper offers the largest flexibility to write ideas, without having to slow down to meet either lines or boxes, or to consciously ignore them.
- Use something from which you can tear off the pages once you have used them. This will allow you to put (transcribe) them into your collection inbox while leaving the notepad in its place.
- Use a notepad with a laminated cover. If you carry your notepad with you all the time, it has to take a lot of stress and will be subject to moisture from walking in the rain or sweat.
- Be careful if you use a soft cover and the notepad gets thin because you have removed a lot of pages — you can miss it if the notepad is falling out of your back pocket. A hard cover is not necessarily better, it might be too inflexible to wear it there. So, when the notepad gets too thin, use it in

## PEN &amp; PAPER



your apartment (e.g., use the last few pages in the shower, see page 116) and take a new one with you.

- If you use single pages held together by a clip binder, you can print the pages with a template (e.g., a form, special lines, etc.).

## USAGE

- You can usually carry something to write with you. Even in a spa you can put something to write in the pockets of your bathrobe (although it might take you some time to get acquainted with the setting good enough to write there).
- Train to write blindly, it's handy in situations in which it is too dark to see (e.g., on the way home in a street with no lamps, or while lying in bed). It's not that hard — you know the letters, you feel the dimensions of the page, all you need to make sure that the page is actually blank. Write larger than normal and have a look when you can see again.
- Train to write while walking. Walking is a good time for ideas (see page 110), however, if you stop each time you have an idea, you will always be late(r than planned), which will act as a strong deterrent to write down your ideas. While it might look strange, writing while walking is actually pretty easy: take the notepad, fold it a little so that the paper gets additional strength, then write. The handwriting will not look as nice as writing while sitting, but with some training it will be readable. Keep switching between the notepad and the scene in front of you while writing to avoid bumping into something, or having someone (or something) bump into you.
- Begin a new page if you want to think about new ideas. Continue writing on an already written page to continue thinking about the previous ideas.



## PEN &amp; PAPER

## TIPS

- Visit a well-sorted stationery shop and get a few pens and notepads you like writing with.
- Make it to your second nature always to carry a pen. Regularly check their functionality (ink level) and replace the cartridge before you have used up your ink.
- Always keep something to write in the place where you have ideas (e.g., next to the shower/bathtub, next to the toilet, next to the bed, in the car) and leave it there (see page 122). That's why notepads are so helpful – you can tear out the pages and leave the notepad (and pen!) for the next time you have ideas.
- Learn steno/shorthand to keep ideas (somewhat) private.
- Learn to sketch, it's highly useful to convey your ideas when you discuss them with others.

## PAPER HAS ITS LIMITATIONS

For capturing ideas, paper is often best. But for collecting ideas, digital collection are usually better suited. Paper is too limited, the relevant content is too hard to find or enlarge, and paper takes up space too quickly. If you love paper, find out whether you really need it to collect your ideas, or only to capture/sketch your ideas. In the later case, digitalizing the ideas (scanning the graphics or transcribing the text) is better. Nobody forces you to throw away your notebooks, you can still keep them on the shelf after you have transferred the ideas to the collection. Take care not to try to work with both when you develop the ideas further, but to stick to the digital collection and expand this collection — otherwise it becomes confusing.

We now look at different ways to use paper.

## PAPER: VARIABLE ORDER

Paper tools that use variable order are (for example):

- index cards (e.g., in boxes like the famous Zettelkasten of Niklas Luhmann)
- file folders, or
- loose-leaf books.

## USAGE

- You can use them to collect ideas, but be careful: As usual with physical collections, they become larger and unwieldy as the amount of content increases. They are difficult to backup and can hardly be enlarged on the page itself.
- Use colored post its and dividers to mark pages that belong to the central projects (see page 56).
- Write only one idea on each card and order them that the first page of the card is always in the same direction (allowing you to quickly sift through the collection without having to turn each card).
- Use a fixed order by number, instead of a topical order, to avoid inflexible structures. Write the number of the card/page in the top left corner and keep every card at its place.
- If the card/page is full include a "link" to the card number when the next information is available. You can also include cards like 23a, 23b, etc. to place them between the (now full) card 23 and the already written card 24. Add an "a" to card number 23 immediately when you write card 23b, so that you always know that you have an additional card behind card 23a.
- Use links to make the connections explicit between related ideas (cards/pages) by referring to their number.
- Keep a continuously updated index register.
- You can print fields/templates on the cards/pages to create templates.



## PAPER: VARIABLE ORDER

### STRUCTURING

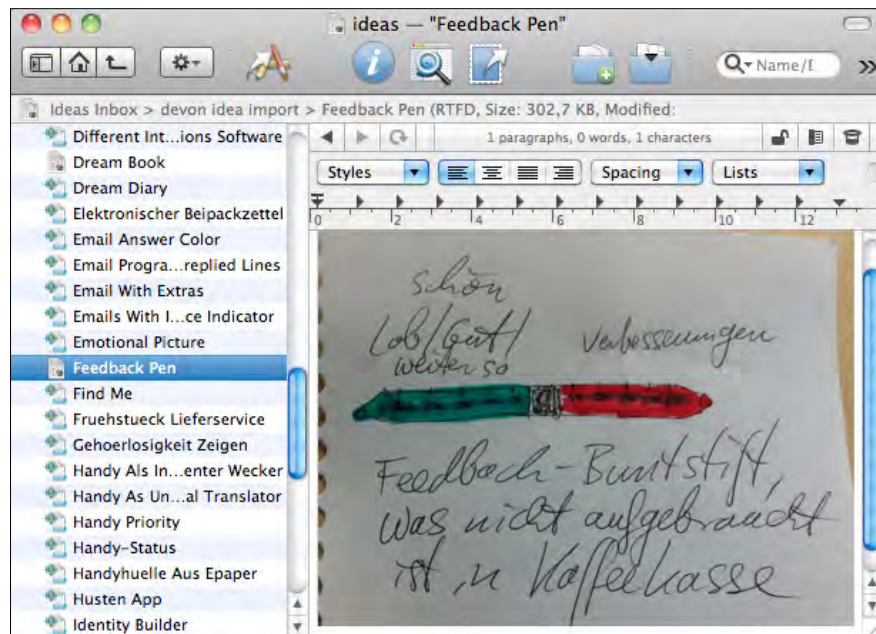
- Alphabetical order: Dividers (stronger paper, different color, slightly larger).
- Thematic order: Dividers with thematic topics.
- Chronological order: New entries behind the last ones, but write the date on the cards.
- Order by index number: Assign consecutive numbers.
- Order by multiple principles: Not possible at the same time (although you can mark each page with different, easily visible markers/post-its, whose color indicates the project they belong to).

### KEEPING REFERENCE MATERIAL

- Within the collection: Stick it on an index card, or between the right pages.
- As different collection: Depends on reference collection method used.

### DIGITAL ALTERNATIVES FOR COLLECTING

A lot of computer programs provide you a similar look and feel as index cards with all the advantages of digital tools (but watch the drawbacks on page 217). There are good reasons to stick with an paper collection, but it might be advantageous to have a look at the digital alternative.



DEVONthink (see page 237) is a nice alternative to a paper collection with variable order.

## PAPER: FIXED ORDER

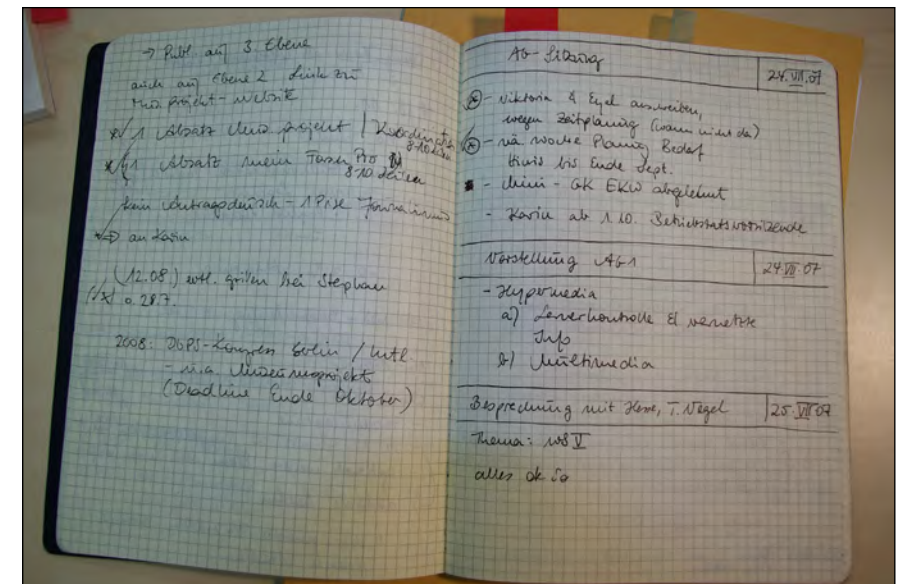
Fixed order paper are (for example):

- notebooks,
- diaries, or
- calendars.

The main advantage is the emotional connection they provide. They can be good for capturing ideas, however, paper is not well suited for collecting ideas.

### USAGE

- Sometimes a new, unbroken Moleskine notebook, or a notebook made out of fine leather exerts a lot of pressure only to capture the "best" ideas. However, the selection of ideas should come later. Thus, immediately break in the notebook. Write some "stupid" ideas in it to allow yourself to write down any *really* stupid ideas in it later.
- If you collect ideas in notebooks, keep a shelf free to keep the books. The chronological order is often your only clue and finding the books can be hard enough.
- If you collect ideas in notebooks, create Indexes. Otherwise you will not find the things you search for once you have several notebooks that all look the same.
- Label the back of the book with a number and the time frame you used the book (e.g., June 2011 — August 2011). A silver liner works on a black back, so does writing on sticky labels (or non-black tape). A label printer might be useful here.



## PAPER: FIXED ORDER

- For important ideas (e.g., of the currently realized project) use post-its (in different colors) to quickly find them.
- Use different books for different topics (e.g., one book for ideas for paintings, the other for story ideas, etc.)
- If you want to use templates, you can write the information on the pages in one session if you want to invest the time. You can also create a book with your word processor and have it bound by a bookbinding service (e.g., Lulu, Createspace).

## STRUCTURING

- **Alphabetical order:** Difficult since you cannot add or move pages. You can reserve pages or books for entries beginning with a, b, c, etc., but this is difficult (to impossible) to plan and wasteful.
- **Thematic order:** Hard to impossible to do. One book per topic is a possible solution, but this will take up a lot of space and prevent any “cross-fertilization” of ideas.
- **Chronological order:** Naturally in chronological order.
- **Order by index number:** Assign consecutive numbers.
- **Order by multiple principles:** not possible

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Stick it on the page or put it between the pages.
- **As different collection:** Explicit reference to the name/number of the entry in the reference collection.

## DIGITAL ALTERNATIVES FOR COLLECTING

If you want the look of a notebook for collecting ideas, there are digital versions available that offer (nearly) all advantages of a notebook, with all the advantages of a digital collection (e.g., Circus Ponies Notebook, see page 233, or Microsoft OneNote). It might be good to check them out.

## STATIONARY WRITING SURFACES

Working on a single project, it can be helpful to keep all the information on the wall in your office or home. If the amount of information is not too much, the collection on the wall will have a high *presence*, stimulate you to add additional ideas, and — if a flexible way is used — allows you to restructure the information from time to time. This also works very well for planning and for timelines.

There are different stationary writing surfaces:

fixed order	
<i>Fixed order means that you cannot change the writing without completely removing it/writing it anew.</i>	
<b>blackboards</b>	Often used in science departments, like mathematics and physics. Writing with chalk on a blackboard is still a nice, albeit dusty, tool to develop ideas.
<b>whiteboards</b>	The business white-collar alternative to blackboards: a surface that requires special markers to write upon. Note: Mirrors, windows, glass doors, cupboard surfaces, tilings and the like also work well for whiteboard/dry-erase markers. Make sure the whiteboard marker can be removed without a trace (which might be possible at first, but not if you leave it on for longer time periods).
<b>Magic-Chart</b>	Thin plastic foils sold by Legamaster (and other companies) that stick to nearly any smooth surface due to static electricity. They can transform a plain wall into one large whiteboard (erasing is possible). They can also easily be taken down, rolled up and stored, or hung up somewhere else. You can also put them over each other, although you might see the one below the top foil. Perhaps not very ecologically friendly, but a very powerful way to use your walls. If you cover a wall with them and overlap the pages about a centimeter like scales facing away from the direction of the wind, they are less likely to be torn down by the wind. Of course, they can be enhanced with print-outs, post-its, etc. to have the information ready while you are standing in front of the wall (see page 213).
<b>IdeaPaint</b>	Special wall paint that allows you to write on it by turning the wall into a dry-erase surface. The more permanent version of a whiteboard or Magic-Charts. Ever dreamt of drawing on walls (or allowing your children to draw on walls)? This is your chance ( <a href="http://www.ideapaint.com">http://www.ideapaint.com</a> ).



## STATIONARY WRITING SURFACES

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<b>Flipframes</b>	Essentially, a (very) large notepad that can be put on a holding structure or on the wall itself. They have the advantage that you can quickly use a new page and turn back to previous pages, but the disadvantage that you cannot erase what you have written (unless you use a soft pencil and an eraser).
<b>paper on the wall (esp. poster size paper)</b>	The easiest way: Simply take large sheets of paper and put them on the wall. If you print your own conference posters, use the discarded or old versions. It has the same advantages and disadvantages of FlipFrames.
<p style="text-align: center;"><b>variable order</b></p> <p style="text-align: center;"><i>With variable order you can easily change to position of the writing, which gives you more flexibility.</i></p>	
<b>Post-Its on the wall</b>	Post-Its stick to a lot of surfaces, and they can be used to develop ideas. But keep in mind that they were developed as a temporary solution. They will fall down and might be cleaned up by someone who does not know (or remembers) its value.
<b>Pinboard, Magnet Board</b>	A temporary solution, although the paper can be kept in position for longer time frames.
<b>Smartboards</b>	A sensitive surface on which an image is projected via a computer and a projector. It handles like a very large touchscreen with the ability to write with different "colored pens", save the information can include graphics, animations, etc. While it is hailed as the future of blackboards and allows a lot of nice interactions, it takes a long time to start up, uses up a lot of power, is noisy (due to the fans that cool down the projector), and costly (the lamps burn out after a while and they are expensive to replace). So it is very powerful, but not really recommended. The analog alternatives are way superior to display information for longer time frames. Only useful if you want to modify existing information.
<b>Powerpoint, Keynote, Word, Pages</b>	The virtual version of a stationary way to keep information. You can export it as image and use as background image for your computer, or print it to hang it on the wall.

## STATIONARY WRITING SURFACES

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Magic-Charts, "augmented" with some sheets of paper (yellow-transparent Post-It were used to allow easy removal). The MagicChart pages stick to the wall due to static electricity and function as a whiteboard, which you can easily scale to cover the whole wall.

## USAGE

- Use it to develop and discuss ideas.
- Use different smooth surfaces of your office for different aspects of the projects.
- Enhance the information with print outs or post its.
- Look at the wall when you take a break from your computer. Take a pen/some chalk even if you do not know what to write (yet). Read the information, think about it, perhaps you have a nice idea. If so, write it down immediately.
- Keep it alive. Once you stop doing significant changes, it fades into background quickly. Mark days in your calendar, or set alarms, reminding you to explicitly look at it from time to time.
- Start anew regularly to let it attract your attention. If something does not change over time, it has no information value for you, and it fades from attention quickly. Change the content occasionally. For example, if you have dealt with a certain problem and transferred all the information to your collection, erase the information and start anew with a fresh sheet. It will change the appearance of the wall, force you to formulate the part you

## STATIONARY WRITING SURFACES

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are working on clearly, and give you the room to expand.

- Keep the pens (or pieces of chalk) to write on the wall close to the wall. Do not put them in the desk drawer or the cupboard. They either belong on a cupboard immediately next to the wall, or somewhere else close by. When you have an idea in front of the wall, you must not search for the pens, you must have them with one move(ment), without thinking. Otherwise use your standard capturing tool. It is frustrating to have a great idea, then realize that you have nothing to write, search for it, find it, and then to realize that you have forgotten the idea.
- Keep alternatives to write and sketch close by, because the space on the wall is limited (one reason why I like Magic-Charts).
- You can pre-write text (e.g., with markers that cannot be erased) to create templates.
- Make backups by photographing the wall and include the images in your backup cycle. While you might not imagine that “anything could ever happen to the ideas on your wall”, there are quite a few things that can (literally) erase them. One colleague of mine leaned against the wall, right on my Magic-Charts, erasing quite a portion when he moved while talking. While this was bad for this clothing, it would have even been worse for me if I did not have a backup of the information on the wall. Blackboards can suffer a similar fate, especially if the cleaning service takes their duty too seriously, or the children want to draw some pictures (“but there was some gibberish in the way”). Check the photo whether the text is really readable (zoom in!) — camera shake can provide you with an image where you can see the text, but not decipher it. You can also take multiple photos with a large overlap and use Photosynth (App for iPhone) or Photoshop (Photomerge) to stitch the photos together (see page 215).

## STRUCTURING

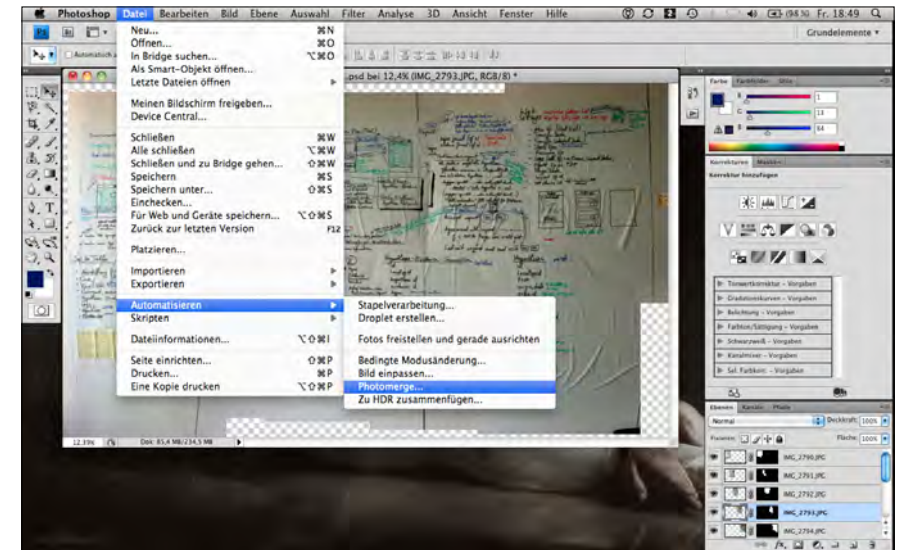
- **Alphabetical order:** You can predefine areas for the different letters, or move/rewrite them whenever you have a new idea.
- **Thematic order:** Predefine areas for different topics. However, this way of collecting should not be used for more than one project.
- **Chronological order:** Decide which dimension (horizontal or vertical) will represent the time and order the ideas according to this dimension.
- **Order by index number:** Assign consecutive numbers.
- **Order by multiple principles:** The two dimensions (horizontal and vertical) can be used for two ordering systems — but this takes huge amounts of space.

## STATIONARY WRITING SURFACES

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## KEEPING REFERENCE MATERIAL

- **Within the collection:** Simply put it on the wall.
- **As different collection:** Explicit reference to the name/number of the entry in the reference collection.



Stitching multiple overlapping photos of a large Magic-Chart wall together with Photoshop.



One huge advantage of the Magic-Chart plastic foils is that you can easily put them on another wall, e.g., in front of your computer while working on the project.



## REMARKS ABOUT DIGITAL TOOLS

Digital tools are extremely powerful, but make sure you understand their advantages and weaknesses when you use them.

### MAIN ADVANTAGES.

<b>fast and easy transfer of data</b>	Data (ideas, works) can be transferred at a breathtaking speed. Millions of files that would have occupied all scribes for the whole Dark Ages can be transferred in minutes. This makes quick and easy backups possible.
<b>information is highly flexible</b>	You can easily edit texts, sounds, videos, etc., by changing/rewriting/recomposing. Whole areas of information can be move or replaced.
<b>pseudo-intelligence possible</b>	Digital tools can assist you in your tasks, often with surprising (pseudo-)intelligence.
<b>personalization possible</b>	In many digital tools, you can customize the interface and behavior of the application that it suits your needs. Check the preferences/settings, they have far-reaching consequences and can make your life much easier (but think before you click).

### HIDDEN WEAKNESSES OF DIGITAL TOOLS

As powerful as they are, digital tools have weaknesses. And not only the ones that can instantly kill them, or the data they store.

General Weaknesses	
Digital tools are extremely vulnerable to errors/loss/theft/destruction. Especially errors with digital tools can quickly cost you all data you have saved on it, e.g., all your captured ideas, your whole collection, or archive.	
<b>accumulate a lot of information</b>	Computers quickly become the main focus and collect everything from eMails to ideas and plans. If a computer breaks down, a lot of information is lost, unless it was saved somewhere else as well (backup, see page 306).
<b>fragile</b>	Water, power surges, dust, fall, even extreme temperatures (night in a car trunk), or the classic accidents like dropping it, because you were startled by a lighting strike and thunder, or fluids (a glass of red wine, the cat who decides to spray the competition), digital tools can be killed easily and in most cases the dying process takes only an instant (i.e., there is not enough time to save anything).

## REMARKS ABOUT DIGITAL TOOLS

<b>technical failure (e.g., hard disc failures; software crashes)</b>	Paper will work, it cannot fail by its own. However, computers are very complex devices and over time, any hardware, esp. hard disks, will fail. And if they do you lose all your data. Likewise software can corrupt data, especially if you use Microsoft Word.
<b>need to actively prevent decay</b>	Paper can be read in a hundred years, but if you didn't update your computer in the last ten, you might have serious problems reading your data. Hardware and applications change — and might die out.
<b>valuable / theft</b>	Few people steal paper (unless it's money), but a computer, esp. a notebook, is made for stealing if opportunity, need, and a way to rationalize this behavior is combined. And the thief will not value your ideas, unless they can be used for extortion (any embarrassing photos or thoughts?). See page 310.
<b>fast in doing what you say but did not want</b>	It is possible to delete millions of files in seconds if you type the wrong commands or press the wrong buttons. If you cannot cancel the operation, you can see the digital equivalent of Rome burning.
<b>depend on a continuous power supply</b>	This is especially a problem for mobile devices, although you can prolong the battery life by selecting the energy saving mode, turn off the wireless/cellular network, put the screen as dark as possible, quitting all programs you do not need, and work with small, light-weight programs.
<b>hard/costly to replace</b>	Digital tools are usually expensive and thus hard to replace. Repairs take time. Configuring a computer also takes a lot of time, making replacing it very aversive. Make sure that you have a replacement infrastructure ready, e.g., the programs available for reinstall and current backups.

## CONSEQUENCES OF USING DIGITAL TOOLS

Using digital tools you can achieve things that a whole monastery could not do in the Middle Ages, but you also run a high risk. Digital is ephemeral. So protect your digital tools.

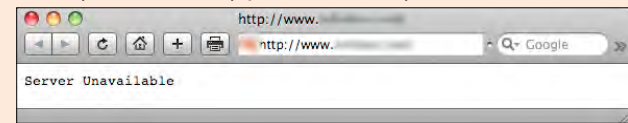
- Adhere to the rules of backups (page 306).
- Protect your devices against theft (page 310).
- Make sure a finder can return your device if it gets lost (page 311).

As usual, the best way to deal with accidents, crime, and other catastrophes is before they happen. So do it now.

## WEB-BASED TOOLS AND CLOUD SERVICES

Currently there is a strong movement to shift all data into the cloud, i.e., not (solely) stored on the computer you use, but on a server hosted by a company (like Apple, Google, Amazon, etc.). Services like Dropbox or iCloud offer you to have your data available on any device whenever you need it.

However, I am very critical of these services. Take a look how the „Main Criteria of an Idea Collection“ on page 127ff apply to web-based tools and cloud services.

<b>TANSTAAFL<sup>1</sup></b>	Nothing is truly free. These services will need to keep their data centers operational and they need a lot of money for it. So it is either financed by the success of another business, by advertisement, or by user fees introduced later.
<b>Data Control</b>	An important aspect of any idea collection is data control (see page 131) — that you control the <i>access</i> to your data. This is not the case when your data is stored on some server in Norway, or somewhere in the US.
<b>Privacy</b>	The data gets send over the net and can easily be intercepted. Sure, this is unlikely and they use encryption (don't they?), but would you write down your most precious thoughts, knowing that they are easily readable by others?
<b>Availability</b>	You are dependent on Internet access. If this fails (and occasionally, it does — on your side or theirs), you cannot access your data. Very problematic if you are on a deadline. 
<b>Security</b>	Nobody will invest the same caution and effort in protecting your most precious data than you yourself. Others might be more skilled, or have better tools, but <i>you care</i> about the data.

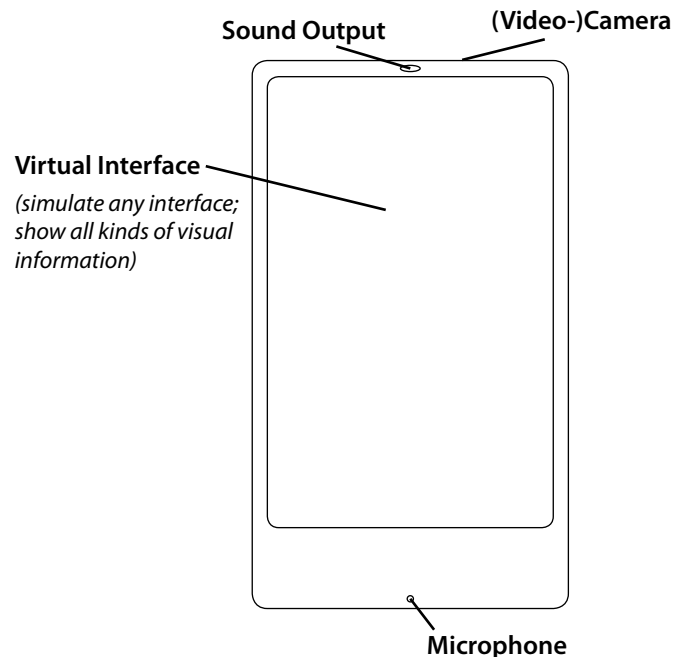
This does not mean that using off-computer storage is bad. On the contrary. You should always have your data in different places, at best distributed around the world. And cloud services can take a lot of effort off your hands, leaving your mind free to do the creative work.

But be careful with cloud services and keep local backups.

<sup>1</sup> "There Ain't No Such Thing As A Free Lunch" from "The Moon Is A Harsh Mistress" by Robert A. Heinlein

## (SMART-)PHONES

Cellphones are no longer only phones. Most devices are minicomputers, which have functions that come close to a normal computer, even if it is not marked as a Smartphone. You have a voice recorder for musicians, a video recorder for dancers, notepad/text-writing apps (and external keyboards) for writers, etc. The available Apps can simulate nearly any device, and it can even be equipped with sensors for mobile data collection.



Additionally, making notes on a mobile device is more socially accepted, as people will likely think that you are typing a SMS or an eMail — which is true: you have to tell your future self something it must not forget.

### USAGE

- Find out what your device is capable of — and have a look at the available Apps (see Resources starting on page 359). It is strange if people pay hundreds of dollar for a device (directly or per contract fees), yet are somehow reluctant to \$5 for a good App.
- Transfer ideas as soon as possible. As the storage is often huge, digital devices often suck in ideas, and take them with 'em when they die/crash.
- Use it when pen and paper is either not available, or not accepted.

## TABLETS (E.G., iPad)

Tablets can be incredibly useful. They combine the advantages of smartphones with much greater screen real-estate. However, this is also their disadvantage: Whereas they are easier to carry than a notebook, they are not as comfortable to carry as a smartphone.

### USAGE

- The virtual keyboard is much more silent than any mechanical one, thus, tablets are great for silent typing, e.g., writing in presentations or meetings.
- Tablets can be used for sketching. Use a Pogo sketch pen (griffel that works on the surface of a tablet, <http://tenonedesign.com/sketch.php>). Apps like Autodesk's Sketchbook Mobile or Brushes allows you to draw, providing (among others) a wide selection of pens and brushes, layers, and colors (see „Sketching“ on page 352).
- Tablets are great for illustration work on written texts. Scan the text (or if created digital, export it as png images), put the images on the bottom layer of Sketchbook or Brushes, and draw on the layers above. Delete the page layer later to keep the illustration.
- Tablets are also great for reading, especially if you use a software like Sente or GoodReader and highlight/add comments. With Sente, the comments can be exported later. Very, very comfortable and a great task on a train ride. See „Reference Management Software“ on page 346, „Reading Research Literature“ on page 348, (also applicable to other kinds of literature), and „Reading Digitally“ on page 349.
- Tablets can be used during a train journey more easily than notebooks. You can cover them more quickly and you can actually hold them in one of your hands and work with the other (e.g., highlight or annotate relevant sentences). If you use a good App (e.g., Sente, GoodReader) you can use even a 30 minutes train journey every morning and evening effectively. Create a reading list and focus on highlighting/annotating. Export the material later.

## VOICE RECORDERS

Voice recorders are widely available, nearly everyone has one — in their cellphone. Even if the cellphone itself does not offer the function, your voice box is essentially a voice recorder. Simply call your own number if this redirects you to your own voice box (not available with all providers). Voice Recorders are great to capture music (or humming), and can be used in situations in which writing is not possible (e.g., while driving).

### USAGE

- Keep a voice recorder easily accessible in your car (where you cannot jot down ideas), but keep your main attention on the road (it should not become a blackbox with your last thoughts recorded, see page 112)!
- Make sure you can use it without looking.
- Transcribe the information as soon as possible, as audio files are hard to search and difficult to build upon. Full storage is deadly to ideas, and you can quickly reach a point of no transcription, when you do not want to transcribe the information.
- Have an earpiece to transcribe the audio information. Stating ideas in the privacy of a car might be o.k., but hearing them aloud in a train might not.
- If you collect ideas on the way to work/home, transcribe the ideas immediately after you arrive, when they are also still fresh in your memory. Do it regularly before you do anything else (even checking mails). This way you have cleared the storage every day, before the demands of the day take you in.
- Do not babble the idea, but try to tell it as concise as possible — think before you speak. While talking is effortless (for most), transcribing is not.

### TRANSCRIBING AUDIO

- See „Digitizing Information“ on page 319.

## (VIDEO-)CAMERAS

(Video-)Cameras are widely available in most cellphones, and can be used to quickly capture the image of an object, movement to learn (often used in sports by professionals, make use of them yourself), or even to digitize notes.

However, keep in mind that:

<b>sufficient (not perfect) quality is needed</b>	You need to get information down as fast and easy as possible. If you want to remember something, you do not need a perfect photo with a professional camera, taking up 10+MB. Clarity counts, not the usual criteria for a “good” photo.
<b>digitize text</b>	While you can quickly capture text with a camera, unless you use OCR, you cannot search for the text, or copy & paste it. So digitize it. See page „Digitizing Information“ on page 319.
<b>make it searchable</b>	If you use images or videos, use tags/keywords to make them searchable — assign the tags as quickly as possible.

### USAGE

- Think about the file format first. With photocameras, RAW offers you more post-processing choices than JPG. Some video formats are easier to convert than others (and some nearly impossible to convert).
- Videocameras are great for personal feedback (see how you do in sports/dancing/presentations) and for learning motion (record and play in slow motion to grasp the movements).
- Cameras are often the only choice to capture information that you might not get otherwise, e.g., digitizing pages from a book in a university library (careful with flash, it damages old paper and makes you very, very unpopular).

Computers are “bicycles for the mind” (Steve Jobs) — they are the most versatile and powerful tool ever invented to assist the human mind. Few creative projects cannot be improved by using a computer, even if it is “only” getting information materials, or reaching the target audience via a website/blog.

## QUICKLY CAPTURING IDEAS

Computers are well suited to quickly capture ideas, not only text-based ideas.

- For text-based ideas, use pure text files. Opened with a pure text editor (TextWrangler on Mac, Notepad or Notepad+ on Windows) they are available faster, and prevent you from wasting time on the formatting.
- Keep the text file easily accessible — e.g., via Quicksilver/Spotlight on Mac, or on the Taskbar in Windows, where you can open it with one click (see „(Text) File Shortcuts“ on page 314).
- Programs for Sketching do exist (e.g., Sketchbook Express), but they are inconvenient to use with a mouse — if you do a lot of sketching consider a tablet or Wacom Tablet.
- Use templates when your ideas follow a common scheme, and to remind you of information you have to write down with an idea (e.g., name of the project it is for).
- If you have a webcam, you can sketch on paper and use the camera (e.g., via Photobooth on Mac, remove the mirror option in the preferences) to digitalize the image (see also page 319).
- If you also collect your ideas on your computer, do not use the idea collection itself to capture ideas. It takes longer and looking for a place in the collection for the idea (and doing the necessary steps) increases the risk that parts of the idea deteriorate and get lost. Use the collection inbox instead (see page 139), which can be a part of the collection.
- Keep alternatives handy — computers sometimes lock you into a program (e.g., a game that cannot be left easily), or tasks that tax the computer to capacity. Also, even if you carry a laptop everywhere you go, you might not want to stop and take it out to jot down an idea. A notepad or a pack of post-its nearby often do the trick (see also 122).
- If you write in public, small font sizes prevent others from reading your notes. You can also change the color to light gray/white or use a symbol font (unlikely that anyone can decode non-letter symbols while you type and you get feedback that you have typed something).
- If it is not your computer, you can send yourself an eMail or — if you have a website — use a webform.

We now look at some specific programs/ways to use the computer.

The basic way to store information on computers is the files and folder system. Based on the file/folder metaphor, information is stored in files, which are kept in separate folders (create order and thus allow easier retrieval of information).

Many more advanced systems build on this metaphor, but offer functionality like more easy file opening, identification of duplicates, etc. For example, a notes management system like DEVONthink or a .txt-file based Wiki (like DokuWiki) is often more useful than a pure files & folder system. You can still use a file and folder structure, but have an extremely powerful information structure above it.

## USAGE

- Use templates, either via the function in the program you use (e.g., Word Templates, Excel Templates), or by preparing one file and copying the file for a new idea.
- Find a way to identify duplicate files. Some programs (e.g., Gemini, DEVONthink) identify duplicates.

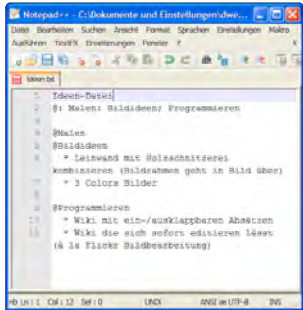
## STRUCTURING

- **Alphabetical order:** Select the “order by name” view, or use subfolders. Automatically for the contents of one directory.
- **Thematic order:** Easily possible by using folders.
- **Chronological order:** Difficult if the operating system cannot sort the files by *creation* date (“date modified” does not help here). You can use the file name for date and time information (e.g., 2008-07-21\_1232.txt for an idea from the 21th of July 2008 at 12:32).
- **Order by index number:** Manually assign consecutive numbers in the file name (or do it once automatically with a program or the “Automator” of OS X).
- **Order by multiple principles:** Depending on how you use the file name different systems can be used. Some operating systems offer smart folders based on other file attributes.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Either make a folder for the idea and put the material with the document containing the idea, or change the filename of the reference to the name of the idea filename with “\_ref1” to it. For example, if the idea is in “squid\_propulsion\_method” and you have a movie called “squid.mov”, rename the reference to “squid\_propulsion\_method\_ref1.mov”.
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection, either direct links are possible or a written link must be made.





Simple text files are great for capturing ideas, but not as good for collecting ideas. Note that text can be coded in different formats (e.g., for Windows, Mac, UTF-8, etc.) resulting in differences when opened with another encoding. Line breaks also differ between operating systems, e.g., Windows uses Carriage Return and Line Feed, Macintosh only Carriage Return, and Unix only Line Feed. Opening the file with the wrong settings can screw your paragraphs.

Text files are also very useful to manipulate text via “search & replace” functions.

## USAGE

- Keep a textfile you use for capturing on your task bar (Windows) or in your Dock (Mac) for easy access, or use spotlight or Quicksilver to open it without having to take the hands off the keyboard (see page 314).
- Get a good text editor that supports different text encodings, e.g., Notepad++ (Windows) or TextWrangler (Mac), see page „Text Editor Resources“ on page 370.
- Some editors offer auto-save (e.g., every x seconds) and auto-backup (additionally saved in a different folder) features (e.g., TextWrangler).
- Use editors that offer incremental search, i.e., the search starts immediately when you enter the first letter. If you search for “find” for example, it will find the first instance of “f” when you type “f”, then the first instance of “fi” when you enter the “i”, then “fin” and finally “find”.
- Some editors allow fold-in functions, i.e., you can fold in whole sections of text for easier navigation in large amounts of text.
- Install a version of your favorite editor on an USB-stick to have it available wherever you are (works for Notepad++ on Windows).
- Use tags like @WORD where WORD stands for the search term under which you want to find this text. The @ avoids finding the word in the text itself (see „Tagging“ on page 317).
- If you put a lot of text in a text file, use headers by using a specific character to denote a header, e.g., use a #. For example, a header like #work will start the part where work notes are and searching for #work will immediately put you to this “section”.
- If you want to use a specific syntax for your ideas in a text file, write the syntax at the beginning of the file to keep it in mind.
- If you use a text file for collecting all your ideas, do not use the same file for capturing them. Differentiate between capturing and collecting. Capturing must be fast — just open the file and enter the text. Collecting

## TEXT FILES

requires more thought and thus is slower.

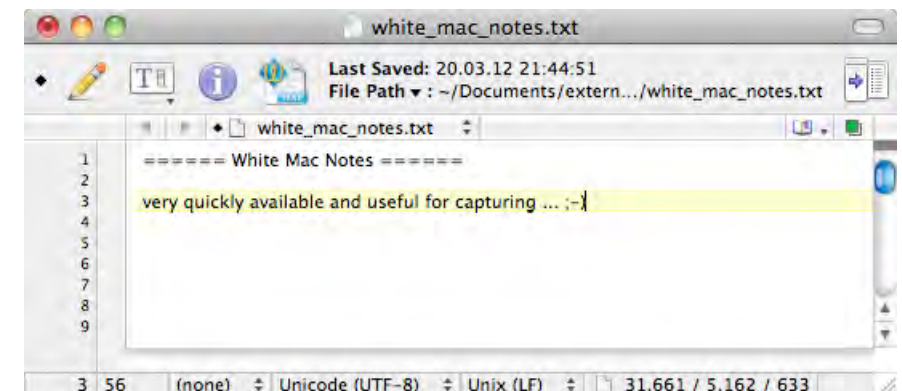
- If you want to use templates, create a template, and copy & paste it a few times. Make sure that you keep at least one unused version of the template.

## STRUCTURING

- **Alphabetical order:** Using headers that can be searched for and entering the ideas after the corresponding letter of the alphabet. Manual only. Some editors allow a sorting of lines, but since an idea is rarely only one line, this would tear entries apart and destroy your collection.
- **Thematic order:** Possible with headers or different text files for different topics. Manually only. Using tags might allow you to search for topics in the text file.
- **Chronological order:** You would have to start each line by a date and time code or simply write the information always below (or always above) the already existing information. Manually only.
- **Order by index number:** Manually assign consecutive numbers for each entry.
- **Order by multiple principles:** Different systems can be used at the same time, especially if you use tags.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Easy for text references, but impossible for anything else.
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection, either direct links are possible, or a written link must be made.



*TextWrangler on the Mac, note the settings for the different kinds of encodings in the bottom line.*

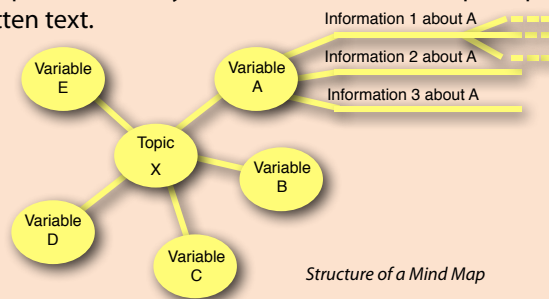
# MIND-MAPS & CONCEPT MAPS

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Mind Maps and Concept Maps are two related techniques to visualize information. They can be used to collect ideas, and to display an existing problem in a new way to stimulate insights and new ideas. You can draw Mind Maps and Concept Maps per hand, or use software to do so (Office programs like Word or PowerPoint can do it, but dedicated programs are usually better).

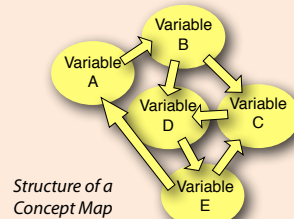
## Mind Maps

Mind Maps display related topics in a hierarchical way. They are great for visualizing the available information in keywords and finding relationships between the elements. Simply write the main topic in the middle of the paper, add the related concepts around it, connect them via lines. You can add additional information at the ends of the hierarchical tree and its branches. Given that they are hierarchical and can thus easily transferred into a sequential order, you can also use Mind Maps to plan a written text.



## Concept Maps

Concept Maps display the interrelations between the elements, without the need for a hierarchical structure. They are very useful if you want to find out what influences what, especially if it is not a chain of events, but a complex network in which the variables influence each other.



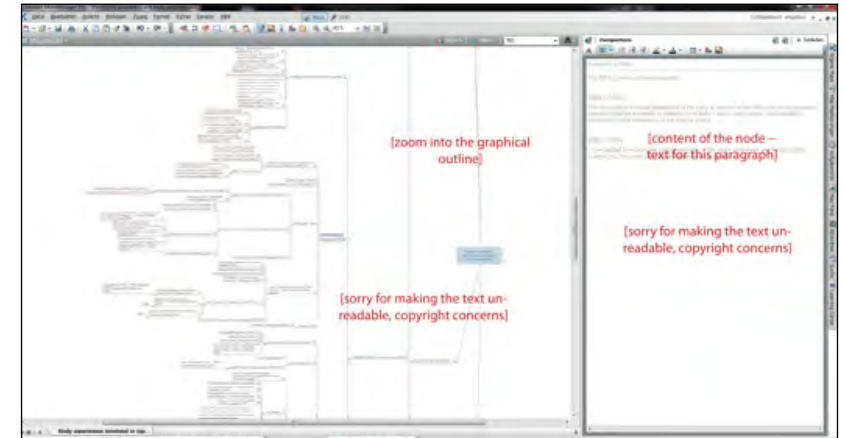
## USAGE

- Use one Mind Map for one project only.
- Useful to restructure the material, get an overview, learn it and get new ideas.

# MIND-MAPS & CONCEPT MAPS

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- Useful when the project is in realization phase.
- To use a Map as a template, create a Map as you like it, save it, and copy & paste it for a new Map.
- MindMaps can be used to write an article due to their hierarchical structure. Write the central issues/paragraph summary in the knots and use the annotation feature to write the content, when finished export as text.



## STRUCTURING

- **Alphabetical order:** Possible by using one arm for each letter of the alphabet, but this is not the way a MindMap or ConceptMap should be used. Manually only.
- **Thematic order:** Possible by using one arm for each topic. Manually only.
- **Chronological order:** Difficult but you could use an arm with a node for a year, then split it up in months, then in days. But this is not the way a MindMap should be used.
- **Order by index number:** Manually assign consecutive numbers for entries.
- **Order by multiple principles:** Difficult to use more than one system, save when tags are used.

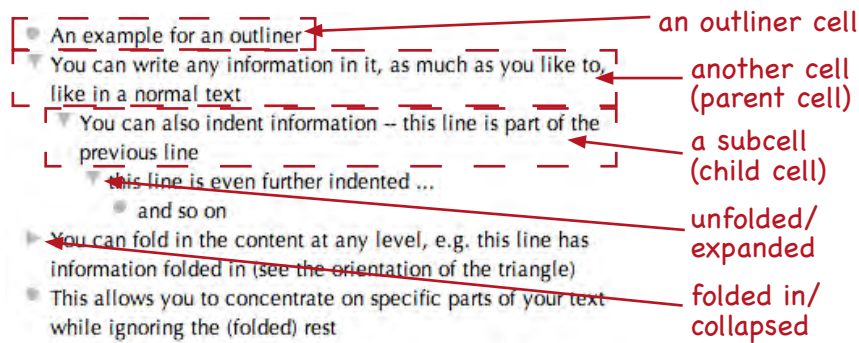
## KEEPING REFERENCE MATERIAL

- **Within the collection:** Most programs should allow images or other media files.
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection either direct links are possible or a written link must be made.

## OUTLINERS

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An outliner is a program that allows you to structure your information hierarchically. Outliners work with cells instead of normal text lines.



An outliner cell is like a box, containing information that can be everything from a character to words, sentences, even multiple paragraphs.

The main difference between an outliner and an outliner view (e.g., in Word) is that in an outliner, you can work with cells, not (only) with its contents. You can easily move the cells, put cells as subcells (child cells) of other (parent) cells, indent or outdent cells, etc. As you can fold in sublevels (indented information), you can reduce the amount of information displayed to the information you are interested in.

This makes outliners the ideal tools to deal with complex information, because you can easily switch between the whole picture (e.g., top headers) and the tiniest detail (e.g., expand a header to the lowest level).

## USAGE

- Outlines are extremely useful to create a Content Outline that helps you write long and complicated texts (see page 338).
- You can make high-level summaries in the parent cells and go into details in the child cells. Great for structuring information.
- Whereas outliners are normally used to make notes and plan writing, they can also be used to collect ideas. Because they are inherently hierarchical, they require a corresponding order of ideas.
- An outliner is good for one project and excellent for note keeping, planning and restructuring information. You can list your todos and use checkboxes to quickly resume the project after interruptions.
- Be careful with the indent function. You can easily go to the extremes and end up with columns of text that are so often indented that they are extremely small. Consider the vertical axis as the main timeline or causal dimension of your notes. Go horizontal (indent) only if something is

## OUTLINERS

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additional information to a header.

- To use templates, save an outline with predefined information, or copy and paste it inside the outliner.

## STRUCTURING

- **Alphabetical order:** Easily done by indenting the entries under a line containing their first letter. Manually only, although some outliners have an auto-sort function.
- **Thematic order:** Indenting the entries under a line with the topic name. Manually only, although tags can be used.
- **Chronological order:** Possible by either writing the ideas beneath (or above) each other or indenting the information under Year, Month and Day entries. Manually only. Some outliners have a time stamp for each entry that can be used to automatically sort the information.
- **Order by index number:** Manually assign consecutive numbers for each entry.
- **Order by multiple principles:** Difficult to use more than one system, save when tags are used.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Some outliners allow other media files.
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection, either direct links are possible or a written link must be made.

## Model fit via Reproduced Correlation Matrix

## Rotation of Factors

## effects of the rotation

- **Changes:** loadings, distribution of the  $\lambda$  (eigenvalues), in oblique rotations: partitioning of communalities
- **Stays the Same:** configuration of points representing the indicators, sum of  $\lambda$  (eigenvalues), communalities, in orthogonal rotations: partitioning of communalities

## Other Aspects

Another example for an outline — a Circus Ponies Notebook page: "Rotation of Factors" is a cell on the top level. It is the parent cell of "effects of rotation" and "Other Aspects". At the moment the parent cell is unfolded (look at the triangle) so you see its child cells. "effects of rotation" itself is the parent cell of "Changes: ..." and "Stays the Same: ...". The indentation of the outlines can be increased or decreased. Parent cells can be folded in, allowing you to focus only on specific levels or compare information that is in different places in the outline.



## DIGITAL NOTEBOOKS

Some computer programs mimic the look and feel of traditional paper notebooks. An excellent example is Circus Ponies Notebook for Mac OS X. It gives you the look and feel of a traditional notebook, with all the advantages of a digital solution (e.g., an outliner, automated indexing, an excellent search function, see page 234).

### USAGE

- As digital notebooks have an inherent structure (hierarchical: chapter, page, paragraph) they are better suited for an individual project (incl. a project notebook, see page 351, or a topic notes collection, see page 350) than for a heterogeneous collection. Although tags (keywords) can be supported (see page 317), it is easier to use a collection that places less emphasize on a hierarchical structure.
- A notebook can be used to restructure the information for a specific project before you try to realize it. It allows you to bring all the information together in an easily editable form after you have decided on a global structure.
- For a template, copy & paste will work inside the notebook.

### STRUCTURING

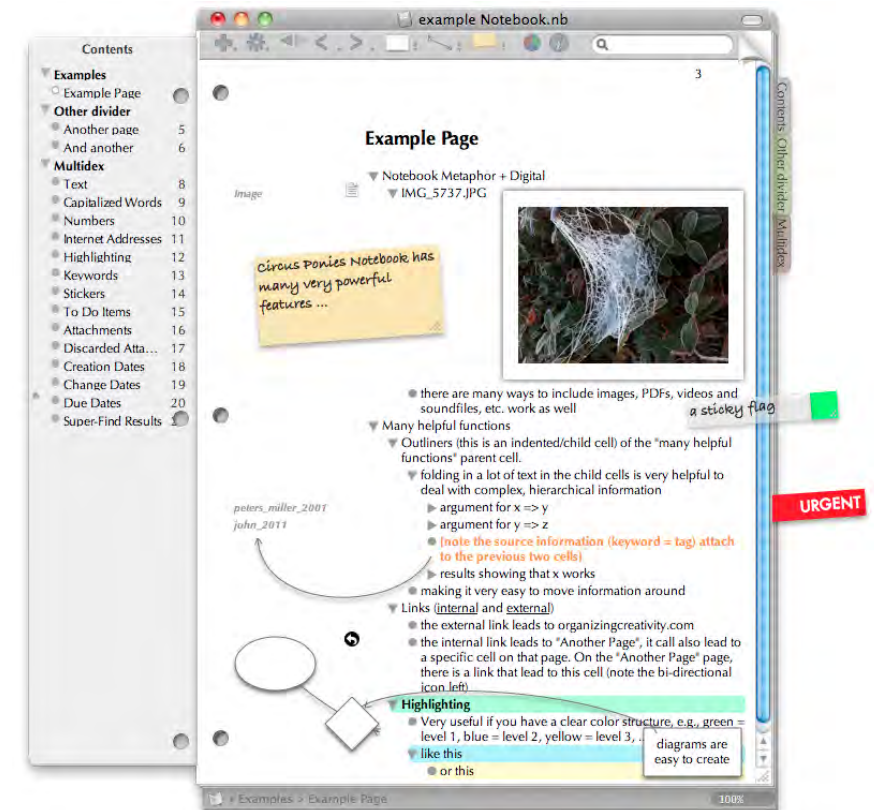
- Alphabetical order:** Possible by naming and sorting the pages according to alphabet. Manually only.
- Thematic order:** Easily possible by using pages or whole sections for a topic. Manually only, although tags can be used.
- Chronological order:** Possible by using dividers and pages or simply writing the information consecutively. Some programs have time stamps that can be used to sort the information automatically.
- Order by index number:** Manually assign consecutive numbers for each entry.
- Order by multiple principles:** Different systems can be used at the same time, especially if you use tags.

### KEEPING REFERENCE MATERIAL

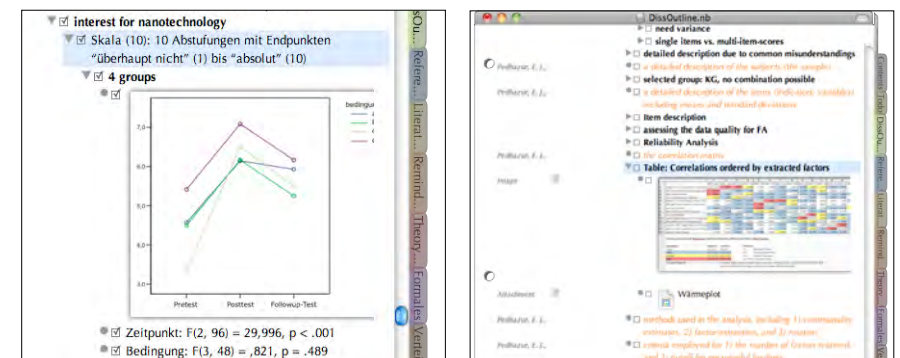
- Within the collection:** A digital notebook should allow all media files.
- As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection, either direct links are possible or a written link must be made.

## DIGITAL NOTEBOOKS: CIRCUS PONIES NOTEBOOK

Circus Ponies Notebook (CPN) is easy to underestimate. On the first glance it's simply the digital version of a paper notebook.



A Circus Ponies Notebook notebook with a few of the available features shown. See the text in the graphic for more information.



Very useful for dealing with research data, here: the results of an analysis.

Using another color for meta-notes, and checkboxes to make sure you miss no information is very helpful.



## ADVANTAGES OF USING CIRCUS PONIES NOTEBOOK

On second glance it shows its strengths.

<b>familiar and inherent structure meets the power of digital</b>	CPN uses the notebook metaphor stringently, which is convenient, familiar, and very useful. Given that it is digital, the “paper” can have any length, and you can easily add or restructure information, something that is almost impossible with a real paper notebook.
<b>powerful navigation</b>	Pages can be accessed in multiple ways, e.g., via a page turn icon, a back to previously seen page and forward to next seen page, tabs, stickies, search results, table of content, indexes.
<b>Outlines</b>	CPN offers outliner pages (not views!), giving you a very powerful outliner (see page 230). Each cell can optionally be assigned with dates, checkboxes (text in the cell gets grayed out when ticked, very useful to stay on track), keywords (tags), and stickers. Autosort is also possible, which is great for lists. Easily the killer feature of CPN.
<b>tags (keywords)</b>	Keywords assigned to cells stay with the cell when copied. You can expand all cells, select all, and assign the same keyword to all cells, making it easy to assign source information in literature notes (see page 348).
<b>auto-index (Multidex)</b>	CPN offers a powerful register that shows Text, Capitalized Words, Numbers, Internet Addresses, Highlighting, Keywords, Stickers, To Do Items, Attachments, Discarded Attachments, Creation Dates, Change Dates, Due Dates, and Super-Find Results. Very powerful.
<b>links</b>	You can create internal (bi-directional) and external links.
<b>text formatting</b>	You have the usual options to format text (bold, italics, etc.), including cell highlighting. Very useful to add more structure.
<b>media attachments</b>	CPN displays, among others, images, videos and PDF files. Any file CPN does not recognize gets displayed as an Icon — you double click it and the corresponding application opens it. Great for SPSS, Excel, Word, etc. files. You can embed the file in the notebook, or just link it.
<b>sticky flags &amp; notes</b>	Like in an paper notebook, you can add sticky notes and sticky flags. Great if you need to return to a page often.

<b>drawing</b>	You can draw on the pages, per hand (recognizes handwriting) and with elements (similar to PowerPoint/Keynote), great for diagrams.
<b>clipping services</b>	You can easily import information from other sources.
<b>mobile App</b>	There is also an iPad version of CPN available, allowing you to use your notebook on the move.

## TIPS FOR USING CIRCUS PONIES NOTEBOOK

<b>decide how you copy &amp; paste</b>	There are different options to paste information on an CPN outliner page, e.g., as an outline or as plain text. If you want to have the information on an outliner page without formatting, you might want to paste and copy it in a text editor that removed the formatting first (e.g., TextWrangler).  Regarding cell information like keywords, as long as you remain within the CPN files and use only copy+paste to transfer them from one CPN file to the other, the keywords remain attached to the cells. However, they are not transferred if you copy only part of the text of a cell or copy-past-as-outline/plain-text cells!
<b>decide what enter should do</b>	On an outlining page, Enter can have different behaviors. I recommend selecting “End editing of that cell” in the preferences, otherwise editing a cell might give you a new one below if you accidentally press enter.
<b>decide what you export</b>	You can export as PDF, webpage, etc. Oftentimes, it is only what you currently see, meaning only the expanded cells get exported.
<b>think notebook</b>	Many behaviors make sense when you consider that it is a notebook. For example, you remove sticky notes by dragging them outside of the notebook window.
<b>use the additional views</b>	You can display a table of contents card for quick navigation, see the keywords on an outliner page (cmd + k), and much more.

# NOTES MANAGEMENT SYSTEMS

Given the high demand for a good software that enables people to deal with their ubiquitous notes, some dedicated software was developed for this purpose. Prime examples are DEVONthink and Evernote.

See DEVONthink (see page 238) for an example of the powers of such a system.

## USAGE

- Use the trial period to see if you really like working with it.
- Watch the time you need to enter/access information — is it acceptable (in the long run)? Just because it is very powerful and very integrated into the OS does not mean that the trade off for getting the information in it is acceptable.
- Make sure you can easily export your information. Otherwise you will be stuck with the software until it sinks and takes your collection with it!
- If you want to use templates, copy and paste will often work.

## STRUCTURING

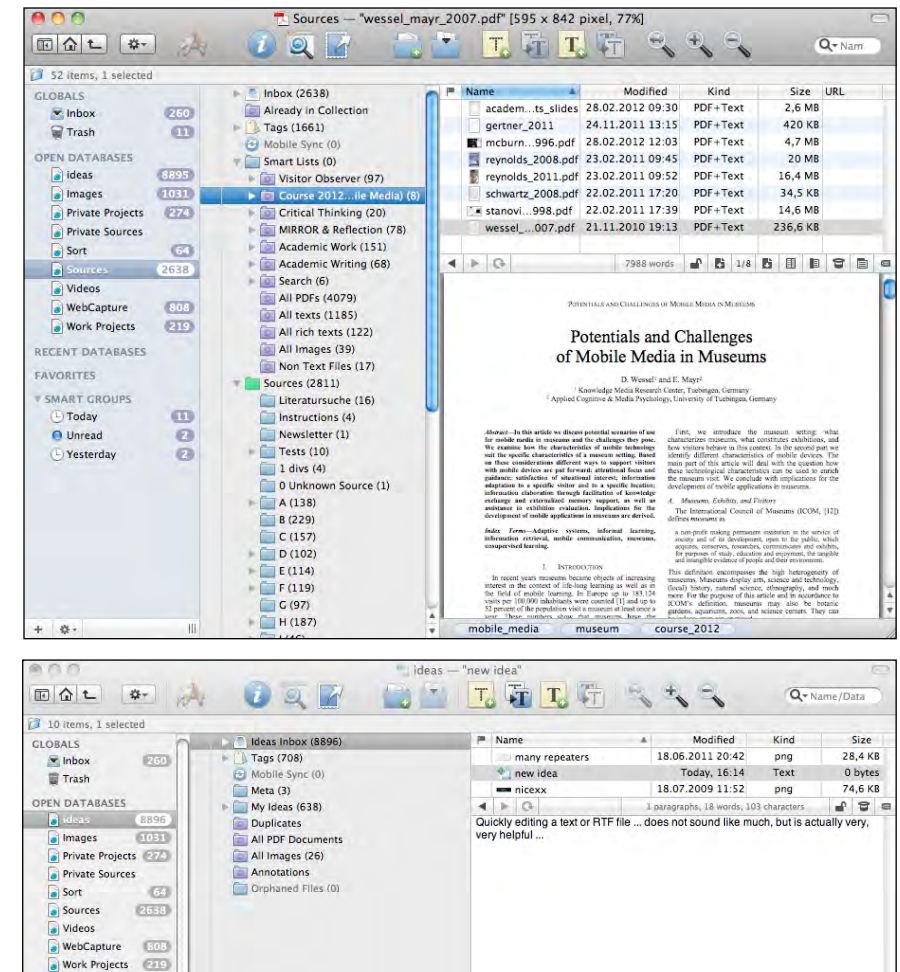
- **Alphabetical order:** Alphabetical sorting should exist in most systems. Automatically and manually.
- **Thematic order:** Ordering via folders or by graphical methods possible. Manually and automatic (via tags) possible.
- **Chronological order:** Possible by writing the information consecutively. Some programs have time stamps that can be used to sort the information automatically.
- **Order by index number:** Manually assign consecutive numbers for each entry.
- **Order by multiple principles:** Different systems can be used at the same time, especially if you use tags.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Should allow all media files.
- **As different collection:** Depending on the capabilities of the program used for the idea collection, and the reference collection, either direct links are possible or a written link must be made.

# NOTES MANAGEMENT SYSTEMS: DEVONthink

It is easy to underestimate the power of a good notes management system. On first glance, DEVONthink does not look like much:



Two DEVONthink windows (three panes view). Databases are on the far left, next is the group structure, with the content of (smart) group on the top and the content itself at the bottom. Tags are displayed below the document.

While it **looks** like the usual files and folders system of a computer, in reality it is a powerful database that helps you to deal with huge amounts of information, with text files, documents, images, anything. DEVONthink manages the structure on the hard disk in the background, shows you the files and folders (folders are called "groups" in DEVONthink) and assists you in dealing with the information.

## ADVANTAGES OF USING DEVONTHINK

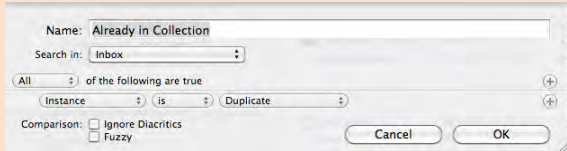
<b>recognizing duplicate files</b>	DEVONthink automatically recognizes duplicates based on the content of the file. The filename becomes bold-blue and it appears in a smart group called duplicates. Very useful to clean up duplicate files even if they have different names.
<b>replicants</b>	If you need a file in two different places at the same time, replicants can be used. There is no original-link distinction as with aliases. If you change one file, the other changes as well.
<b>powerful scripting support</b>	DEVONthink and other developers offer powerful scripts to automate processes, e.g., importing PDF annotations, removing duplicates, etc.
<b>tagging</b>	You can tag files (autocompletion, will suggest tags that were tagged frequently with assigned tags, tag list, tag view) and have smart groups display files with specific (combinations of) tags. See „Tagging“ on page 317.
<b>smart groups &amp; advanced search</b>	Smart groups show files that have (combinations of) specified criteria (e.g., tags, name, file type, and much more). The scope can also be defined, from the whole database to specific groups. While the search function is powerful, allowing you to "save" these searches and have them continuously updated is very powerful.
<b>allowing files with the same name in one group</b>	You can put two files with the same filename in one group. What sounds like a nightmare is very useful for sorting files. Simply put them in one group and go through them one by one.
<b>multiple views on the group-file structure</b>	It provides different views, including a very helpful "as Three Panes" view, where you see your folder structure on the left, the content of the group you have selected on the top right, and the content of the selected file on the bottom right (see page 237).
<b>AI in the background</b>	Without your notice it analyzes the files and — on demand — provides you with recommendations of files that are similar in content. It can help you to quickly classify your material.

<b>quickly saving small bits of information</b>	You can quickly add text or RTF files in a group (e.g., with project information) by pressing a toolbar button. It's similar to a wiki, you can quickly create files in groups and jot down information. Very useful.
<b>smart programming</b>	Some programs max out the processor and send the system into a nervous breakdown. DEVONthink lets the CPU stay cool even when you import huge amounts of files.
<b>allows you to add and open files it does not understand natively</b>	It displays what it can and shows the icon of all other files. This allows you to add, for example, Circus Ponies Notebook files (see page 234) and open them on a (double) click. Very useful if you need outlines in DEVONthink.
<b>easy creation of templates</b>	You can open the templates folder (Data - New From Template - Open Templates Folder) and add files to it. After you update the template folder (Data - New From Template) you can easily insert (copy) this file where you need it. For example, you can create a Circus Ponies Notebook file, put it in the template folder, and have an outlining option in DEVONthink.
<b>Browser Plugin</b>	It allows you to install powerful plugins to Firefox and Safari, allowing you to send highlighted sentences or whole webpages (e.g., automatically converted to PDF) to DEVONthink <sup>1</sup> . Very useful for saving what you find online (link is saved in the file information).
<b>Sorter</b>	A helper tool that sits unobtrusively on the side of your screen. You can use it to quickly import a file into groups in DEVONthink.
<b>Dashboard Widget</b>	Allows you to make notes with OS Xs dashboard.
<b>Mobile Version</b>	There is also a mobile version, although its functions are limited and syncing needs work.

<sup>1</sup> If there are additional images on the webpage you want to save to, e.g., a news report, open the PDF with Acrobat and add the images to that PDF.

## SOME TIPS FOR USING DEVONTHINK

The following tips might be useful to get more out of DEVONthink:

use multiple databases	DEVONthink can deal with about 200k documents and 300M words. That is a lot. Yet, it runs faster and the AI works better if you use multiple databases, e.g., for ideas, images, private projects, private sources, files to sort, work sources (= academic literature), videos, webcaptures (websites saved), and work projects.
review the settings	<p>For example:</p> <ul style="list-style-type: none"> <li>• <b>General:</b> Alternating row colors in views, Display number of items inside groups, Highlight Internet links in views, Mark duplicates and replicants in color (duplicates are blue, replicants are red — very useful!), and colorize icons with label.</li> <li>• <b>Import:</b> Filename without extension</li> <li>• <b>Backup:</b> daily (the backup includes only the database information, not the files itself!)</li> <li>• <b>Update:</b> startup</li> </ul>
sort your material in DEVONthink	<p>Simply drag (copy!) your previous folder structure in DEVONthink and let DEVONthink help you sort it.</p> <p>Deal with <b>duplicates</b> first (identical files, although DEVONthink can be mistaken if the files are very large and start the same (e.g., videos with the same intro). They are shown in the smart group duplicates.</p> <p>To make sure you only remove the newly imported duplicate (and not the one that is in a specific place in your database) you can create a new smart group that <i>looks only in the Inbox for files that have duplicates anywhere in the database</i> (think of it as a status info attached to the file). Very convenient to prevent you from importing the same file twice.</p>  <p>Next you can use a smart group with, e.g., all images and sort them by name or size to weed out files you do not need anymore.</p>

### careful with dragging files from other applications (esp. Aperture)

If you import, e.g., from Aperture, export the photos first in the quality you like. Just dragging them into DEVONthink from Aperture gives you a downscaled (and often useless) version of the photos.

### find a structure that works for you

For example, with images it pays to have a folder structure based on the source (e.g., own photos, deviantART, dilbert, etc.) and then use tags and smart folders (based on tags). It allows you to have the same picture appear in multiple smart folders, no matter where the original image is.

### use the right view for sorting images

Use a smart group to display the untagged images (you can search for "Instance - is not - Tagged"). Open the group with the images in "Icon View" to easily see the images. Use **cmd** to select multiple images in different locations or **shift** to select a group of images that are next to each other. Use the "Info Panel" to assign tags.

### tagging multiple files that already have differing tags

If you select multiple files that already have different tags, you get a "multiple selection" info in the tag field. You can use a script<sup>1</sup> to assign a tag anyway, or drag them on the tag name.

## CAVEATS OF USING DEVONTHINK

There are some things you should keep in mind if you decide to use DEVONthink:

- You chain yourself to Apple and DEVONthink. However, you can easily export your data so you mainly lose its comfort and the work you invested outside of the used files.
- Backing up means backing up the whole database (even with an incremental backup solution like TimeMachine), so if you have a DEVONthink database of several GB it takes a while.
- You need to have a structure in mind how to sort your information, how to deal with them. In general it is not very user friendly in showing its strengths.

<sup>1</sup> John Sidiropoulos from "A Digital Workflow for Academic Research" has written one. It is available at <http://www.organognosi.com/add-tags-to-many-devonthink-items-at-the-same-time/>



## VISUAL NOTES MANAGEMENT SYSTEMS

Some notes management system (like Tinderbox or Curio) use a visual metaphor (and "idea space") and allow you to play around with the elements in a free format.

Like with PowerPoint, you can insert images, text boxes, tables, etc. and move them around, visually arranging the elements in a way that makes sense to you. In contrast to PowerPoint, these programs offer you more functionality to work with the elements, configure their design, import and export data, record audio and video, or use project management features like start- and deadlines, etc.

They can be very powerful if you want to work visually. However, they also have their limitations — mainly the size of your screen. Not a problem with an 30" screen, but problematic if you use a 13" notebook. You can also get lost easily, do not find space to write, have problems comparing objects that are physically separated, and might have to move objects a lot. There is no inherent hierarchical structure (needed for writing). Printing is also difficult if you have created a large document (scale to fit the paper size becomes impractical if you cannot read the text).

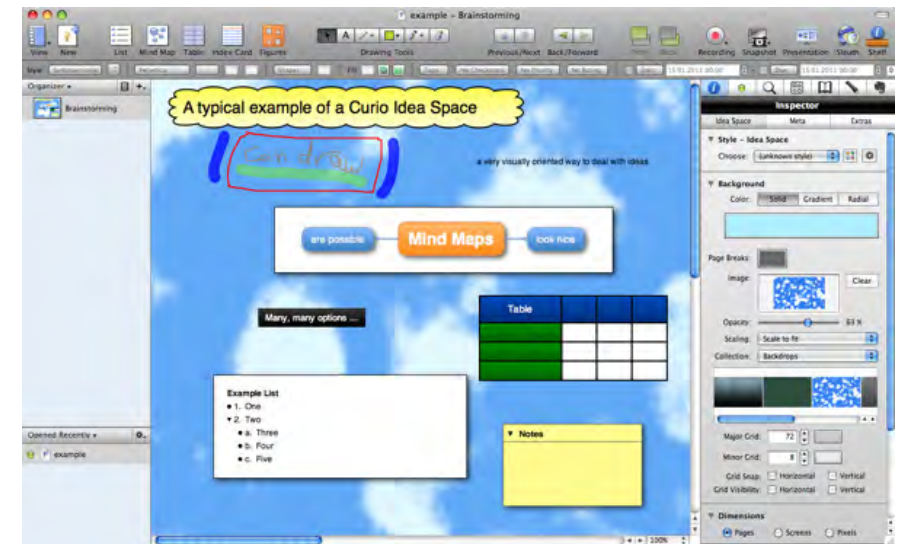
### USAGE

- Due to the size limitations (screen as window, available virtual area is also limited) they are usually better for working on one problem/project only.
- Think about the structure. There is no inherent order in this virtual space — you have to create it yourself.
- Use shortcuts to aid in navigation: See the whole page, jump to a specific zoom level, etc.
- Be careful not to be sucked in by the formatting/design. While you should enjoy working with it, it might distract from the actual content.
- It allows you to "work with" ideas visually where ever you are with your computer. However, if you do not need to have it with you, Whiteboards or Magic-Charts might be more convenient to use.
- Try out the extra functionality these programs have compared to PowerPoint or InDesign. They were created to work visually with notes.

### STRUCTURING

- **Alphabetical order:** Manually only, automatic in some inserted elements (e.g., outlines).
- **Thematic order:** Manually only.
- **Chronological order:** Manually only.
- **Order by index number:** Manually only.
- **Order by multiple principles:** Difficult, but you can use the x and y axis or use tags if they are supported.

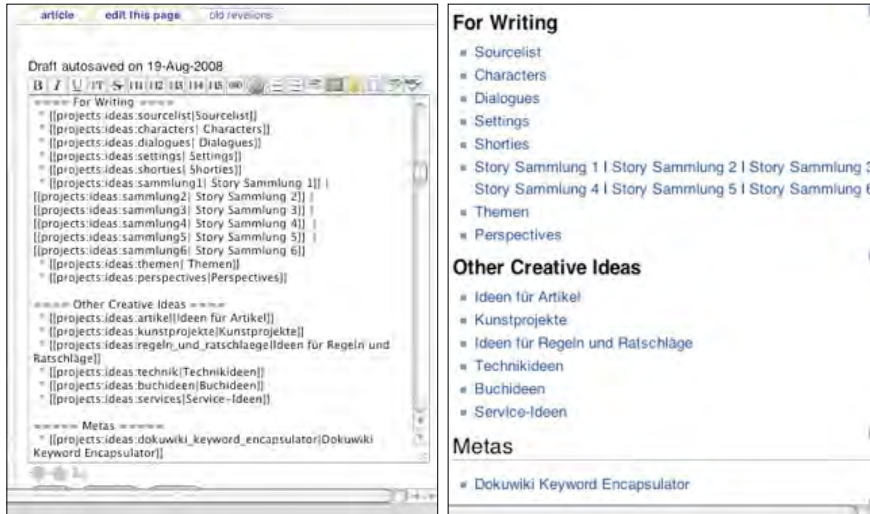
## VISUAL NOTES MANAGEMENT SYSTEMS



### KEEPING REFERENCE MATERIAL

- **Within the collection:** Some allow you to import elements, including media files.
- **As different collection:** Links may be possible.

A wiki is essentially a website that can be edited quickly via the web browser. It uses a simple syntax to quickly format the text and additional media elements (like images, videos), way easier than html. Per default, a wiki page displays the page, but if you click on edit (edit mode) you can quickly change the text.



In edit mode, the syntax is typed into the text window of the wiki.

Once saved the page is displayed by the Wiki Engine as an HTML file (website).


While it is normally used for collaboration (e.g., Wikipedia), it can also be used by a single user, e.g., for a private idea collection (prevent unauthorized access!).

## REQUIREMENTS & TYPES

<b>additional software</b>	Most Wiki engines (the program that displays the pages and allows the editing of the content) require at least a web server (e.g., Apache) and a programming language (e.g., PHP) installed. See the installation guides of the WikiEngines (recommendations on page 375).
<b>local vs. web-installation</b>	Wikis can be installed locally on the computer or on a webserver. Installed locally you have it available offline, but only on that device (which can also be a USB stick with XAMPP or Server2Go, although the speed is terrible), installed online see the concerns on page 219.
<b>text-file vs. SQL database</b>	Some WikiEngines store the text in a SQL database, others use text files. While an SQL database might be faster, especially with very large datasets, text file based Wikis have some advantages (see page 246).

## ADVANTAGES OF WIKIS

<b>free structure</b>	Wikis can have any structure you want them to have — so you need strong discipline to keep the structure. You can omit a hierarchy and put all entries on the same level with many links between them, or you can make categories — or both. You can also create different indices to find the entries that belong to one topic.
<b>version control</b>	Most wikis store a compressed version of a file whenever it gets changed. They do this automatically and without disturbing the user. This gives you the possibility to undo changes and have a look how an idea progressed over time.
<b>tagging</b>	Most wikis allow the usage of tags. Make sure you use this conscientiously. Use a list of keywords and stick to it.
<b>text gets enhanced but remains intact</b>	Wikis offer an easy way of formatting text, e.g., if you want to write a text in <b>bold</b> letters, you use <b>**text**</b> , if you want to underline the <u>text</u> , you use <u>__text__</u> (in DokuWiki). This formatting leaves the text itself intact, thus it is still readable as a text file. You can use the text for other purposes even if the wiki engine does not work anymore.
<b>multimedia files remain unchanged</b>	Wikis that are browser based (you use and edit them with your Browser like Firefox, Safari, Opera, etc.) can display multimedia files. The advantage wikis have over other solutions, e.g., using Word-documents, is that they leave the multimedia file intact. Uploading an image in a wiki will not change the file in any way (in most cases, depending on the settings). This gives you a great way to store images, documents, etc., because whenever you access it, you download a copy from the wiki while the original remains unchanged.
<b>multiple plugins</b>	Good wiki engines have a large community of programmers, who develop tools and plugins for this wiki engine. These can facilitate your work by providing you with plugins, e.g., that display all images in one directory on a given page, allow you to tag pages, display tag clouds or word clouds (the most often used tags are displayed while the font size corresponds to the frequency of usage), or advanced search capabilities.

<b>skins</b>	While the wiki engine works in the background, most allow wide customization of the front end. This means that you can give your wiki nearly any look you want to, from plain index cards to a sophisticated notebook layout. If you like Wikipedia's look and feel, some wiki engines offer this skin (called monobook).
<b>HTML and PHP can be used</b>	Most web-server based wikis (can) allow the use of HTML and PHP. This allows you to provide additional functionality to a wiki page. For example, you can display complex schematics as an image and use image maps to link individual aspects to wiki pages. With PHP you can access databases or use DATE/TIME functionality, e.g., to automatically create pages with file names corresponding to the current day (great for logbooks/diaries) or to update links (e.g., to a picture of the day).
<b>Advantages of text-file-based Wikis</b>	
<b>future proof</b>	Even if the wiki engine is not supported anymore, the data in the text file can still be accessed and the information is still available for future use.
<b>easier administration</b>	You do not need to deal with a SQL database (they can be difficult).
<b>files can be edited outside of the wiki environment</b>	<p>You can use Quicksilver or Spotlight, or put the respective file in the task bar/dock, to quickly edit the files of the Wiki (bottom right in the image, see also page 314).</p>  <p>The changes will not be in the version control of the Wiki and you have to re-index the search manager, but this allows you to quickly add information without using the browser. For example, keeping the collection inbox file in the Wiki and opening it this way will allow you to quickly add information and have the file in your backup cycle.</p>
<b>easy backup</b>	If the wiki stores the text files in one directory and the media files in another (like DokuWiki does), it is easy to make a backup of only your written text. You can simply compress your text file directory (e.g., pages in DokuWiki), which will be very small and easy to backup. Ideas written as text are often more valuable and have to be secured more often than media files.

## ENHANCING A WIKI WITH FRAMES

Working with a wiki is tedious if you do not enhance it. Creating pages, entering the same default information or the link to a specific page is laborious. However, you can use Frames, JavaScript and PHP to quickly do many tasks.

Frames are HTML-files that allow you to open two or more other HTML files at the same time. You can open your Wiki in one of the frames, and an HTML-file with control elements in the other frame. This control-file can be used to facilitate data entry and to manage the Wiki.

For example, you can:

<b>easily create/edit/view pages</b>	<p>Using a form to enter the page name (and if supported radio buttons to determine the directory) you can quickly and comfortably create new pages or edit existing ones. No need for tedious edit-page-create-link-save-page-click-link actions anymore!</p> <p>For example, in DokuWiki you can open a non-existing page in edit mode via the "&amp;do=edit" command in the URL, as in: "DOKUWIKIPATH/doku.php?id=PAGENAME&amp;do=edit&amp;rev="). The pagename can easily come from a form text field or be generate via the date-function.</p>
<b>automatically generate page-names</b>	You can also use the control-frame to use automatically generated information (e.g., date, time) for the page names. Great for keeping a logbook.
<b>edit the content of the text window of the wiki page</b>	<p>In edit mode, you can use the control frame, e.g., to:</p> <ul style="list-style-type: none"> <li>• assign tags (and use the control.html for a tag-list!),</li> <li>• enter control elements (like "show no directory"),</li> <li>• enter date/time headers (great for a logbook), or</li> <li>• reformat the text (e.g., search &amp; replace).</li> </ul> <p>You do this by searching and replacing the text that is already in the text window (e.g., for tags, search and replace {{tag&gt;...}}).</p>
<b>use templates</b>	As you can edit the content of the text window, you can use the control frame to enter templates (incl. backlinks). Huge improvement in time!
<b>display other HTML files</b>	If you need more space, you can simply use a link to another HTML file in the control frame. The file gets opened in that frame, allowing you to create multiple specialized interfaces for the same Wiki.



## WIKIS

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create useful  
wiki syntax  
code

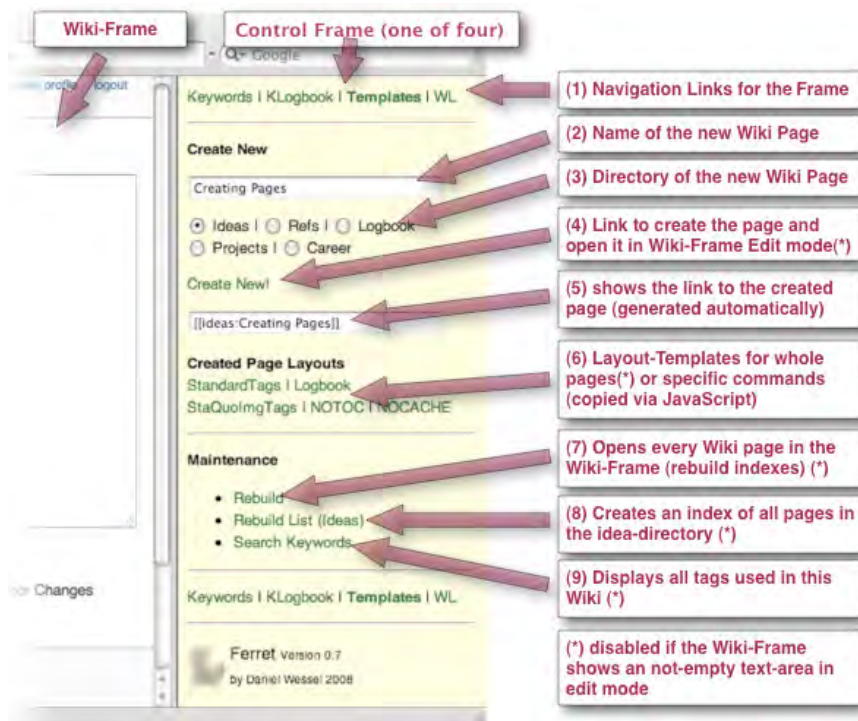
You can access the Wiki to generate code in a text field, allowing you to insert the text on another Wiki page, e.g. generate backlinks to the page you have just created.

You can create the text in a specific format, e.g., `<sup>[[pagename]]</sup>` with gives you <sup>pagename</sup> if inserted — great for literature references.

do maintenance  
work

PHP is very powerful to do maintenance work, e.g., you can:

- recreate the search/tag index by opening every page for a second,
- display all tags/keywords used,
- create a complete table of contents (also limited to a letter of the alphabet or to specific folders, by searching for all files in the directory and creating a new file in the Wiki with links to all these files in the Wiki Syntax), or
- change text (incl. tags) Wiki-wide.



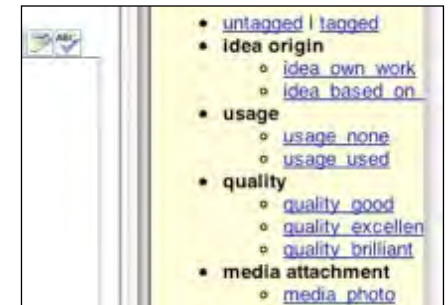
Example of the control frame of a DokuWiki. The actual Wiki is displayed on the left (only partly shown), whereas the HTML file on the right offers a lot of powerful functionality to comfortably use the Wiki.

## WIKIS

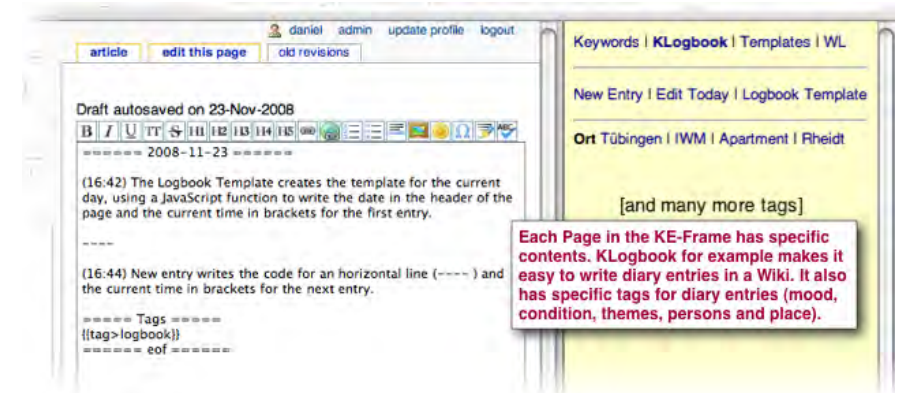
249



Getting the link to the currently displayed page (in an uppercase format) and assigning page templates.



Assigning tags. You can use the control frame to create a taglist in any format you like (incl. using images).



An example of using Frames: Keeping a Logbook/Diary. It has its own HTML page in the control frame (right side) with dedicated commands and tags.

## CAVEAT OF ENHANCING A WIKI WITH FRAMES

Using a Wiki this way is not trivial and requires some knowledge of HTML.

You need to address the wiki frame correctly from the control.html (e.g., top, `wikiframe.document.forms[0].wikitext.value` to address the text field in edit mode in a DokuWiki with the monobook template).


Note that all three components (frame.html, wiki and control.html) must be on the same server. You should include some security checks, e.g., only allow automatic page creation if the Wiki is not currently in edit mode (otherwise you lose what you have not saved) and prevent the accidental replacement of text when you assign templates (e.g., allow only if textfield is empty).

You can find more information at <http://www.organizingcreativity.com/2009/09/ferret-frame-and-javascript-enhanced-wiki/>



## OTHER WAYS TO ENHANCE A WIKI

There are a lot of other things you can do with a Wiki. Keep in mind that you essentially have a website — with all benefits, for example:

<b>change the Wiki itself</b>	Good WikiEngines allow you to change the code. You can change the toolbar in edit mode, create your own icons, etc. Look around what the community can offer.
<b>Image (Maps) Links</b>	You can use images and parts of images as links. This is very useful for navigation. For example, displaying an image of a process model and linking the boxes to different pages, or creating nice interface elements and using them to access your Wiki pages. You can build beautiful start pages this way.
<b>default navigation elements</b>	For example, you can use a back-arrow at the start of each page if you have a hierarchical structure. E.g., <code>[[start {{back.gif }}]]===== Literature =====</code> gives you 
<b>css</b>	The HTML-output of an Wiki can be easily adapted via css files, allowing you to change font size/style, highlight headers in different colors, etc. E.g., <code>h1 { font-size: 130%; background-color: LightGreen; }</code> gives your 1st level header a green highlight.
<b>JavaScript</b>	JavaScript is very powerful. Among others it can be used for date-dependent links or to fold-in HTML-text, e.g., preventing embedded videos from being loaded automatically.
<b>PHP</b>	PHP can also be used to access additional data or simply to display date-dependent information, e.g., an image or a reminder-text on weekends with: <code>&lt;php&gt; \$today = getdate(); if ((\$today[weekday] == "Saturday") or (\$today[weekday] == "Sunday")) { echo 'TEXT'; }; &lt;/php&gt;</code>

## USAGE

- Enhance the Wiki with Frames, JavaScript, and PHP. Otherwise you go crazy writing the wiki syntax, especially to create new pages.
- Consider a local installation (see page 244).
- Use a .txt-based wiki (e.g., DokuWiki) due to speed of access/future-proof.
- Adapt the wiki to your liking (e.g., skin) and decide on a clear structure — otherwise it gets very confusing very fast.
- Decide for a consistent layout. Personally I prefer bullet point list for hub-pages (overviews leading to a lot of different pages).



- Wikis are very useful to keep an archive (see page 195). You download files per default, making accidental changes/deletions unlikely.

## STRUCTURING

- **Alphabetical order:** Creating separate pages that contain all entries with a, b, c, etc. In .txt-file based wikis this can be automated with PHP (search for all entries, sort alphabetically, write them in different files). Some wiki engines can display the entries in this fashion. Manually, but automatically possible if implemented by engine or written via PHP.
- **Thematic order:** Using overview pages that contain all entries to a given topic. Tagging of pages with topic tags and searching for these tags can also be used. Manually with overview pages, automatically with tags.
- **Chronological order:** Pages can be named manually according to date and time. Tags can be used (e.g., year, month, day, hour, minutes tags).
- **Order by index number:** Manually assign consecutive numbers for each entry as page name.
- **Order by multiple principles:** Different systems can easily be used.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Should allow all media files. Even if stored in another directory, they can be linked from each page. Wikis were made to do this.
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection either direct links are possible or a written link must be made.

## WORD PROCESSORS

Word processors are ubiquitously available, offer advanced formatting options and can handle media (mostly: images), but they are neither good for capturing nor for collecting ideas: Regarding capturing, they are simply too slow and they offer features (formatting) that distract from the content. For collecting, they become unwieldy if they get large, the formatting distracts, and the file format is often proprietary, locking you into this program.

Whilesomenotesmanagementsystems(see page 236, esp. page 237f) allow you to use RTF files and they have their uses for some ideas, using a Word Processor document for capturing or collecting is not recommended. In fact, they are not even recommended for writing — better solution exist (see Scrivener on page 340).

However, if you really want to use it, make sure you understand how the word processor works. Whereas everybody "understands" Microsoft Word (in the sense that they can write a text with it), make sure you understand Word's logic. Otherwise it will drive you mad<sup>1</sup>.

## STRUCTURING

- **Alphabetical order:** Using headers, most word processors offer an "outline view" showing you the headers. Some editors allow a sorting of lines, but as an idea is rarely only one line, this would tear entries apart and destroy your collection.
- **Thematic order:** Possible with headers or different files for different topics. Manually only. Using tags (in the manual #tag format, see page 317) might allow you to search for topics in the text file.
- **Chronological order:** You would have to start each line by a date and time code or simply write the information always below (or always above) the already existing information. Manually only.
- **Order by index number:** Manually assign consecutive numbers for each entry.
- **Order by multiple principles:** Difficult, but might be possible if you use tags.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Easy for text references, but difficult for anything else (images might work, although file size becomes a problem quickly).
- **As different collection:** Depending on the capabilities of the program used for the idea collection and the reference collection, either direct links are possible, or a written link must be made.

<sup>1</sup> See Arno's Tech Tools page for more information: <http://morepork.home.xs4all.nl/software.html>

## SPREADSHEETS

Spreadsheets (e.g., Microsoft Excel, Apple Numbers, etc.) seem like the poor man's version of a database, allowing you to edit a table directly. Not suited for capturing (what would be the advantage compared to a text file?). You can use them to collect ideas, however, they are usually unsuited for most cases. The amount of text a spreadsheet cell can handle is often limited (some simply cut off the text if it is larger than a certain number of characters per field), it is difficult to integrate media, and the file format is proprietary.

However, there is one usage where a spreadsheet is actually very useful: **for dealing with something that requires a strict order according to a clearly defined variable (e.g., date)**. For example, if you are writing an **autobiography** you can use a column for time, one for source information, and one for the information/quote itself (and possibly how important the information is, which area like work, private life, etc. it refers to). Sorted according to date this can provide you with all the information you need to write a biography about a long and complex life.

Thus, spreadsheets can be very useful for realizing a specialized project for which you need information according to one clear dimension.

## STRUCTURING

- **Alphabetical order:** Easy as the rows can be ordered alphabetically. If one idea is represented by one row, the ideas stay together (providing you use the right command for ordering!).
- **Thematic order:** Easy if you use one column for the topic (useful in biographies, etc.)
- **Chronological order:** Difficult for the time you entered the information (unless you use an extra column for this, easy if you provide the information yourself).
- **Order by index number:** Can easily be done by using one column for the id and drag down the cells, so that the program automatically enters consecutive numbers.
- **Order by multiple principles:** Possible by using multiple columns. As the sort function can have multiple principles according which to sort (e.g., date first, then topic) it makes structuring information easy.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Difficult for anything but text.
- **As different collection:** Links are often possible. Otherwise write the file name and use a separate directory.

A database offers quick access to entries. In a sense it provides all the advantages of spreadsheets (most databases use tables internally) with a lot of additional options. You can define forms to enter data and make some fields required for data entry.

However, they are unsuited for capturing, as you need to get the idea down as quickly as possible, and it usually takes too long to enter a complete entry.

Make sure that the database is not too restricted to take ideas in different domains, e.g., how can you include ideas regarding characters for a book with ideas for pictures and ideas for artworks and scientific studies? Thus you probably have to use pretty general fields (e.g., idea, context, used: yes/no). Make sure that the database really still has its advantages when you use it for collecting ideas. You might have to invest some time in finding out which fields work for you and how you would like to see the search results. In many cases, using a Notes Management System (see page 236) or a Wiki (see page 244) might be easier.

Also take care that the database does not lock you into a specific operating system. Access runs only on Windows, while File Maker runs only on Mac, limiting your future options. Take care that you find out how you can quickly export the data, e.g., as .csv-file.

In short, it is often better to use a different, more flexible system and use templates to get the advantage of the clear structure of databases combined with the flexibility to accommodate different idea domains.

## STRUCTURING

- **Alphabetical order:** Easy as the database can sort the entries alphabetically.
- **Thematic order:** Easy by giving each entry a field for the topic.
- **Chronological order:** Possible if you have one field that displays the data entered or the date according to the story/biography.
- **Order by index number:** A database usually has this per default.
- **Order by multiple principles:** Easily possible, as an entry can have a lot of fields and searches can take them into account.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Possible if you create the necessary fields to hold the data.
- **As different collection:** Links are often possible.

Google offers web-based Word-Processors, Spreadsheets, even a Drawing Tool. The main advantage is that these tools are web-based, accessible from anywhere and for multiple people at once. So, they are great tools for collaborative work. You can work on a shared document in real-time, even see where the other person's cursor is at any given moment.

However, take care that you keep in mind the remarks about „Web-Based Tools and Cloud Services“ on page 219 and make backups of your files regularly by downloading them.

Another issue is that Google is — in my opinion — essentially an advertisement company. It earns money by selling ads — and it needs detailed information about the user to present the best ads (I think "the best" for the buyer of the ads, not "the best" for you). If you pour your ideas into a GoogleDocs document, **you are essentially giving Google access to your thoughts**, allowing them to tailor the advertisements *perfectly* to you. Decide for yourself whether you want to go in that direction.

Regarding the structuring principles and keeping reference material see the entries for:

- „Word Processors“ on page 252,
- „Spreadsheets“ on page 253, and
- „Visual Notes Management Systems“ on page 242 (albeit not as powerful)

Some people like to use their eMail program for capturing and collecting ideas. While some eMail clients offer interesting features, like smart searchers and tagging, the dependency on net access and the difficulty to restructure the collection makes it hard to use the collection for longer periods of time. Also note that unless you work with local copies you do not have the control over the data — and it can actually happen that a mail provider loses data<sup>1</sup>.

Be also careful not to use your eMail program as a todo list. If you keep the eMails where you have to do something, it will get mixed quickly with new incoming mail and it is hard to set priorities. Move the tasks quickly to a dedicated todo list (or use a task management tool, see page 356) and keep the mail inbox as empty as possible<sup>2</sup>.

## STRUCTURING

- **Alphabetical order:** Possible if you use the subject line for the name of the idea.
- **Thematic order:** Possible if the tool supports tags or you use only one topic per idea (often not feasible) and begin the subject header with the topic, e.g., "[TOPIC] NAMEOFIDEA".
- **Chronological order:** Possible with the send/receive date.
- **Order by index number:** Usually not possible, unless you need the subject line for it (and then you would have to remember the current number of ideas you have).
- **Order by multiple principles:** Possible if you use tags, otherwise difficult.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** Possible with attachments, although size becomes a problem quickly.
- **As different collection:** Manual references to other sources or web-links are possible.

<sup>1</sup> For example, the mail server of an institute in Austria literally burned down (must have been the firewall — tsk, tsk, tsk, every child knows never to let fire unattended. ☹)

<sup>2</sup> I highly recommend Merlin Mann's talk on "Inbox Zero" regarding dealing with mails: <http://www.43folders.com/2007/07/25/merlins-inbox-zero-talk>

It seems contra-intuitive to use a publication software like a blog for a private idea collection, but blog entries can be marked as private and thus be protected by access control. While they have nice features like media integration and availability over the internet, I would not recommend them.

As with web-based tools (see page 219), you need a working net connectivity to edit and access your ideas, and even with access control they are not secure. The worst problem is that unless you use your own server, which is physically accessible to you (overkill for most people), someone else controls the access to your data.

## STRUCTURING

- **Alphabetical order:** Possible if you use a plugin like postlists (Wordpress) that shows you your entries according to predefined searches.
- **Thematic order:** Possible with categories and tags.
- **Chronological order:** Every entry has a date, so this is easy.
- **Order by index number:** Manually only, although there likely will be an internal number for each entry.
- **Order by multiple principles:** Possible, given that categories and tags are allowed.

## KEEPING REFERENCE MATERIAL

- **Within the collection:** You can add files to the webserver and integrate them in the blog postings.
- **As different collection:** Possible with manual references and weblinks.



## USING YOUR MIND

While using the mind to capture and collect ideas runs contrary to this whole book, there are moments when you have only your mind. And your mind can be trained and prepared for these moments.

<b>anchors</b>	In your imagination, put the thing you want to remember in a place where you will be in the future. For example, you want to order flowers online when you are in the office, imagine flowers growing out of your keyboard. When you sit in front of it the next time, the image should be activated and remind you of ordering flowers.
<b>memory story</b>	Humans are very good in remembering stories, so you can weave the things you want to remember in a story, where the items appear in remarkable roles.

Remembering all your ideas has the advantage that you have them available without needing your tools — if you can access them. And there are the disadvantages: you probably cannot access the ideas on demand, it is hard to see the connections between different ideas (compared to spreading the ideas out in front of you), and it is difficult to remember details.

If you want to trust your mind with important ideas, do so, but use a physical or digital collection as a backup and as a way to evaluate the power of your memory. Only when you compare your memories to your physical or digital idea collection you can see how well you can remember your ideas, and you will probably end up using a physical/digital one.

There may be people who can do it, and there probably are a lot who *think they can do it* (without external reference, how would they know if they have ever forgotten an idea?) — so this is not recommended.

# General Tips

About the Tips

Working with Yourself

Working with Others

Working with Computers

Working on Specific Tasks

## ABOUT THE TIPS

It is astonishing how much time and effort can be saved by often tiny changes — or by stopping for a moment, rethinking one's workflow and making investments in the infrastructure.

In this section I describe a few tips I found useful, for working with myself, with others, with computers, and on specific tasks. They are in a separate section because they are not directly related to organizing creativity (nor are they tools that are discussed for this purpose). However, they are often also relevant, for your work and your success. Many tasks can be made easier with a few tips, and examples often help as a basis for comparison when it comes to rethinking one's own processes.

This said, the topics dealt with are:

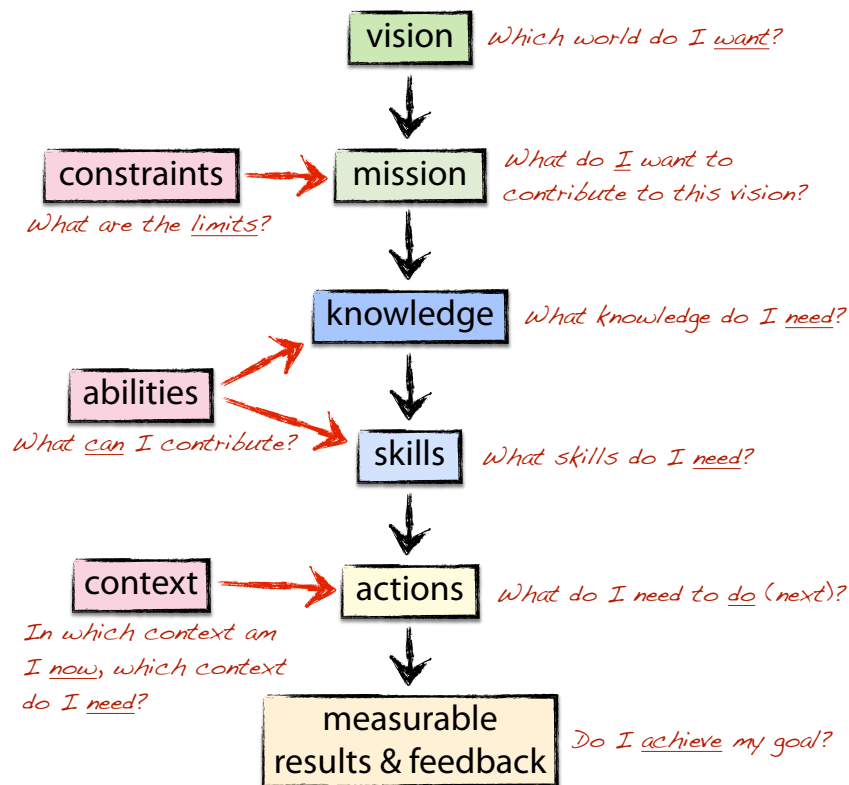
- **Working with Yourself**  
Finding Something to Live For, Listen to your Own Heart, Remembering Aids For Projects, Depression, Drugs, and Creativity, Making a Practical Impact in Science, Modify Your Work Behavior Continuously, Avoid Creative Glitter, Becoming a Professional, Dealing with Creative Burn-Out, Ascesis, Digital Lifeboat, Showroom/Motivators, Bags, Be Skeptical, and Be Good with Numbers
- **Working with Others**  
Small Talk, Remembering People, Public Speaking, Leadership & Advisory, Dealing with Administration, Group Work, Project Management in Teams, Workgroup Meetings, Creative Sessions, (Group) Creativity Room, Interdisciplinary Communication, Creative Children, Getting the Best Teacher, Hostile Environments: School, and Hostile Environments: Scientific Community
- **Working with Computers**  
Control your Computer, Combining Digital and Paper-based Tools, Backups, Theft Protection, Getting Lost Hardware Back, Preventing Unauthorized Access, (Text) File Shortcuts, Keyboard Shortcuts and Layouts, Formatting and Editing Text, Tagging, Tagging, Digitizing Information, Mice, and Additional Displays
- **Working on Specific Tasks**  
Academic Work, Doing a Ph.D. Thesis, Writing a Book, Writing with Content Outlines, Scrivener Writing Software, Content vs. Structure Outlines, Digitizing Books by Gutting Them, Reference Management Software, Reading Research Literature, Reading Digitally, Keeping Topic Notes, Project Notebook, Sketching, Time/Effort Calculation, Creative Help Sheets, Remembering What you Want to Change, Using a Task Management Tool, and Life-Newspaper

## FINDING SOMETHING TO LIVE FOR

It is your decision what you create — you invest your life in it. But given that this is **a lot**, it should make an impact, i.e., influence the lives of others in a positive way and "improve" the world.

How do you find out what is worth "the life you pay for it"?

One way is to think about the world you want to live in (**vision**) — and what your contribution to this world can be (**mission**). Keep in mind that few lives can change the world — usually this happens vice versa. And there are **constraints** regarding what you can do, e.g., the time have left, or what is technically possible. But above all, make sure you choose something **meaningful** for you.



Your mission will pose requirements in **knowledge** and **skills**, and your **abilities** will set limits to your contribution as well.

Once you start **acting**, the **context** you are in will also pose limits and provide opportunities — and perhaps you have to change your context.

As this is a long meta-project, make sure that you have **measurable indicators** that tell you how well you achieve your goal.

## FINDING SOMETHING TO LIVE FOR

This process takes some time and it is not as linear as the diagram suggests. Personally, I have used a table with all relevant aspects and filled in the cells more or less in random order, looking for something for which the cells would fill themselves "automatically".

vision	mission	knowledge	skills	actions	outcome	limits
...	...	...	...	...	...	...
...	...	...	...	...	...	...
...	...	...	...	...	...	...

outcome = measurable results & feedback  
limits = constraints, abilities, context

In many cases this process is unnecessary, you might neither need nor want to ask that question. But if you want to really align your skills and strengths and work to achieve a vision, take the time to decide what this vision will be.

See whether you can align your interests to work for one vision. If this is impossible or not something you like, have a look at page 55 to make sure that your (unaligned) interests to not impede your work. Also look at page 56 to make sure that even within one area of interest, the projects you want to realize do not interfere with each other. If you are interested in science, see also page 271 regarding making an impact in science and page 302f to deal with resistance.

Keep in mind that you might have to deal with the situation that your vision becomes unattainable (but see page 187), which might be devastating if you have "staked your salvation on it". Your vision might even change when you attain more knowledge and skills, seeing it in a different light.

But even if it is only for a while, merging one's interests and working in the service of one goal can be very inspirational — and productive.

## AN EXTRAORDINARY EXAMPLE OF FOCUS

One person I have met has focussed all her efforts on becoming very, very good in what she likes best. She has turned something that most people would only do as a hobby into her profession, merging her diverse private interests with her professional interest. This concentration, the focus on one subject, and the synergy of her private interests and professional life made her extraordinary in what she does.

Sometimes, she looks like she is playing a role, but on this level of proficiency it does not look like a mask anymore. You cannot "fake" high-level work. It looks like she has transformed herself. Did she made sacrifices? Probably. But she did also gain tremendously, and developed an insane knowledge and finely honed skills. In short, she reached a level of expertise most people could never hope to achieve.

This is not possible for everyone, nor should it be, but it shows what can be achieved if you really focus on one subject and **want to be really, really good in what you do**.



## LISTEN TO YOUR OWN HEA{RT|D}

Finding something to live for (see page 264) is very difficult if others<sup>1</sup> exert an influence on you in what you do. It does not matter whether they really want to do it, or whether you only imagine it. It happens in your head, this makes it real.

### DISAGREEING WITH AGREEMENT

Others can influence you to do something you do not want to do by disagreeing (real or imagined) with your preference, but also by agreeing<sup>2</sup> with it:

You want to do x, not y,	
they say ...	you do ...
do y	y, because you do not want to disappoint them, defer to the advise, are dependent on them, do not want to appear silly, etc.
do x	y, because you want to be your own person (maintain your sense of autonomy), do not trust their judgment, etc.

The second case can happen easily when it comes to choices after school<sup>3</sup>, or in any situation when people want to differentiate themselves from the prior situation or the person (e.g., a disliked colleague).

So make sure that you decide what you want, independent of what others want. This means taking their arguments into account (after all, they might have a point), but ignoring their position *and* the social relationship with them completely. Own your emotions and motivation, do it because you want to do it. If others want or do not want you to do it too, that's none of your concerns.

### "RIDICULOUS" TOPICS

Sometimes you have found something that you want to live for, that makes you happy, but the choice itself invites unjustified<sup>4</sup> ridicule, because social norms are violated ("this is not something we<sup>1</sup> do"). For example, choosing a work in any field with a strong gender inequality like cheerleading or nursing for men, and boxing or physics for women. Totally unjustified, but also totally real.

The problem is when it does not stop, but continues for as long as you occupy yourself with the topic (e.g., the rest of your life). Again it does not matter whether the ridicule is real or imagined. It is very hard to deal with it (almost) every day — it wears you down. On the other hand, why should you defer your life to the opinions of others?

This said, the following things can be useful for dealing with such a topic:

burn for it	If you are unsure of yourself, others will have cracks to put the crowbars in. Burn for it — passion is very hard to stifle.
be very good at what you do	It is very hard to ignore people who perform on a very high level of skill.

## LISTEN TO YOUR OWN HEA{RT|D}

presentation	Beyond the quality of the work, make sure that the presentation is excellent. For example, just singing in the streets might get you strange looks, but using a professional microphone and sound equipment elevates you above the usual crowd.
keep your mouth shut	If you burn for something that others might not like, and you do not need them to know, don't tell them. Especially when you begin developing knowledge and skills this might be a good way to gain security in the topic.
find social support/ confederates	Often one or two people who burn for the same issue can be a tremendous help. Not only can they give you tips regarding the content, but there is also strength in numbers. It can lead to a minority movement that makes a lasting impact. For example, many people who love to sing join a choir first.
seek the right environment	It is very hard to fight an uphill battle each and every day. Some places are more permissive than others, and if your tastes run counter to your environment, you might want to change your environment. No use to talk to people who do not <i>want</i> to listen.

Thing is, you have to listen to your own head, your own desires — and have the courage to try to strive to achieve them. Otherwise you are just a sidekick, a screen for other people's projects, or a safety line for other people's insecurities. Do not be afraid to make a fool out of yourself for something that makes you genuinely happy.

Have the courage to risk achieving *your* dream.

<sup>1</sup> Commonly known as parents, spouses/husbands, children, siblings, aunts/uncles, grandparents, neighbors, friends, acquaintances, governments, or anyone else, including your former self.

<sup>2</sup> The human psyche can be a bitch — luckily. 😊

<sup>3</sup> To give a concrete example, saying you think of becoming a teacher when deciding what to study and hearing your parents say that they totally agree with your choice, you should become a teacher, because you are perfectly suited for the job, they can imagine no other job for you — can easily "force" you to (try to) become a doctor of medicine.

<sup>4</sup> Make sure it is really unjustified. I have never understood why so many people invest their lives in strange, non-falsifiable conspiracy theories, instead of going after the real (but often mundane) conspiracies, like a local politician, who supports a change in media finance to the benefit of local media outlets and is inexplicably more often/positively in the news, the friendly association of businessmen, who talk shop/price when they meet privately, or the policeman who cannot explain why the protester fell ... repeatedly. Of course, they require tedious work by requiring real proof.

## REMEMBERING AIDS FOR PROJECTS

If you want to generate ideas, you have to know where the unsolved problems lie. If they are in the back of your mind (not necessarily consciously aware), it is more likely that you will come up with ideas to solve them.

There are different ways to remind you of these unsolved issues — mostly they involve setting "landmines", e.g., placing something where you stumble upon it in the future and that triggers an immediate recollection of what you wanted to remember (not the nicest metaphor, but it works to convey the image).

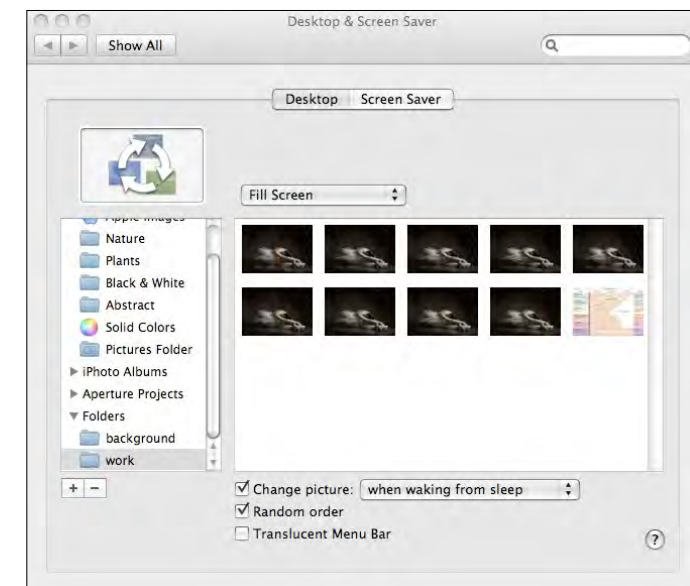
Note that things that do not change (e.g., a piece of paper on the corkboard) will vanish from consciousness quickly. We are prone to see changes in the environment, but when something offers no new information, we do not see it anymore.

<b>notes</b>	Place them where you will find them in the future, e.g., in a book you want to read, in your wallet, on a page in the middle of your notepad, etc.
<b>digital alarms/calendars</b>	Using iCal, Outlook or your cellphone — set to ring at a time where you will likely have some time afterwards, e.g., before you take a train ride or drive to work. Use long time frames (e.g., weeks, months) for larger projects. If you use a paper calendar, simply write it as a task on day in the future. If you use 43 folders, put it in a folder in the future.
<b>mock-ups/prototypes/images/photos</b>	Create a visual study of the thing you want to implement, e.g., make the cover of a book you want to write (see right). Placed where you can see it frequently, e.g., on your desk, in your car. Often a quote or a nice image is enough.
<b>(random) background image</b>	Most OS offer a random background image (e.g., every x minutes or days). Select a folder with different background images (or copies of the same image) and put one image reminding you of your project in the folder. It will appear every now and then (see right).
<b>postcard</b>	Simply write yourself a postcard, or send a letter to a friend with a postcard, and ask this person to send the postcard to you after a certain date.
<b>delayed eMail</b>	There are services that let you delay the sending of an eMail (e.g., <a href="http://www.futureme.org">http://www.futureme.org</a> or <a href="http://futuremail.bensinclair.com">http://futuremail.bensinclair.com</a> ).
<b>pinboard/magic chart/whiteboard/blackboard</b>	It helps to develop ideas by sketching them on a stationary writing surface. You see it every day (until you adapt to it), and it is easily available to develop the idea further.

## REMEMBERING AIDS FOR PROJECTS



Creating a mock-up-cover of the book you want to write and a screenshot of the work so far can be very motivating. On the other hand, an unchanging object on the wall fades into the background quickly.



Using a (random) background image as a reminder. The computer changes the background image every time it wakes from sleep (a couple of times per day the way I use it) and randomly selects one image. Nine are the same (you won't see any difference), but one is a plan of the things I have to do. Thus, I notice the change and am reminded of the things I have to do.

## DEPRESSION, DRUGS, AND CREATIVITY

Common associations of creative people are depression (or other psychological disorders) and/or drugs, often ending in suicide. But neither psychological disorders nor drugs are requirement for creativity.

### PSYCHOLOGICAL DISORDERS (E.G., DEPRESSION)

A **psychological disorder** is not something a person picks, yet people suffering from it might fear of losing their creative ability if they seek treatment. However, consider that psychological disorders in themselves are not helpful for creative work. You do not write a masterpiece when suffering from a depressive episode. It cripples you and you have the very real (and final) risk of suicide. Psychological disorders are sneaky, ugly, devious, and painful diseases that need to be treated by professionals. Whereas good help is hard to find (not every therapist or doctor is good), it is available if you search for it.

### DRUGS

Creative work is high-risk/high-pressure work — and the risk and pressures do not stop with success, they increase further. You never have it "made", you have to continue to be successful, to produce highly creative works. Dealing with this pressure and having access to legal (and often illegal) **drugs**, it is no wonder that drugs are often used for "mood management" or "self-medication" (including by people with psychological disorders). But they quickly destroy the ability to be creative by interfering with the time and determination necessary to continuously learn new knowledge, hone and improve the skills, and realize the creative projects. And of course, they destroy the health, to say nothing of the risk of dying of an overdose.

### BALLAST, NOT FUEL

To be creative, you have to *deliberately create something that is new and useful*, and on this journey **psychological disorders and drugs are ballast, not fuel**.

It is more likely that people with psychological disorders/drug users are creative **despite than because of it**. We just know of the few who manage to achieve this feat, because it often becomes publicly visible and is immediately picked up by the media. We remember them more easily and think they are more frequent than they are, or that it is even required to be creative, instead of thinking that they might had created more/better works without it.

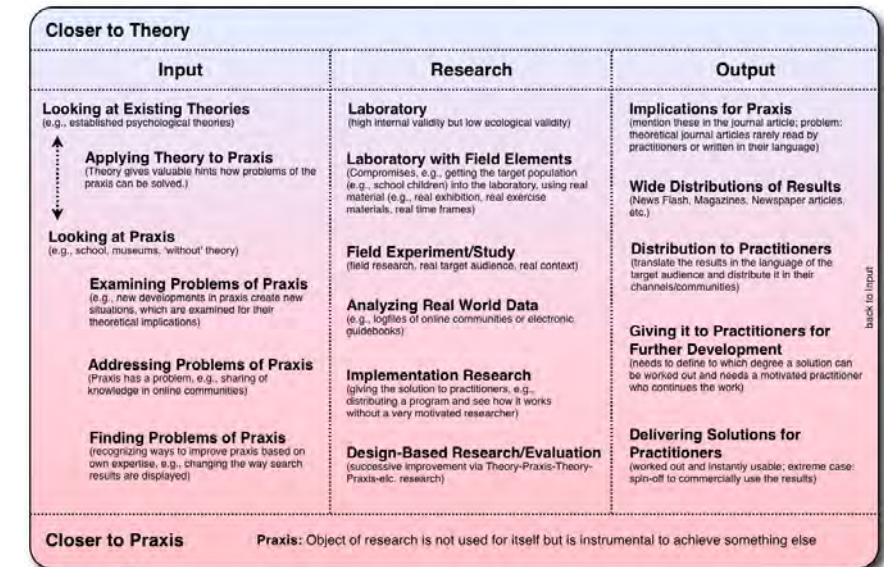
You do not need to be bent on self-destruction to achieve great creative works, and there are better ways to deal with past/psychological problems, and anxiety about the future, than with drugs, legal or illegal.

See „About Creativity Resources“ on page 362 for more information.

## MAKING A PRACTICAL IMPACT IN SCIENCE

How can you make an impact with your scientific work, i.e., influence the lives of others in a positive way and "improve" the world by answering questions that matter?

One way is to increase the relationship to praxis in your research:



There are many ways to create a link from theory to praxis.

The diagram is based on a discussion with other doctoral students and was displayed on my blog at <http://www.organizingcreativity.com/2010/05/your-impact/>.

This approach is not for every scientist, nor for every discipline. Some scientists are content (and very successful) by ruling over an island of theory, counting their grains of sand. They see the ocean of praxis as unforgiving, often tempestuous, full of unknown and possibly dangerous creatures, and with a deep and slick bottom. Occasionally they dip their big toe into the water, but the second something touches their foot, they retreat and bury their toe into the warm sand. If forced, they will do swimming motions on the shore and theorize about "the praxis", but they refuse to dive into the water.

Of course, if you try to swim, you might get lost, injured, or even drown. But you can also reach interesting shores and discover new lands — "strange, new places" not directly connected to the one you came from.

And you can actually make a real impact<sup>1</sup>.

<sup>1</sup> If you strive for impact, make sure that you actually reach your goals. Evaluate your work critically — it is the only way how future projects can become more successful. Keep in mind that good evaluation is hard and studies have to be conducted carefully.



## 272 MODIFY YOUR WORK BEHAVIOR CONTINUOUSLY

Taylorism has its limits, but that Taylor had a point: The things we do can be greatly improved if we reduce unnecessary actions.

If you monitor your behavior, or keep a log, you might find some things you can do differently, i.e., better, faster, with less effort, etc.

Especially when you are doing mundane things on the computer, continuously monitor your behavior to see where you can save work by modifying your routines. It's like Cinderella, only you would have trained the birds yourself to do the task for you.

For example ...

<b>automate it</b>	Use the Automator in Mac OS X or the Recorder on Windows to do the same tasks quickly.
<b>delegate it</b>	It must not always be another person. Scripts are on the computer what birds were for Cinderella – they can very quickly do tedious tasks for you.
<b>sequentialize</b>	<p>If the task consists of doing the same subtasks again and again find out whether you can sequentialize them.</p> <p>First do the complete task to ensure that it is working (otherwise you might invest a lot of time for nothing — and worse, only find it out when doing the last step). Then take the first subtask and do all of the instances. Then move to the next subtask for all instances. You save the repeated switches between both tasks and thus a lot of time. This works for tasks that are non-circular.</p> <p>For example, if you decorate a wagon with artificial flowers, first roll <i>all</i> flowers, <i>then</i> glue them to the wagon. There also are many task at the computer that can be done in the same way.</p> <p>The big drawback here is that you have nothing to show for until you start the last task.</p>
<b>parallelize</b>	Useful if tasks can run on their own (like running a computer program), or can be delegated. Stop for a moment and have a look at the tasks you can start that can run in the background. Take care that they do not interfere with the crucial tasks you have to do (e.g., a computer program that maxes out the processing power).

## 273 AVOID CREATIVE GLITTER

Some people try to force a creative *appearance* by using creative glitter: black clothes, beret, Moleskine and/or Apple products, toylike or oversized jewelry, wild hair, or being on speed/aloof/distanced/extremely childish, etc.

This behavior is perfectly understandable, because it is way faster and easier to copy superficials than to do the hard work of being creative.

However, it also is a counterproductive and self-defeating mistake, because it not only achieves nothing, but also makes it impossible to see whether the person really is creative or not<sup>1</sup>. The person changes from being an artist to being an admirer, a fan, a groupie. The cheap and easy admiration distracts from focusing on the work (which is hard) and finding an own voice and path (which is even harder).

In an interview with Time, when asked about passing the fedora to Shia in the next Indy movie, Ford said, "What are you talking about? It's mine. I would love to do another Indiana Jones movie. George Lucas is working on an idea now. Shia can get his own hat. I earned that hat."

Wikipedia (en)

## TIPS

- Do not choose **tools** for their prestige (see page 200f) — tools must work for you. Each brand has its adherents, make up your own mind.
- Do not adopt **symbols** of other creative people — they will not work for you. You did nothing for the status of the symbol, nor can you overshadow the prior owner (see the quote top right). You need to create your own symbols.
- Do not copy the **eccentricities** of other creative people. What has a function for them will be ballast (and awkward) for you.

In short, creative people are **leaders**, not followers, admirers, or groupies. They have a **vision** and a **mission** (see page 264f) and do (almost) anything in order to achieve it. They have no need for artificial glitter. In that sense, leave the Fedoras and berets alone and find things that you like, that are distinctly your own, and make them your own by using them. It might not be a famous symbol (yet) but at least it is something you actually own.

<sup>1</sup> It is similar to plagiarism, which makes it impossible to evaluate the quality of the work (because you cannot be sure what actually was the work of the person).



## BECOMING A PROFESSIONAL

The options described in this book are useful for everyone, amateur to professional. But if you are an amateur and want to become a professional (i.e., someone paid for the creative work **done**), the following aspects might be helpful to consider:

## TIPS

- **Set it up parallel to your day-job first:** If you try to make it by depending on your creativity, set your business up in your spare time first (or take a sabbatical/vacation). If you get a steady stream of revenue *and* you come to the point when working at your regular job actually loses you money *and* you are confident that you can keep it up in the future, *then* the time *might* be right to change jobs. This safety line does not hold you back, it ensures that you can return to your day-job and regroup *if* it does not work out.
- **Earn your living:** Note that many creative people did “mundane” jobs to secure their existence. They only became full-time artists after they became successful and the job was losing them money (e.g., Terry Pratchett). In the past, many of the best artists (e.g., da Vinci) did commission work to survive, and many of those works did become masterpieces.
- **Leave the pond:** Can you make it as a creative? There is the “Big Fish — Little Pond” effect. It is very difficult to get an honest estimation of your performance when your competition is limited or skewed. For example, at university level students often find out that they might have been “top of the class” in their local school, but only mediocre when compared with a sample of the whole country. So, if you have only worked locally so far, but need a larger audience to be successful (most professionals do), leave your pond. See that you compare yourself to your competition and can satisfy your customers on the level you will need to work. While you can always learn/train your skills to close the gap, you need to know where you stand.
- **Try it out for a while first:** Make sure you can do the creative work as a job by doing the job first for a while without burning all your bridges. Make a cold decision after that “trial” period to evaluate whether you want to earn your living this way. Note that in many cases, you will be self-employed — make sure that you like and can continue to work this way.

## DEALING WITH CREATIVE BURN-OUT

“Not having *it* in you” anymore is a terrible *stage* for a creative person. Many creative persons define themselves by their creativity — and it gives their other attributes a positive touch. Without it, they become a person they do not want to be.

However, there is no reason why it should be anything than a stage, one you can overcome.

## TIPS

stop and listen	You probably are highly stressed. Take a moment to stop and think about your situation. If you cannot possibly do this right now, you probably should.
check you perspective	What did change? Did you become an expert who “knows” without trying out? Is the input/stimulation missing?
re-evaluate your motivation	Sometimes your expectations are standing in the way. Re-evaluate for whom you are doing what you do.
check the infrastructure	Make sure you have the time and input to be creative. Over the course of a career this becomes harder and harder — you might have to do some adjustments here.
humor	It might be the last thing you want to do, but humor is great for achieving the necessary emotional distance.
get some time off	Taking a break, <i>especially when you cannot</i> , is often the best thing you can do.
find a muse	Whether it is a partner, a companion, or a courtesan, a muse can help you to see the world with different eyes. The difference to a groupie is that a muse feeds something back to you — she inspires you. You might not see it anymore, but by using her eyes (and mind) you see the world anew. It is very hard to find a muse worthy enough of devoted attention (with grace, class, that certain <i>je ne sais quoi</i> , and the self-confident curiosity of enjoying, but not strip mining, life). Often imagination must suffice.
change the subject	Some great creative people changed the subject (e.g., the style of music, the genre in writing) after they became famous and crashed in their first domain. It might be a way to leave the heart-wrenching aspects of the past behind, yet use your knowledge and skills to get a headstart.
find someone who believes in you	As trite as it might seem, find someone who believes in you. One person might actually be enough (And given that this is the most fitting place: Thank you, Tanja ☺).

## ASCESIS

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Things not only cost money — they cost time and attention, which are way more precious than money. In today's world of distraction and "experiences", you can lose yourself. Make sure that the things you own do not distract you from the things you want to achieve.

Be careful not to overshoot — you should never sacrifice your dreams on the altar of efficiency, nor deprive yourself of your securities, be they emotional, financial, domestic or nutritional. But listen to yourself in trying to find out what you want, watch your input and regularly check your possessions — you might not need all the things that burden your daily life.

"Too many material possessions and they start to own you — I like to live light."

"Chastity" comic

## TIPS

- **Check:** Scrutinize your possession and activities, whether they really suit your needs, what you burn for (see page 264), or whether "The things you own end up owning you." (to quote "Fight Club").
- **Keep it up:** Keep in mind that asceticism is not something you achieve, but something you have to strive for every day.
- **Watch the input:** See your body and your home as your realm and scrutinize everything that comes through the door. Do not accept things that make you deviate from your goals. Avoid things that need you (e.g., advertising has created this desire), things you can borrow or rent (e.g., avoid storage and distraction costs), and things that are over your budget (which you might want, but not need). Things you buy stick with you, so avoid it unless necessary.
- **Reduce to essentials:** Discard things that are not important, digitize things if the original object is not important (you can reduce a whole library to an USB stick *and backup it somewhere safe*), and put things in storage that you do not need immediately. Only keep things you really need. If you have trouble throwing things away, put them in a box (or an external hard drive/DVD if they are files). If you do not use it for a year, throw it away.
- **Invest in few high-quality multi-purpose items:** High quality usually last longer and costs less in the long run. High value multi-functional items include Swiss Army Knives, smartphones, and personal computers.
- **Use a motivational image:** Personally I use the comic panel of the "Chastity" comic shown on the top-right corner of this page. But a typical Star Trek episode can also serve as an inspiration and reminder for simple living. Be it a lack of props, the necessity of living onboard a vessel, a society without money (and consequently without advertisement), or the benefits of future technology, but the personal quarters are usually sparse and it is rare that a transfer arrives or leaves with more than one bag.

## DIGITAL LIFEBOAT

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Could you leave your apartment within a few moments and take with you all you need to start anew? For example, imagine you wake up (smoke detectors!) and the place is on fire — what do you grab? What *can* you grab?

In a story by one of my favorite authors, "The Cat Who Walks Through Walls" by Robert A. Heinlein, the protagonist has a few minutes to vacate the apartment he was living in. Luckily he is a writer who works digitally, which allows him to carry his material with him as electronic files, using the "shinbone" his prosthesis foot to carry them.

Could you do the same? Can you store your ideas and (records of) your crucial works digitally, on a device that you can easily carry with you? For example, encrypted on an USB stick in your wallet, or as a necklace (USB sticks like the "Pico USB Flash Drive" are small enough and have a convenient ring for a chain).

Whereas the risk of loss or theft might be larger than the risk of losing your apartment due to fire or water, it is very comforting to have all of important files with you at all times.

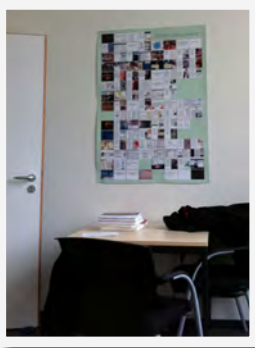
## TIPS

- Determine which data is really important for you. In the example story, the protagonist mentions "contracts, business letters, file copies of my copyrighted works, general correspondence, address files, notes for stories to be written, tax records, et cetera, and so forth, ad nauseam". What do you need? What can you not recreate (at all or within acceptable time). Make sure you can do a selection of files quickly, as you have to do this backup manually and repeatedly.
- Set yourself a specific day to update the information on the device (e.g., the first of each month). Additionally update the information after (e.g., completed important step in a project) and before (e.g., vacation) significant events.
- These media are usually quite slow. Do the backup when you do not need the computer for a while (e.g., overnight).
- Make it a habit to carry it around with you.
- Given that the risk of loss is quite high, use encryption (but also see page 312).
- Find some way to carry it that is unobtrusive yet secure. You might not have an artificial foot, but there are other ways and places that might be possible. Make sure that the data remains intact.
- You might also think about putting the files online on a secure server (but see page 219). While you do not have the advantage of actually having the files in your possession, this kind of backup can be automated and might provide another independent layer of security.

## SHOWROOM/MOTIVATORS

Creativity is a rocky process and at times you might need some motivation or reminders to keep you going. For example:

<b>display (an extra copy of) your actual works</b>	Easy with photos, objects that can be mass-produced, or published works. Even without a publishing contract you can use a book on demand service (like Lulu or Createspace) to create a bound version of your writings. If you create things as gifts for more than one person, create an extra version for yourself. If you do a conference poster, print it twice or bring it back with you.
<b>use photos</b>	Many creative works that leave no direct record by themselves can be captured on photo (e.g., concerts, readings, plays).
<b>use video/audio records</b>	With digital photo frames you can display videos, add speakers and you (and others) can see short clips of your creative works on demand.
<b>change the format (a little)</b>	Sometimes you have to do slight variations. For example, if the presentation itself (not you holding it) is something you want to remember, print the slides on A0 paper.
<b>add style</b>	There is no reason why you cannot turn (part of) your house into a museum, with your own works as exhibits and labels describing them. You can even use display cabinets. The difference between honest pride and arrogant vanity is often style.



*My office wall with slides of a presentation I did about organizing a scientific work, printed on A0 paper, as a motivational reminder of what I believe in regarding science.*



*Two images with exhibit labels in my apartment. The images are grayed out due to copyright concerns (model contract prevents commercial use) and mature content (deviantART is your friend).*



*Office desk with a mashup book of quotations (printed with book-on-demand service and bound in green velvet) and the first version of this book as motivation (in the foreground is a bought calendar).*

## BAGS

Some people like to work in different contexts and they have to carry (some of) their material to be creative with them. It is often a good idea to stop occasionally and reflect on what you carry and what you use to carry the material.

<b>get inspiration: flickr.com "What's in my bag?"</b>	There are over 48,105 photos on Flickr which address the question: "What's in my bag?" ( <a href="http://www.flickr.com/search/?ss=2&amp;mt=photos&amp;adv=1&amp;w=all&amp;q=what+in+my+bag&amp;m=text">http://www.flickr.com/search/?ss=2&amp;mt=photos&amp;adv=1&amp;w=all&amp;q=what+in+my+bag&amp;m=text</a> ). People from all over the world show what they carry every day — and in what. It is very stimulating to see what other people carry — you might see something that might be useful in your own life.
<b>use modules</b>	The quickest way to change the contents of what you carry is to use modules. Or to put it plainly: Additional bags, boxes and cases carrying items you frequently, but not always, need. Especially if your bag does not come with a lot of (fitting) pockets you might want to invest in a few good cases.
<b>keep it well stocked</b>	Take a look at the objects which expire/are used and restock them frequently.



*Contents of my bag. Note that despite the pockets of the bag, some things (like contact lenses/unplanned stay kit above the Tempo's, the iPhone cables/plug above the umbrella, or the planned stay kit at the bottom right) are in their own sub-bags.*

## BE SKEPTICAL

Open-mindedness is important for creativity, but new ideas must also be critically evaluated (see page 36). Like organization, skepticism might seem like an anathema to creativity, but it is actually a very important part.

Being skeptical does not mean being destructive, but carefully analyzing an idea (or any assertion) for its merit. It can be applied to your own ideas and to those of others. The following steps are based on the rules for skeptical thinking by Christoph Bördlein<sup>1</sup> and those by Carole Wade & Carol Tavis<sup>2</sup>:

Be open-minded, but not so open-minded that your brains fall out.

*Stephen A. Kallis, Jr.*

Question	Task
1. What is the issue?	Be curious, ask questions and wonder. Admit your lack of knowledge.
2. What is claimed?	Define the terms. Find out which measures are used and which success criteria.
3. Which reasons are given to support the claims?	Examine evidence (quality & quantity), make inferences visible.
4. How well is the claim supported?	Analyze assumptions and biases, discover fallacies, avoid emotional reasoning (like indignation and wishful thinking), and do not oversimplify. This step requires solid knowledge of scientific research.
5. What would be a reasonable support of the hypothesis?	Consider other interpretations and tolerate uncertainty (it is not always possible to find an answer).
6. Why is the claim believed by its adherents?	Consider the issue from the perspective of the adherents.

Keep in mind that some things are not amendable to skeptical thinking, e.g., judgements of personal taste (and partly, also aesthetic and value judgments). But for judgment about the social or physical world, imagination is good, but you need a firm grounding in the facts and examine what is true and what is not. Otherwise you invest a lot of time and hard work (and often: money) in things that do not work, and will never work, no matter how hard you wish for it.

<sup>1</sup> Bördlein, C. (2002). Das Sockenfressende Monster in der Waschmaschine. Alibri Verlag Gunnar Schedel [German]

<sup>2</sup> Wade, C., & Tavis, C. (1999). *Invitation to Psychology*. New York: Longman.

<sup>3</sup> From: Kuhn, D., & Weinstock, M. (2002). What Is Epistemological Thinking and Why Does It Matter? In Hofer, B. K. & Pintrich, P. R. (Eds.). *Personal epistemology: The Psychology of beliefs about knowledge and knowing*. Mahwah, NJ: Lawrence Erlbaum.

## BE GOOD WITH NUMBERS

In many creative areas you have to deal with numbers. They represent (some form of) reality and are used to make estimations, to find out whether something works or not.

Even if you hated math in school, it pays to be good with numbers. And being good with numbers does not have so much to do with math.

## SCRAP SHEET CALCULATION

A scrap sheet calculation is a rough calculation, a first "educated guess", whether something works out. It is done by calculating it with rounded numbers (here, setting  $\pi = 3$  will not get you crucified). The aim is to quickly get in the right neighborhood of numbers. If the end result is close to what is acceptable, you can recalculate with the real numbers.

Note that depending on the calculations involved you can be off by a large degree. With today's ubiquitous processing power, it may pay to get an app for your smartphone to calculate it exactly.

## STATISTICS

Statistics is a great tool to think with. While it is often considered complicated and compared to lies ("don't trust a statistic that you haven't faked yourself") there is nothing as useful in science. It can show you where the real, important differences are, where you should focus your efforts.

Learning about statistics is not easy, as most books are dry and fail to show the usefulness of it. You find some information on good books in the „Statistic Resources“ on page 387.

## INFORMATION VISUALIZATION

Numbers are more than — well, numbers. In many cases you can make more sense of them if you visualize them in diagrams or illustrations. For example, Edward R. Tufte has written some very good books on how the right visualization can help people think and make the right decision and the website [InformationIsBeautiful.net](http://InformationIsBeautiful.net) shows beautiful examples of how visualizations can make a point.

You find some information in the „Statistic Resources“ on page 387.



## SMALL TALK

Small talk probably the most detested social activity of many — often highly intelligent and creative — people. They want to invest the hard work and time in things that matter (important things, interesting things, *creative* things), not in conversations without a point.

However, small talk has a point. The reason for small talk is not to simply pass the time, but to **establish a rudimentary emotional trust**. Many people need to know whether they can trust their conversation partner, at least on a very preliminary level, before they continue to invest more effort and energy in the conversation. It is not the time for a character analysis, but for that first contact. There are many books on small talk available, and I am not going into the details. For me, it helped me to ...

<b>make the first step</b>	It is unlikely in a social situation that other people make the first step (unless you are young/beautiful). So, do not wait on others to make the first step, do it yourself.
<b>leave your social network</b>	Whenever you have the chance in a social gathering, make sure you (also) talk to the people you do not know yet. People you know feel safe, but in a social gathering you cannot discuss personal issues anyway. They are for making first connections with new people.
<b>listen, then join</b>	In social situations there are often people talking. Listen for a while (about two minutes). Slowly show that you are listening (e.g., non-verbal signals like nodding if you understand their point, etc.). After a few minutes you can show interest by asking a question and adding to the conversation.
<b>join the right conversations</b>	Not all conversations are good for joining, and some should be avoided. Among others, people strongly arguing and conversations between two people that could be private.
<b>show interest in the other person's life</b>	Actually, many people are interesting, if only to find out why they are so boring (just kidding). But most people have things they find interesting and even if the topic does not interest you, it is interesting to find out why they find it interesting.
<b>follow up</b>	Make sure you get the name (see page 283) and follow up after meeting the person. An eMail with some (helpful!) information you wanted to give them is a first step.

## REMEMBERING PEOPLE

Many people struggle with remembering the faces and names of the people they have met. However, there are some ways to facilitate this:

<b>make sure you have understood the name</b>	If you meet someone, make sure you really get the name. If the name is unusual, have them repeat it. You cannot remember something that you haven't understood.
<b>use the name</b>	Repeat the name in your mind after you are introduced to the person. When you talk with the person, use their name. People usually like it and it will help you remember it.
<b>write down the name and some other information</b>	If you have a moment, write down the name of the person. Smartphones are great for this, because it is unobtrusive (it is also very impolite to use if you are talking to someone, so use a break for this). Also write down some details about the person and the conversation, otherwise you have only a name later and no way to remember who that person was.
<b>look them up afterwards</b>	Almost all people have photos of themselves and other information on the Internet, for example, the website of the organization they work for, social networking sites like Facebook or LinkedIn, or private blogs. Look them up.
<b>create a record</b>	Add them to your social networking site (friend on Facebook, contact in LinkedIn) and/or to your local addressbook (with photo and some notes). This information is easily accessible one the move if you own a smartphone. You can also keep a Farley File <sup>1</sup> if you have people working for you (although profiles on social networking sites seem to work as well).
<b>look them up prior to a possible meeting</b>	If there is a chance that you meet them again soon (conference, club/society meeting, etc.), look them up. This works well when you tag them in your records (e.g., #clubname in an addressbook, tag functionality on social network sites).

<sup>1</sup> Named after James Aloysius Farley, a campaign manager for F. D. Roosevelt, who kept a file about the people who met Roosevelt and included personal information about them (meeting history, family history, trivia, preferences, etc.). The next time this person met Roosevelt, he made sure that Roosevelt got the file immediately prior to the meeting, allowing Roosevelt to remember this person and the prior meetings perfectly.

## PUBLIC SPEAKING

You need to convey your ideas (see page 176ff) and often this means public speaking. Whereas public speaking is often feared, it is something you can train very well, and there are many things you can do to improve your overall effect.

<b>develop your own style</b>	You need to successfully communicate with your audience. This means developing a style you are comfortable with and that achieves this goal. Do not pretend to be someone you are not — the audience will quickly notice. Either the pretension will break down under pressure (i.e., some time into the presentation), or people will notice the difference if they talk to you later.
<b>train it</b>	There are many courses and books available that teach presentation skills. Some general rules apply to all, but a good course should take your individual personality into account. It should help you to improve the impression you make — without trying to make you someone you are not. If you have serious problems (e.g., speech/articulation problems), seek professional help.
<b>watch yourself</b>	When you train your presentation style, record yourself (most cellphones have a video camera now). Record your presentation and analyze it. Do not be too hard on yourself.
<b>watch other presenters</b>	Watch good presenters, e.g., TEDtalks online. The presenters are usually quite heterogeneous, yet they usually convey their message. Have a look at these styles and learn from the ones that suit you.
<b>it is only a conversation</b>	Some people loath public speaking. However, in its essence, it is only a conversation. You speak to more than one person at a time, but their reactions speak back to you. The conversation is a little different than the ones you usually have, but in the end, this is all it is.
<b>know your audience</b>	A presentation must be specific for the audience — in words, in images, in style. You know the audience beforehand, so prepare for it. For some, you need to show an example, a proof of concept (think Steve Jobs), for others you need detailed numbers.

## PUBLIC SPEAKING

<b>something for everybody</b>	Aim to make the presentation understandable for an audience one level below the audience you expect, and go into detail at the level of the audience you expect. Even in a technical talk general information can be put in a way even a lay person can understand.
<b>strong beginnings</b>	The presentation stands or falls within the first few minutes. Make sure that you start with a strong beginning, e.g., a counterintuitive finding, a surprising effect, or a stunning view. And then keep your audience.
<b>capture and keep the audience</b>	Keep a narrative in your presentation that is easy to follow. Capture the imagination of the audience and keep them with you by summarizing your talk at the key points during the presentation.
<b>make it alive</b>	Make numbers come alive — instead of describing a difference with a decimal point, translate it in actual units or people affects (e.g., drug effectiveness becomes much more convincing if you learn that two people more will die without the treatment).
<b>slides should convey the central meaning of the point you make</b>	Many people use slides as teleprompter. They put complete sentences on the slides and read them while presenting. Don't. If the audience can read what you say, why should they listen to you — and they should be listening to you! Use the slides to make a point, to clarify, to illustrate by using diagrams, small tables, or images. Use the presenter display for more information. It differs from the slides shown and provides you with the presenter notes. It's the closest you come to a teleprompter, and much better suited for presentations than using the slides for it. Because your voice conveys the central information, the slides only assist.
<b>convey the gist</b>	Make sure that the gist of your presentation is clearly presented. Use it as the summary at the end of the presentation.
<b>train it</b>	Train the presentation to make sure that you have the timing right and you know what you want to say.
<b>ditch the lecture stand</b>	You should communicate with your audience, and a lecture stand only signals that you try to hide from them. Stand freely in front of the audience and let them see you.

## PUBLIC SPEAKING

<b>speak freely</b>	Use keywords (no sentences except the first sentence you say) on index cards, or in the notes field of the presenter display of Powerpoint or Keynote. You know what you want to say, the keywords will remind you of it — and you should speak freely. The way you write is not the way you speak, and your listeners will notice this discrepancy immediately. Also, written sentences are usually longer and hard to understand when read aloud. If you absolutely have to say something as it was written (e.g., a company memo), distribute the memo and skip the presentation.
<b>have the right attitude regarding the effect and criticism</b>	Some people fear public speaking because their fear that they will be publicly humiliated. People interfering, leaving, posing questions that raise issues you never thought about — it is easy to fear. However, most of these fears are unfounded. Few people have the necessary knowledge and depth in the subject to tear apart your work. It is okay to be wrong, interruptions can be dealt with, and you need not to apologize unless you have specifically harmed this person. If you are criticized, avoid justifications, but explain why you did something. If the issue is too difficult, say that you think about it.
<b>enjoy it</b>	Public speaking is much easier if you love your subject and want to convey its beauty or the importance of the results. Few things can compete with honest passion and interest.
<b>get feedback</b>	After the presentation get feedback on your presentation. Look for a variety of opinions and different backgrounds of the people involved.

See also „Presentation Resources“ on page 388.

## LEADERSHIP &amp; ADVISORY

Many creative people drift into leadership positions without being groomed for them. The scientist who suddenly has doctoral students to advise, or an own work group, the artist who starts an agency, or has helpers.

Even in Academia, leadership matters (see „Academic Work Resources“ on page 384) and money or formal power is not the answer — it gets old quickly.

## LEADERSHIP

Beyond the basic requirements of safety (money to life, security), people need meaning. It might be their work, but given that they spend so much time on it, it should mean something to them. The aim of leadership is to make sure that the vision (what do we want) and mission (how do want to achieve it) is clear. This means that you must know what you live for (see page 264). After this, make sure that you remove obstacles the employees have that they cannot remove themselves. Keep in mind that people usually work better when they are self-directed and can become better in what they do<sup>1</sup>.

## ADVISORY

A good adviser:

- looks at who the person is (i.e., where she is in her career, what her attributes are, her character, strengths and weaknesses, etc.),
- how the field is in the area this person wants to be successful in (e.g., the specific research community), the possible advantages and (more relevant) the problems this specific person will have if she wants to be successful in this specific field,
- (ideally) possible ways to improve the persons chances, e.g., strengthen the positive aspects and overcome the problems, and
- a way to convey valuable feedback to the person in a way that she can accept this feedback<sup>2</sup>.

This makes advisory very hard, yet it is very difficult to be successful without it.

<sup>1</sup> See Dan Pink at RSA: "Drive: The surprising truth about what motivates us." at <http://www.youtube.com/watch?v=u6XAPnuFjJc>

<sup>2</sup> The feedback Randy Pausch got from his mentor exemplifies this point for me. His mentor pointed out that people perceive him as arrogant and that this will limit what he can achieve, i.e., he did not say that he was a jerk, but only that his behavior appears arrogant and has actual negative consequences for him.

## DEALING WITH ADMINISTRATION

Administration does not only process the buy-orders for scientific equipment, they are the first and often final line of defense against external auditors who ask — really *nicely* — for justifications of the use of research funding.

As a consequence, scientists and administration have very different but equally valid goals when it comes to technology in rapidly evolving fields:

Criterion	Administration	Scientists
<b>experience with technology</b>	robust technology that was used for a long term (which allows accurate estimates how dependable it is)	state-of-the-art, even prototype, models are desired
<b>finished development</b>	want the finished, unchanging version free from birthing pains	need the tool before the area is cold and willing to invest/cooperate in development if it answers their questions
<b>acceptance of prototypes</b>	do not want to be the guinea pig	willing to use prototypes if they might deliver superior data
<b>favorite vendor</b>	established, reliable company with long track record of good service and market survival to ensure fulfillment of service contracts	start-ups with experts fresh from the university are accepted if they have the expertise

While scientists usually want state-of-the-art, often prototype equipment, administration is more looking for something akin to a reliable car, something that is known and can be planned for/with.

Thus, both positions are rational. Administration is not evil, but constitutes a necessary counterweight for scientists, who are prone to spend large amounts of money on powerful but unstable tools, and would likely run the institute into bankruptcy.

By looking at it from this perspective, understanding the concerns of administration and arguing with the rapidly developing field and the need for state-of-the-art, high quality tools, you might actually work with them. They often just need good reasons for external financial auditors to justify the purchases.

So provide them.

## GROUP WORK

Group work is often necessary. No matter how gifted or creative you are, you have to make yourself understood and work professionally with others. Otherwise *you* have a problem.

Group work has some advantages, ideally, others stimulate you and add expertise in areas you have none (e.g., interdisciplinary work, see page 296). It also helps to ensure that the solutions are useful and provide some social control needed to stay on the path.

Keep the following in mind when working with others:

<b>get commitment first<sup>1</sup></b>	People working the group need to make a commitment to the overall task and their individual tasks. Get this first. If they agree to do it and want to do it, they will find ways to bypass communication problems, lack of materials, lack of time, etc. If you lack commitment, any of those problems might kill the work.
<b>kill social loafers</b>	Group creativity is often bogged down by social loafers, who do nothing but prey on other people's effort and who are not prepared for a meeting. Make sure that contributions are identifiable, kick out/reprimand social loafers, and work with the ones who are motivated.
<b>beware of groupthink</b>	If you are working in a group that has strong bounds between its members, there is a risk that members support the same decision uncritically, assume that their decision is right, and ignore contradicting information. If you work in such a group, argue (see page 85) and get an <i>advocatus diaboli</i> .

Also have a look at:

- „Project Management in Teams“ on page 290
- „Workgroup Meetings“ on page 292
- „Creative Sessions“ on page 294
- „(Group) Creativity Room“ on page 295
- „Interdisciplinary Communication“ on page 296

<sup>1</sup> Beautifully formulated in a comment by Peter J. Denning in Communications of the ACM, June 2010 (vol. 53, no. 6, page 6).



## PROJECT MANAGEMENT IN TEAMS

If you are working **with other people**, especially in large, distributed projects, you likely need dedicated project management. Software exists to help you plan the realization of a project, create and manage checklists of things to do, set deadlines and milestones, plan the work of different people or project groups, etc. Finding a good software you all can work with is not easy. Essentially, you need all the criteria of an idea collection, only that the criteria have to be fulfilled for all partners.

So keep the following things in mind:

<b>keep it simple</b>	The project management tools are just that — tools. They should help all partners to do their job, not add additional complications.
<b>adhere (almost) to the least common demoninator</b>	All partners must be able to work with the tool — easily. The limits are usually skill (e.g., prior experience) and organizational constraints. What are they used to use? What can they understand easily? And what are they allowed to use? Not all companies allow, for example, the use of externally hosted software.
<b>one tool (for each area)</b>	Always use only one tool for each area, e.g., coordination, communication, data sharing. Once you have the same information in multiple tools, things become confusing, no matter that the specific tool had advantages for different data types. For example, using GoogleDocs, MediaWiki, and a Moki to store long-term project infos is a bad idea. Usually, after some time, only one tool is used and the information in the other tools go unnoticed.
<b>easy access</b>	Make sure that each partner can use the tool easily. While this might seem like a no-brainer, some tools are cumbersome to access (e.g., do not allow browsers to remember passwords).
<b>remind to use</b>	Introducing software and making sure all partners use it is not easy. You have to remind partners to use it. If you have regular meetings, use these meetings for it. If you keep protocols, include the links in it.
<b>Improve on proved solutions</b>	Ask what your partners have used previously — but do not hesitate to improve on the prior solutions if you can convince them of using the new solution.

## PROJECT MANAGEMENT IN TEAMS

## SUGGESTED AREAS TO SUPPORT AND POSSIBLE TOOLS

<b>communication</b>	<b>eMail</b> is commonly used. Mailinglists facilitate communication among multiple partners, although they are often ignored as not all information is relevant for all partners. <b>Skype</b> is great for simultaneously talking to multiple people. Verbal communication is best assisted by simultaneous written communication, e.g., keeping a protocol in <b>GoogleDocs</b> while you talk via phone/Skype. All partners can write in the document, making note-keeping and creating a protocol simple.
<b>coordination</b>	Voting tools like <b>Doodle</b> save a lot of eMails and make the process transparent. Web-programs like <b>Asana</b> allow multiple people to access the same todo lists, great for coordinating large projects. If you need more formal documentation (e.g., Lists that can be exported to Excel, Documents that can be exported to Word), <b>GoogleDocs</b> can be used.
<b>data storage</b>	Depending on whether you want to edit the information <b>GoogleDocs</b> or a <b>Wiki</b> is very helpful. GoogleDocs allows all partners to edit the information more easily than any Wiki, but it is not as well suited for storing data files that are non-office documents. A Wiki allows easy data storage, but is more suited for static information.
<b>collaborative work</b>	<b>GoogleDocs</b> makes it easy for multiple people to work on the same document at the same time. This can be Tables, Text Documents, even simple graphics (Draw, looks similar to drawing on a PowerPoint slide). Coordinating the process is more difficult — the general aim must be clear.

**Note:** Although it might seem that everything goes with GoogleDocs, be careful trusting your information to a web-based service (see page 219). Make backups yourself (download the documents) and include face-to-face or video communication to keep the contact to your project partners alive.

See „Collaboration Resources“ on page 382 for more information.

## WORKGROUP MEETINGS

Workgroup meetings can be painful, here are some things you should keep in mind:

Dimension	Good	Bad
<b>Aim</b>	create and maintain the identity as a member of the workgroup and of the company; being a part of something	pure "you work for me" meeting (supervisor gets information from his employees and distributes tasks)
<b>Agenda</b>	fixed and variable elements; known to everyone	hidden agenda of the supervisor, information that fits is used, unfitting information is ignored (e.g., by saying "we could do this, but we also could do xyz" [with xyz being a part of the hidden agenda])
<b>Leadership</b>	clear	quasi-democratic (disastrous for a meeting with an aim, esp. if that aim is going to raise opposition)
<b>Dealing with Input</b>	treated seriously, is fairly discussed	supervisor jokes about it or immediately tells his first association (which is rarely suiting), if it fits in the hidden agenda it is accepted, if not it is ignored
<b>top-down information</b>	are given	no information given
<b>bottom-up information</b>	flashlight status-reports, everyone knows afterward what the other workgroup members are doing and which information they might need if someone stumbles upon them	no bottom-up information
<b>room climate</b>	good, known, trusted, private room, coffee and cakes	open area, no privacy, in a "fishtank"
<b>time</b>	first thing in the morning	some time during the day (when it's "suing")

## WORKGROUP MEETINGS

<b>date</b>	always on the same time and date; date is set and only reminders are sent, long-term planning is possible	variable and always with several minutes of planning, often postponed at the last minute, unclear whether a meeting is done at all, easy to miss
<b>punctuality</b>	yes	supervisor arrives late (and consequently leads by example for the following meetings)
<b>outlook</b>	information about next meeting	only date/time is determined
<b>misuse of power</b>	none	uses position of power to decide when it is postponed due to bad personal planning or demands information that should be read for the meeting to be repeated during the meeting because he was "in higher demand than the rest of the workgroup"
<b>outside information</b>	given, e.g., interesting conferences, developments at the competition, etc.	none
<b>start/ending</b>	clear start (Agenda, flashlight- status-reports), clear end	diffuse beginning and diffuse end (often because time is up)
<b>result</b>	members of the workgroup are informed about the others, know what is going on, get some input for their projects	unclear given the hidden agenda, the often high-level (20.000 feet) view of the supervisor and the lack of clear assignments

Whereas some or all of these points might seem trivial, many meetings are bad for these reasons. I strongly recommend watching Merlin Mann's presentation on the topic, who lists additional points: <http://www.43folders.com/2010/10/06/broken-meetings>

## CREATIVE SESSIONS

At time you might have to do a creative session, i.e., work on a deadline to solve a problem, either alone or with others.

The following aspects might help in this case:

<b>prerequisites of the participants</b>	The most important part of any creative endeavor is the knowledge in the minds of the participants and the motivation to use it constructively. Without the necessary knowledge, they cannot find workable solutions and valuable time is wasted bringing everyone up-to-date. Individual motivation can be a problem if contributions are not recognized (later). Group rules have to be established regarding participation, time, breaks, moderation, credit, etc. to facilitate work.
<b>prerequisites of the setting</b>	Make sure that interruptions are avoided, e.g., no visitors, no phone calls, no eMails or IMs. See page 295.
<b>clearly stated goal</b>	In most cases this is a no brainer and given, but you need to know what you have to achieve. It must be transparent to everybody in the room, at best days prior to the session. Discuss it shortly in the beginning.
<b>transparency of the current state</b>	Likewise everybody needs to know the current state. Developing and keeping ideas on a stationary writing surfaces (see page 211ff) is very helpful.
<b>progress monitoring</b>	In longer session you also need to log the progress to ensure that you do not run in circles. If you use Magic-Charts (see page 213), you can simply stick the prior versions to the wall. Recording the whole session (e.g., via video or audio) can also be helpful if all agree.
<b>deft moderation</b>	In groups you need someone to coordinate the groups movements, ensure that everybody is heard and able to contribute, that the group stays on track and that the progress is documented.
<b>if needed: reconvene the next day</b>	Taking a break can be helpful to let participants recharge and give them time to think about the problem. If they capture their ideas, work them out, and discuss them in the next round you can use their individual creativity. In this regard, the creative session becomes similar to the Delphi-Method (see page 86).

## (GROUP) CREATIVITY ROOM

Some companies have dedicated rooms for creative group work.

The following aspects might be helpful:

<b>secretary outside the room</b>	Collects cellphones and is the last barrier against interruptions. Takes calls and only interrupts if something really important happens (usually private emergency). This lets participants focus on the work, yet they know if something <i>really</i> important happens, they will be reached.
<b>general room characteristics</b>	Good rooms have a good ventilation/air conditioning, good (bright) lighting, are soundproof, and have chairs on rolls. Toilets should be nearby.
<b>fresh start</b>	Usually a no-brainer, but make sure that the room is clean and tidy.
<b>data access</b>	Chances are that you need to look up something — you need to get the facts straight and some questions might first come up in the session. Data access is often needed. Ideally you have a good record keeping system. Take care that online access does not mislead you to surf the web or answer eMails (have the screen placed in a way that all can look at it all the time). Printers are also helpful to have the data instantly available.
<b>walls with stationary writing surfaces</b>	Walls that have whiteboards, Magic-Charts, or IdeaPaint (see page 211) are very helpful to hold the problem description, the agenda, and the discussed aspects.
<b>supplies</b>	Pens for the stationary writing surfaces, to keep the equipment working, and drinks and snacks (that do not leave your fingers sticky) are helpful.

## INTERDISCIPLINARY COMMUNICATION

Interdisciplinary work can lead to astonishing creative results. Different disciplines stimulate each other, you see concepts differently and talk about things you take for granted<sup>1</sup>. You have access to tools, methods<sup>2</sup> and expertise you couldn't have otherwise. Research is less likely to be so specialized that it's not usable by anyone but experts in that specific discipline.

Every discipline has blind spots, strengths and weaknesses, and working together interdisciplinary can produce superior results — if the communication between the different disciplines works out.

The following aspects might be helpful to consider:

<b>establish ground rules</b>	Based on the contact hypothesis in psychology, to work together well researchers from different disciplines must respect each others expertise, accept others as being of equal status/worth. They must have common goals they can only reach together (at all or in the desired quality). They need time to get to know each other as persons, not only as "that educator" or "this computer geek who programs my experiments". And they need the support of the context (authorities, supervisors) for their work.
<b>get to know the goals and success measures</b>	Different disciplines have different aims in an research project, sometimes different than expected. For example, computer scientists do <i>not</i> just write programs, they have their own research goals. Finding them out (and how they judge quality/success) helps to avoid a lot of conflicts. Discuss how you can do the work that each discipline profits by it (e.g., by publications in their journals with different foci).
<b>false agreement/ false disagreement</b>	Different disciplines sometimes use the same terms differently, or different terms for the same thing. This is especially a problem if terms are also used in everyday life (a bane in psychology where terms like "identity", "self", "learning" have a different meaning than in everyday life). It can lead to tiresome discussions where people do not understand why they do not understand each other.  Thus define your terms and clarify how you define them (assign meaning to concepts, e.g., formal or operational definition). You have to do this again and again if disciplines use the terms differently, because after the interdisciplinary conversation they return to do disciplinary work where they (have to) return to the disciplinary understanding. A shared glossary is often helpful. Make sure that you mention explicitly when terms differ from disciplinary meanings.

## INTERDISCIPLINARY COMMUNICATION

### not knowing what/when they don't know

Many things that are basic and trivial knowledge in one discipline are completely unknown in others. Take statistics — a good research psychologist would never infer from correlation to causation.

However, if a computer scientist is writing a document based on the data of the psychologist, he might not know that correlation does not imply causation. What is worse, he does not know that he does not know it. Note that this is not the fault of the discipline, it is simply not central to their work. Holding them responsible would be measuring their worth by unfair (and false) criteria.

Thus, make sure that you know not only what another person from a different discipline doesn't know, but also what they cannot know that they do not know. In a way, consider them like a freshman without any prior knowledge in the discipline, despite their age or eminence (in another domain!).

And keep in mind that this also applies vice versa.

Interdisciplinary work might appear tiresome. At worst, it is a mercenary army without loyalty to the goal or each other, just interested in the gold (there is "easy" funding for interdisciplinary projects in some areas). At best, it is a Navy Seals unit with dedicated mission specialists.

And communication and commitment to the goals usually makes all the difference.

<sup>1</sup> It also shows you your own expertise (which is often invisible if you work and improve among peers).

<sup>2</sup> The experiment might be the "royal road" to knowledge (in psychology!), but we are often blind that this "royal road" might not allow you to see the whole landscape. And "royalty" has its dark sides — incest, madness, and narrow-mindedness, rarely beneficial to (scientific) progress.



## CREATIVE CHILDREN

If you have children ~~who are creative~~, the following aspects might be helpful (Disclaimer: Do not hold me responsible if anything negative happens to your children if you adhere to these tips.):

<b>give them opportunities to find out their interests</b>	Nobody knows what your children are capable of, least of all themselves. Give them the opportunity to try out a lot of different hobbies and activities to find out where <i>their</i> strengths and interests lie. It might not be what you wanted or they thought, but let them follow their interests.
<b>allow them to make mistakes</b>	Fear of making mistakes is stifling for learning and creative endeavors. While you should take precautions to avoid irreparable harm, allow them to make mistakes.
<b>get them the right support</b>	Children might be very good in something, but they often lack the long-term meta perspective to ensure that they learn and become good in it. If you are not an expert in the subject then get them the best training opportunities and teachers (see also page 299), because they might not see the need for it — or know how to get it.
<b>find them the right peers</b>	Likewise, they might not have access to other children with similar interests (e.g., clubs). Make sure they know of these opportunities and help them to contact other peers.
<b>allow them to have fun</b>	Becoming good in something takes a lot of hard work and time (see pages 53 and 54), so make sure they enjoy doing it, even if they act like a child (which is what they are).
<b>if they are able and understand it: trust them with the heavy stuff<sup>1</sup></b>	Being creative sometimes involves dealing with dangerous tools, e.g. power tools. Make the ground rules clear, supervise them, and if they are able to deal with the responsibility, let them use it, if only under your careful supervision.

<sup>1</sup> See also: Tulley, G. (2008). 5 dangerous things you should let your kids do. [http://www.ted.com/talks/gever\\_tulley\\_on\\_5\\_dangerous\\_things\\_for\\_kids.html](http://www.ted.com/talks/gever_tulley_on_5_dangerous_things_for_kids.html)

## GETTING THE BEST TEACHER

Great teachers inspire, motivate, and help students learn. However, we do not always get lucky with our teachers. You might be in the wrong course, or in the wrong university. However, you should fight for high-quality education.

After all, that knowledge (or at least the grades) is the foundation you build upon later.

The following aspects might be helpful:

<b>speak up</b>	Give feedback to the teacher (and if this fails, to his superiors, to get a different one).
<b>gain mass</b>	While many other students might be satisfied with the least effort possible, there are usually at least a few other students who also want to learn something. Multiple students are harder to ignore.
<b>get other teachers outside of school</b>	Whether it is classes in an adult education center or virtual lectures on the Internet (see page 364), actively search for people who can teach you what you want to know.
<b>switch classes/schools</b>	As a last measure, make the switch to another class or school. Especially on the university level this is risky but can bring high rewards.

### "THIS IS NOT A GAME FOR ME"

One music student I have met got her teacher sacked in search for better education. This teacher had high credentials, but her feedback was unspecific standard stuff you could say to every interpretation of the music piece — and thus worthless for her. As an aspiring professional musician she *needed* better feedback, but the school did not want to pay an external teacher for her. However, she found a young teacher within school, who was teaching classes for amateurs, but whose feedback was good (see page 160ff) and much more valuable than that of the high-credentials teacher.

She successfully fought the school to be allowed to switch to this teacher, which caused a lot of talk (she was one of the best and voluntarily *choose* an apparently inferior teacher). Other students reconsidered whether the high-credentials teacher was really that good and the next semester, all students wanted to switch to the young teacher. The school was forced to draw lots who was actually allowed make the switch, and after that semester, the high credentials teacher "took a sabbatical".

While it may sound harsh and brutal to get a teacher fired this way, it was the best choice. Like she said: "This is not a game for me" — it was about preparing her for the future, allowing her to be successful as a musician. A teacher who gives only the same standard advice for all students, who does not help her to become better, should not be tolerated.

Her decision was courageous and her actions were justified — and I wish more students would act this way.

## HOSTILE ENVIRONMENTS: SCHOOL

Having your own interests, and investing huge amounts of time in them, can ostracize you, especially if you still go to school.

It would be nice if students were *professional*, in the sense that they would consider learning their job — and want to be good at it. After all, it *is* their job.

However, this is often not the case.

In many ways, schools are like prisons<sup>1</sup> — often meaningless, hard to escape, and with brutal social rules. There is often at least one person in each class who is bullied, used as a vent by the other inmates. And while you can see this (more) easily among boys, girls are often masters in a very subtle, but very vicious and devastating form of bullying ("*little angels*" *my ass!*).

However, school, with its cliques and social standings, is not your life forever — one day it is over and you are free. It might seem like a long time (and you are right considering the years you have lived so far), but it also gives you a **clear cut goal to live for:**

**Survive school for as long as it lasts,  
with as few emotional scars as possible and  
the knowledge, skills, and grades you need for *your* future.**

While there will be setbacks, even after you have left school, **it gets better, because you get better.** You learn to deal with these people and their attacks and you leave the school and that past behind.

Personally, I was mobbed in school and considered suicide a viable option at that time — especially after I found out that some teachers apparently are more interested in keeping appearances and saving their own skins, than in actually exposing themselves, taking responsibility, and dealing with serious problems. However, I also learned to deal with it (mostly *after* leaving school). And when a colleague tried to mob me later, during my Ph.D. thesis, I had the skills to stop the mobbing by exposing this "person" to his superiors, with irrefutable proof of his actions (thanks to some technicians and his stupidity). His mobbing backfired and **he** was ostracized — *case closed*.

It was not funny, I could have lived without it, but I also learned from it.

So, yes, it is hard to impossible to see at that time, but it does get better.

"Some people insist that 'mediocre' is better than 'best.' They delight in clipping wings because they themselves can't fly. They despise brains because they have none. Pfah!"

"*Have Space Suit will Travel*"  
by Robert A. Heinlein

## HOSTILE ENVIRONMENTS: SCHOOL

## TIPS

There are many resources on the web and thankfully, this topic gets more attention. Here are some things I found helpful:

- Document what happens and seek witnesses. Exposing the mobber and the hanger-ons is the best, but often difficult, option.
- Get help to survive school. There are a few good help line operators, teachers, and counselors — you likely have to try a few here.
- Learn to defend yourself — verbally and physically. However, use physical force only as self-defense, if someone **unambiguously physically** attacks you first (without provocation on your part) and you cannot leave. Violence itself is no option, because it escalates quickly and usually irreversibly.
- Build a social network outside of school with people who have similar interests — courses/organizations outside of school and the Internet is usually helpful if you avoid the places your class"mates" hang out.
- If school becomes unbearable, switch to another school before you do something that is irreversible.
- And as easy as it's said and as hard as it is to do, survive. School is over one day and life gets better, and like Ellen DeGeneres said: "... you should be alive to see it".

See also „Stress of Being Creative and other Stressors“ on page 362.

<sup>1</sup> See Paul Grahams essay on this topic: <http://www.paulgraham.com/nerds.html>

## 302 HOSTILE ENVIRONMENTS: SCIENTIFIC COMMUNITY

Science is an inherently social process. Scientists decide via peer-review which theories and results are added to the domain. This is a problem if you champion a position that is at odds with the scientific community.

Gold<sup>1</sup> wrote an interesting article — suitably in a fringe science journal — about the way the field (see page 32) skews and cripples the scientific progress. As funding depends on expert judgement about its merit (peer-review), only science is funded that is “mainstream” (where initially many scientists agreed on). This leads other scientists outside of the mainstream region to either fold or move closer to the mainstream region. Over time all scientists converge to the “established” position.

There are no rational/empirically-based scientific arguments that determine this movement, “only” the pressures of getting funding and finding outlets for publication (i.e., it’s a question of individual survival in academia, where you either publish or perish). Funding becomes easy if the aim is to integrate conflicting facts into the established framework. Over time this leads to a false sense of unanimity — scientists have the same opinions, but not because the topic is understood, but because this is the only way to survive. This “herd instinct” wreaks havoc on scientific progress, as it creates a false sense of unanimity and excludes alternatives which might be better explanations.

So, depending on your position and approach, science can not only be a very hostile environment for yourself if you collide with established frameworks and vested interests, but also to scientific progress itself.

TIPS<sup>2</sup>

- **Consider the arguments your opponents make:** Why is your position unpopular? Take a good, critical, and skeptical look (see page 280) at their arguments. You have to deal with them anyway, and you should be able to defend yourself.
- **Establish yourself and slowly insert your ideas:** It is easier if you are already recognized by the community before you (slowly) change to a different position. It is hard to ignore an eminent researcher with a long publication list at a high status institution.
- **Seek your own community:** Look for other outlets of your scientific work. There are many people working in science and for some your work might actually be very useful.
- **Build your own community:** Create multipliers of and successors to

Make sure that you are right, then go ahead.

Unknown

A new scientific truth does not triumph by convincing its opponents and making them see the light, but rather because its opponents eventually die, and a new generation grows up that is familiar with it.

Max Planck

## HOSTILE ENVIRONMENTS: SCIENTIFIC COMMUNITY 303

your work. Not mere followers, but active proponents who do your ideas justice and who do not hijack your cause or steal your spotlight.

- **Seek proponents who fight for your idea:** For example, Darwin had his “bulldog” Huxley as proponent of his theory. Sometimes these proponents fight with tools not available to you, or in settings to which you have no access. But take care of the quality of your proponents.
- **Only accept high-quality distributors:** “Wild” ideas are in danger of picked up by “the lunatic fringe” who try to (mis)use it for their own agenda (religious movements, left- and right-wing political groups, lunatics “with a mission”). Be very careful to distance yourself from them. They might give your idea coverage, but they also inevitably taint it and make it impossible for respected, high-quality researchers to pick up your idea.
- **Aim for the next generation and the middle ground:** It is ludicrous to assume that anything can convince an eminent researcher, who has built his career on a specific position, that his position is false or outdated (see quote left). Many people will die before they admit to a “wasted” life (few people want their works just to be a stepping stone of progress). Thus convince the next generation of scientists that your theory is better and try to convince those who are as-yet undecided of the merit of your position (the “middle ground”). It is more a war of attrition and scorched earth policy than a Blitzkrieg.
- **Seek support outside the scientific community:** Politics and media can be valuable allies, but they can also stab you in the back. Still, it might be a place to anchor your idea, until it is ready to be picked up.
- **Persist when it gets worse before it gets better:** It often gets worse before it gets better. As long as you have no or little support/recognition, the community is likely to ignore you. But once you have gained a foothold, directed attacks become likely. At best, you can use this pressure to forge your community, but you need to persist.
- **Be optimistic:** Science corrects itself — that’s the hallmark of science and something often lost in public debate. Paradigms *can* change, although it takes time — but even if recognition only comes posthumously, it usually comes if you are (were) right.

<sup>1</sup> Gold, T. (1989). New Ideas in Science. *Journal of Scientific Exploration*, 3(2), 103-112.

<sup>2</sup> See also: Martin, B. (1998). Strategies for Dissenting Scientists. *Journal of Scientific Exploration*, 12 (4), 605-616.

## CONTROL YOUR COMPUTER

A computer can be the most powerful non-living tool available, but many people are controlled by their computer. For example, they do not know how to deactivate the automatic darkening of the screen and are forced to move the mouse while watching a movie/reading something, or they do not know how the file system is structured and end up with an illogical file structure and "loss" of files. These people are usually ulcer generator for those working with (or being related to) them.

The thing is, with the rare exception of bugs, **a computer does what it is told, and not what the user wanted, wished, or thought (but failed to express properly)**. People with computer problems are usually bad communicators (luckily, few own dogs) and have problems with power (either too much or too little). In normal conversations, their formal power or emotional temper propels others to infer what the person wanted, but a computer cannot do it and does not care. Thus, computers are "loved" by rational people, but usually hated by irrational ones. However, all persons can *learn* to control a computer.

## TIPS

- **Play around:** Do something and watch what happens — watch the whole screen! You find out a lot this way.
- **Look at the default settings:** While they are usually right for 80% of the users, make sure that they are also right for you.
- **Learn the keyboard shortcuts:** There is more to keyboard shortcuts than `cmd + c` and `cmd + v` (see page 315) and they are called shortcuts for a reason.
- **Use helper programs:** For example, on a Mac, Quicksilver is a very useful program that can quickly open files, or even append text to files.
- **Use what is useful to you, not what the program offers:** You do not need to use every function, but make sure that you know the functions a program offers.
- **Start a pet project:** The easiest way to learn what a program can do is to try to create something with it. When you are playing around with the features, try to think of a project that would require most of the features and realize it. This will give you more confidence in handling the program and lead to a nice project. The best way to learn is often simply to do.
- **If something is bothering you, go(ogle) for it:** Chances are, you are not alone and someone found a solution for it.
- **Ask:** Most people are willing to help, knowing well how gut wrenching it can be if you are controlled by your computer. Some people fear a loss of authority if they ask someone, but as long as you want help to help yourself that is a good sign.

## COMBINING DIGITAL AND PAPER-BASED TOOLS

You can easily combine digital and paper-based tools to get the best of both worlds. Of course, if you also use a smartpen/digitizing pen (like the ones from Livescribe or Wacom) you can automatically digitize your writings.

## IPOD TOUCH + MOLESKINE NOTEBOOK

For example, you can integrate an iPod touch into a Moleskine notebook:

1. Cut out a space for the iPod (leave some space around it).
2. Use glue on the inside of this space to keep the pages together.
3. Use a very small drill or a thin screwdriver to make holes in the pages.
4. Cut some space for the Velcro on the pages (otherwise the Velcro will be easily visible when the book is closed).
5. Glue the Velcro into place.
6. Use a needle and strong thread to sew the pages together (go through the Velcro).
7. Take the pages over the iPod's front and cut a hole in them for the screen and the 'Home' button.
8. Glue a plastic foil on the hole for the iPod and cut a hole in it in the size of the screen.
9. Glue the pages on the foil (a handful is enough to keep the iPod in place).
10. Glue the foam on one side of the hole for the iPod and the plastic foil.



a: Velcro, b: foam to press the iPod into the casing, c: opening for the on/off button, d: thread that keeps the pages together and the Velcro, e: plastic foil to protect the paper; the complete inside of the hole in the pages is covered with glue



a: hole for the 'Home' button, b: a handful of pages are cut from the book to make space for the Post-its, c: Post-its (can be used independent of the casing), d: bookmark

## IPOD TOUCH + PAPER CLIPBOARD

Likewise, you can fix the device to a clipboard if you need more space to make notes per hand. Great for behavior observations. Double sided tape works well, but use it at your own risk. If the iPod drops to the ground, it is likely to break.



A clipboard with an taped iPod touch, some post-its (can be quickly exchanged), some paper to write, and a short list of abbreviations.



## BACKUPS

Digital failure, loss, accidents, etc. happen. Usually, you face a gap between the data you have secured in your last backup (if any) and where you were when you lost your data. Keep this gap as small as possible — in case of loss you would not only have to **do the work all over again (the tedious bits!)**, but you will also **lose the ideas that you cannot remember anymore (and a lot of motivation)**! So, keep the following rules in mind and act according to them.

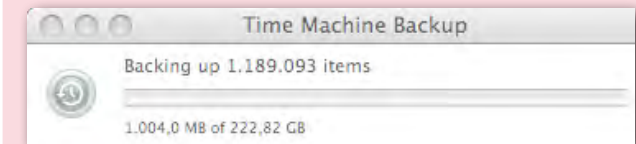
<b>save early</b>	You cannot save too early. Ideally, you save a file immediately after creating it, which allows you to quick-save it via the <code>Ctrl + S</code> (or <code>Cmd + S</code> ) shortcut (works with most programs), which is a prerequisite for the next rule.
<b>save often</b>	You cannot save too often. If the file size is not too unwieldy for the computer, saving takes only an instant. Pressing <code>Ctrl + S</code> can be done while typing, without interrupting the work flow (actually it can become a habit that you hardly realize you do it). Even if you use the “auto-save” option available in most programs, make it a habit of saving manually immediately after you completed a significant step. You know when you have written something important that will not come back, the program merely counts down seconds.
<b>save incrementally</b>	Saving a file can sometimes go seriously wrong and crash the file. You lose access to that file — and to all the ideas implemented in that file. For this reason, save incrementally. Use a standard naming scheme like <code>FILENAME_YEAR_MONTH_DAY_CONSECUTIVENUMBER</code> , e.g., <code>projectX_110822_1.doc</code> , <code>projectX_110822_2.doc</code> , etc. Some programs do this automatically (e.g., most Wikis via version control and text editors like TextWrangler). Saving incrementally prevents you from losing <b>all</b> your work to a rare but very real and extremely volatile error.
<b>save externally</b>	When a storage media dies, it takes <b>all</b> the files with it. <b>All of them.</b> An external storage device (external hard disk) will save your day. Keep in mind that a backup is useless if all files are on the same disk and the disk is gone! This also means keeping the backup off-site. Do not keep all backup media in the same place — a fire can kill them all. Make sure you have at least one off-site storage of your backups. Use online storage (some cheap, password protected storage space on a server in another country) or a safe-deposit box (use two devices, keep one in the deposit box, the other for backups for a month, then switch the devices).

## BACKUPS

## TIPS

**automate the backups and make it part of your working routine**

An easy way to ensure that you have current backups is to automate the backup process, for example, by using Time Machine for OS X or drobo (<http://www.drobo.com>).



*An automated backup system makes backing up a breeze — or would you want to manually select a million files?*

Make sure that it becomes natural for you to do backups, e.g., every day in the evening. You can ‘give yourself the permission to freely browse the web’ at the end of the day, while the backup program works, so this task gets positive connotations.

**save without using it**

Make sure you do not use your backups unless you have to. They are meant to bring you back into the game once you lose your data. Do not start a second collection with your backups. A backup should be made regularly, tested to see if it really works, and then stored securely away. It is a safety net: You want it beneath you while dancing on the rope, but you hope you will never use it.

**use the largest backup medium possible**

DVDs are cheap and you should burn a complete backup of your archive and your collection every year — but for day to day work use large hard disc drives. As hard discs are prone to crash, use two physically separate hard disc drives and make sure that they both contain the same information. Use one for daily backups and switch both drives each month.

**watch and listen**

While crashes often come as a surprise, there are often little indicators that something is not right: the drive reacts slower than usual, a faint clicking noise, more or uneven vibration, the vague feeling that something is not right — if you notice anything unusual about the device you use, copy your data to another media immediately and check on the other media if the data is still intact.

**check the backups**

Try out your backups after you made them on a different computer. Especially if the drive you use acted funny, the data copied might not be intact.

## BACKUPS

<b>have a replacement system ready</b>	Make sure you keep the installation CDs/DVDs of the applications you use readily available with your backups, because while data is the major thing, it is useless if you do not have the programs to read it.
<b>secure wipe or destroy your backup media is the become obsolete</b>	Destroy non-rewritable media, e.g., by scratching the writing surface of a DVD with a nail or a knife, then wrapping it in a piece of cloth and breaking it in half — some DVDs splinter!). If the media can be re-used (e.g., external hard discs) and you want to sell it, secure delete the data.
<b>don't use sync as replacement for backups</b>	Syncing data is often hailed as a better way of doing backups, but it is not. Syncing is not backup. The synced data is used and updated automatically. A backup is putting all your crucial data in a place where it is secure from hardware failure, accidents, and other calamities. If you use sync, be very careful with it. It keeps data the same, but if you change the wrong data, you will overwrite what you want to keep.



*The third time I lost a hard disc drive. Files lost: 0.  
All data was also secured on the external hard disc in the background.*

## DEALING WITH DIGITAL FAILURE

If the worst happened and the data is lost (e.g., due to hard disc failure), there are a few things you can try (absolutely no warranty).

The focus here is get the drive/medium running long enough to get the critical files off the device.

<b>if you can still see the data — photograph it</b>	If the application crashes but the unsaved information is still visible, consider doing a snapshot (Windows: pressing "Print" and inserting the image from the clipboard into another program, Mac: Using "Grab", if all fails use your cellphone camera). This way you have something to recreate the information with later. Works well with Microsoft Word on the Mac.
<b>try it again later</b>	If the disc is unreadable, try it again later. Sometimes the drive starts up another time, or it can be read again for a short time.
<b>cool down the drive</b>	In some cases the hard disc failure seemed to be related to the temperature of the drive — it works for a few minutes but stops working when the computer gets too warm. Letting the drive cool down and then starting up the computer sometimes works long enough to get the critical files.
<b>try it on a different computer</b>	Depending on where the fault it, it is sometimes possible that the drive/medium can be read on another computer.
<b>get external help</b>	Even if you think the drive is broken, get external help. Sometimes it is only a cable that got disconnected, not the drive that is broken. And there are programs that can be used to restore data. If you really, really need the data, some companies can sometimes restore data, albeit for a very high price.

## THEFT PROTECTION

When it comes to theft, notebooks, PCs, cellphones and external hard discs often have a substantial value irrespective of the ideas that are stored on them. And often thieves are only interested in the hardware.

Thus, the main goal is to prevent the theft. In most cases, things get stolen because someone needs the money it can bring (or the device itself), has a rationalization for committing the theft, and sees the opportunity to do so without getting caught. It's hard to change needs and rationalizations, but you can **reduce the opportunity for the theft of the device**.



<b>general</b>	<ul style="list-style-type: none"> <li>• Prepare for the worst — have current backups (see page 306).</li> <li>• Keep the device close to you. In a public place, never leave it unattended in a bag or on a table.</li> <li>• Personalize the device — e.g., stickers or engravings. Makes it difficult to resell and easy to identify.</li> </ul>
<b>Cellphones</b>	<ul style="list-style-type: none"> <li>• Use safe-deposit boxes when you cannot keep your cellphone with you (e.g., in a Spa).</li> <li>• Some cellphones offer a service where you can track down your device via GPS. Enable it and contact the police — you might have to be very insistent if the police does not see the value of the device.</li> </ul>
<b>Notebooks</b>	<ul style="list-style-type: none"> <li>• Use notebook-locks with which you can fix the notebook to stationary objects (radiator bars, heavy chairs, tables, etc. work fine). Be careful to use the newest lock — you can open the older Kensington notebook locks with a roll of toilet paper and a pen! Make sure you cannot easily slip the steel cable off the anchor (an university student once used a table leg as "anchor").</li> <li>• Install a location program. There are applications for Mac and Windows that try to reach you via eMail when the computer/notebook was stolen (trying to locate their position via WiFi and sending pictures).</li> </ul>
<b>external hard discs</b>	Most external hard discs can be secured with a notebook lock. As they are often small and can be easy stolen, lock your external hard disc even in your office.

## GETTING LOST HARDWARE BACK

Not all lost hardware is stolen. You might have simply lost it. While many people assume that they will not get it back (but they themselves would return found devices), many people are actually honest (enough) to return found hardware — *if* they can.

And there are some things you can do, beside the things that prevent theft (see page 310) that make it less likely that you lose your hardware and easier for the finder to return it.

<b>make your device personal</b>	If you can recognize your notebook/smartphone from a distance (e.g., due to its notebook cover), you will recognize it easier as yours when you look back and it will prevent others from confusing it with their own device.
<b>put an address label on it</b>	It is strange that some people put them on \$20 umbrellas but few mark their \$2000 notebooks with it. You can put it discretely on the bottom of the device, but make sure you put some Scotch tape over it to prevent smudging.
<b>use the login/lock screen</b>	<p>It's hard to return a notebook or smartphone if all you see is the login/lock screen with a generic user name and no address. Make sure that your name and address is visible without entering a passcode by using the background of the start/lock screen (prior to entering the password).</p> <p><b>Note:</b> This option is elegant, but it does not replace a physical address label. If the device runs out of power (likely to happen if lost and the finder has no fitting cable) it will not work.</p>



## Translation of the text (left)

Do you still see me somewhere? My name is Daniel Wessel and I would be very happy (and thankful), if you would give me back my iPhone. You can reach me via: eMail: ... Tel.: ... Many thanks.

The background image (wallpaper) can be easily created by adding your address information to the image and gauging where the time/date and slider will be displayed. It looks somewhat vain to have your own photo displayed, but I want my device back, not entertain a stranger with photos of kittens.

## PREVENTING UNAUTHORIZED ACCESS

You might want (need) to prevent unauthorized access to your computer or other digital devices. Using a login/screensaver password is often enough to keep the occasionally snoop out (the mobber in the office, the partner who should not see the gift until it is finished, the stranger in the university library).

However, it gets complicated to impossible if you need really good security:

<b>passwords can be easily bypassed</b>	Just because the average user is at loss when he forgets his password does not mean that they are secure. Most password protection can be quickly bypassed and in public places it is easy to see the password, esp. now that everyone has a video camera in their smartphone.
<b>encryption is very difficult to do correctly</b>	Encryption often gives a false sense of security, because a single flaw bypasses it. A password will not help you if someone has installed a trojan on your computer (listening to the password or the data).
<b>encryption makes it harder to work with the data</b>	The stronger the encryption and the more complex the password, the harder it gets to work quickly with your data.
<b>what prevents others from access might also prevent you</b>	Especially for long-term storage/infrequent access, it can happen quickly that you forget the password, or the password file is lost. You end up with data nobody, not even you, can use again. Even if you do everything correctly, you rely on the program you used for encryption/decryption to use your data. If the program is no longer supported, you lose access to the data.
<b>you might not have the control necessary</b>	If the computer belongs to the organization you work for, its IT department has (and must have) administrator access to the computer, e.g., they can read any file on the computer, even remotely without you noticing it. As they control the Internet access, they can also read any data that you send or receive.

As realizing creative projects cost a lot of time/effort, success is doubtful, and often high-level skills are needed, probably no one will be interested in your ideas unless the project is nearly finished — or they are deliberately trying to hurt you (and invest the effort). Personally, I use light encryption (login and screensaver password) and never leave my notebook unattended/unsecured in a public place.

If you need protection anyway, keep in mind that there is no perfect security, especially if you do not own the computer you use.

## PREVENTING UNAUTHORIZED ACCESS

### TIPS

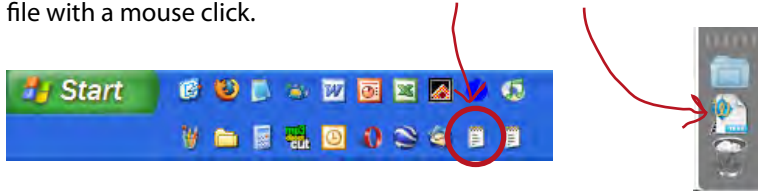
With these important considerations, there are the following things you can do:

<b>always lock your device</b>	Require a password to use your device (start-up, and after leaving stand-by and screensaver) and make sure it is locked when you leave it unattended: <ul style="list-style-type: none"> <li>• Use a screensaver with a password lock and make one of the corners of the display a 'hot corner' to activate the screensaver (Mac), or press the shortcut to lock the system (WIN+L on Windows). This way when you leave the computer you can quickly lock content access.</li> <li>• Use the auto-lock function (immediately or after a few minutes of inactivity) on your mobile.</li> </ul>
<b>check for physical keyloggers</b>	Usually only a problem if you use an external keyboard. These small devices are placed between the keyboard plug and the computer and record anything that is typed. The second you type in your password the game is pretty much over.
<b>use encrypted files/discs</b>	The only way to secure data on a computer you do not own. You can create an encrypted virtual hard disc which contains your files and which cannot be opened without the password. However, given that the IT department has administrator access to the computer, they could easily install a program that listens for the password you use.
<b>use an encrypted USB stick</b>	Keeping the data on another drive, which uses encryption, makes it harder for others to access the data. However, you risk losing it.
<b>use your own computer</b>	Many organizations will not allow this, but if you can, you can use your own computer. The IT department has no administrator access and unless they hack your computer, they can "only" listen to the send/received data.
<b>never install/start unknown programs</b>	No matter whether it's an eMail attachment or a program someone else wants you to try out — if you do not trust the source and the message wasn't written specifically for you, do not open it.
<b>use encrypted eMails</b>	eMails are often transmitted in clear text, meaning anyone can read its contents (like a postcard that is stuck to the wall). There are some PGP programs that easily integrate with your eMail program to allow for encryption.



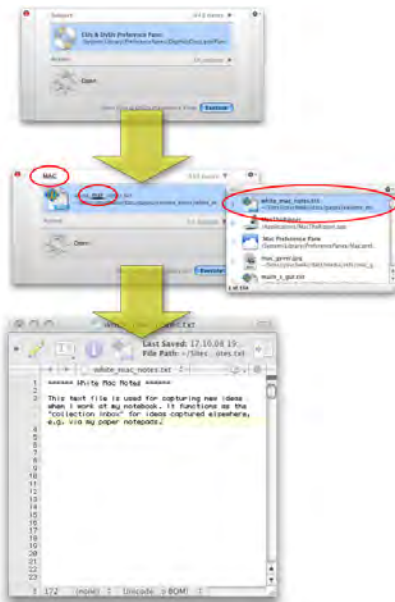
## (TEXT) FILE SHORTCUTS

One of the quickest way to capture an idea at the computer is via a dedicated text file (e.g., ideas.txt) that you can quickly access in one of the following ways: You can put the file in the Taskbar (Windows) or Dock (Mac) to quickly open the file with a mouse click.



On Mac you can use Spotlight (`cmd + SPACE`) or Quicksilver ([softonic.de/mac](http://softonic.de/mac), see right) to quickly open the file via keyboard commands. Quicksilver will remember the files you used most often, so simply typing the first letters of your idea file and hitting enter will open the idea file (you can also set files as default). This saves you using the mouse, which will interrupt the workflow.

With practice it becomes possible to capture ideas en passant, using keyboard commands and `cmd/ctrl + s` (save) and `cmd/ctrl + w` (close window) without really interrupting what you are actually doing at the computer.



## KEYBOARD SHORTCUTS AND LAYOUTS

If you work a lot on the computer, take the time to successively learn the keyboard shortcuts. They are there to make work faster and are well worth remembering.

Some basic keyboard shortcuts most people (should) know and use:

Mac	PC	Function
<code>cmd + c</code>	<code>ctrl + c</code>	copies highlighted text or file (is stored in clipboard memory, next copy command replaces it, pasting has its own command)
<code>cmd + v</code>	<code>ctrl + v</code>	pastes object (text, file, image, etc.) currently saved in clipboard memory
<code>cmd + a</code>	<code>ctrl + a</code>	highlights all text or files it can reach, which depends on what was clicked before (all files in an active window, all text in a word processor, all text in a text area if this is active in a web browser)
<code>cmd + z<sup>1</sup></code>	<code>ctrl + z<sup>1</sup></code>	undoes the last action you did (not available for every action)
<code>cmd + shift + z<sup>1</sup></code>	<code>ctrl + shift + z<sup>1</sup></code>	redoes the last action you undid (not available for every action)

### LAYOUTS

If you write a lot you might want to consider learning typing with the **Dvorak Simplified Keyboard** layout ([http://en.wikipedia.org/wiki/Dvorak\\_Simplified\\_Keyboard](http://en.wikipedia.org/wiki/Dvorak_Simplified_Keyboard)). Whereas the speed advantages are debated, it apparently reduces the risk of repetitive strain injury. If you switch the keyboard layout in the system settings of your computer, keep in mind that you must know how to type your computer password blindly with this new setting (and if you have saved two settings as preference, it might switch without your intention, so if your password is rejected, try typing it with the other keyboard layout). Using an ergonomic keyboard (e.g., Kinesis keyboard) might also make typing easier for you.

<sup>1</sup> or y, depending on your keyboard settings

## FORMATTING AND EDITING TEXT

A lot of work on the computer is formatting and editing text, be it extracting some quotes from an HTML page, sorting quotes into new categories, and much more.

You can make your work much easier (and possible) by using a few tricks, for example:

### FORMATTING AND EDITING TEXT WITH TEXT FILES

- A quick way to remove unnecessary formatting is by copying it into a text file (e.g., of TextWrangler or Notepad++). Then selecting and copying it again. It will remove the formatting.
- You can also use text files to quickly search and remove (replace it with nothing) text you do not need, e.g., HTML tags like "<b>".
- You can search for linebreaks/new paragraphs (e.g., "\r" or "\p").
- You can use placeholders for linebreaks, for example, you want quotes reduced to one line but have quotes that have linebreaks and the quotes are separated by two linebreaks (an empty line below each quote). You can search for two linebreaks first (e.g., "\r\r") and replace it with "NEWQUOTE", then replace one linebreak with "BREAKINQUOTE", and then replace "NEWQUOTE" with a linebreak again.
- When you have a lot of information to sort, e.g., quotes according to different categories, consider putting one quote in each line, use a coding scheme like 1 love, 2 hate, 3 peace, 4 war, etc. (display it also on the monitor) and then write the categories in front of the lines. After you are done, simply sort the lines (possible with many text editors) and you have the quotes sorted to the categories. You only need to remove the numbers, e.g., by searching for a linebreak, the number, and space, e.g., "\r1. " or "\p1. " and replacing it with a linebreak.

### USING EXCEL TO FORMAT TEXT

Excel can be very useful to edit text.

- You can replace parts of the text with Tabstops (e.g., "\t", or "\^t") and insert it in Excel. This will put the parts separated by tabstops in different next columns. Very useful to replace parts of the text.
- You can easily add information by using the drag-down function of Excel. When you write the same number in the cells, dragging them down will write that number in all following cells (also copying one cell and pasting it to the whole column). If you write consecutive numbers in the cells, Excel continues the numbering.

## TAGGING

Tags (also: keywords) are a very powerful way to bring a flexible structure to your collection — especially if it is digital. Tags are "keywords" or "search-terms" that are assigned to entries. They have strong advantages:

<b>remove the constraint for either-or categories</b>	You can assign multiple tags to the same entry. This allows you to assign an idea that could become a painting and a story to the painting and story category, without duplicating the entry.
<b>powerful and quick search</b>	You can search for tags or its combinations (e.g., "story" + "autumn" + "love"). You can also exclude tags from search, e.g., "story" + "autumn" - "love" would find autumn story ideas that have nothing to do with love. As the search is restricted to the keywords it is very fast.
<b>smart lists/groups are possible</b>	Some programs allow you to "save" searches for tags. These smart lists/groups are automatically updated and always show you the ideas, e.g., tagged with "urgent".
<b>hierarchical tags are sometimes possible</b>	Some programs offer hierarchical tags. If you add a child tag (e.g., "portrait"), the parent tag (e.g., photography) is automatically assigned as well.

Thus, tags allow you to create a very flexible ordering system.

If the digital collection (e.g., text files) does not support tags, you can use "@TAGNAME". It allows you to search for "@TAGNAME" (the @ differentiates it from occurrences of the word itself in the collection).

In physical collections tags can, for example, be small post-its in different colors, or words always in the same place and in the same color.

### EXAMPLES OF TAGS

<b>area of creativity</b>	picture, story, scientific_article, dialogue
<b>quality</b>	quality_good, quality_excellent
<b>usage</b>	usage_none, usage_used
<b>idea origin</b>	origin_own_work, origin_based_existing_work
<b>target group</b>	family, children, NAME_OF_PERSON
<b>purpose</b>	gift, commercial, recreation
<b>time/place</b>	autumn, new_york, apartment

## TAGGING

## IMPORTANT ASPECTS WHEN USING TAGS

<b>keep a taglist</b>	Make sure to keep a list of the words you used as tags. Some applications provide you with such a list automatically, nevertheless make sure you have a good overview of the tags you use, and for which cases you use them. Be careful with singular/plural and with synonyms: Using “party” and “parties” will make it hard to search for this term, as will using “watch” and “clock”. Regularly check the tags and remove/rename synonyms.
<b>structure of tags</b>	In many applications you can hierarchically order tags. For example, you have education as tag with the subtags kindergarten, school, and university. The advantage is that if you assign a subtag, tags on a higher level are usually implied. Thus, you only need to check school to also have education checked. It also gives you more freedom with search, as you can search on different levels to enlarge or constrain your search. However, this only works if the same terms do not appear as subtags in different tags. Most of the time it is better to give the tags separately (e.g., education, school).
<b>naming of tags</b>	Use short, easy to assign names for tags.
<b>use independent tags</b>	Do not use names that combine two aspects into one tag, for example, education_school. You will unnecessarily constrain your search options. Give education and school separately — if you want the results where both are assigned, search for education and school at the same time.
<b>do not use default tags</b>	The information value of a tag is reduced the more files are tagged with it. If you use default tags like idea, it will screw up your tag cloud.
<b>auto-assigned tags</b>	If you want to use tags, but do not have the time to do so when you import ideas, you can automatically assign a tag like tagstatus_no to indicate that you have not yet tagged this idea. Some programs also allow you to list all untagged entries.

## DIGITIZING INFORMATION

Digitizing information, e.g., from a text on paper to a file on the computer, or from an audio recording to a transcript, is often tedious, but also unavoidable if you work with digital media.

The following tips can help you to digitize your information, esp. for a collection.

## FROM PAPER

If you capture your ideas on paper (which is often ideal), you have to digitize the information for the collection. The quality should be sufficient, e.g., you should recognize the idea. Better quality goes along with larger file sizes and slower reaction times of the collection, so keep the file sizes small.

<b>retyping the information</b>	Laborious, but often the only way to go for handwritten notes. Goes very quickly if you can write with 10 fingers.
<b>webcam</b>	Most notebooks have a webcam integrated and applications like Photobooth (Mac, there is a preference setting that turns off the mirroring) allow you to take photos with it. Simply hold the sketch in front of the webcam and put the photo into your collection.
<b>cellphone or compact camera</b>	Often an image with the cellphone or compact camera is enough. Apps often allow you to send the images via eMail or import them into a photo application (like iPhoto or Aperture). If you export a photo for Mail in these applications, you get it in downscaled quality sufficient for keeping it as an idea. Simply drag it out of the created mail onto the desktop.  Note that you can also photograph pages in a book and use OCR on that image. Make sure you photograph it without distortions (holding the camera parallel to the surface). Very useful if you are reading fiction and want to have a quote available later.
<b>scanner</b>	If you really need good quality, consider using a scanner. They come in different types, most importantly:  <b>Flatbed scanners:</b> You put the paper on a glass surface. It allows you to scan books and thicker material. They are typically slow and not that well suited to digitize books.  <b>Document Scanners:</b> Need separate pages to scan. They have a slot similar to copiers, but they are often way faster — and scan in color! If you are willing to maul/kill the books, you can use it to digitize books (see page 345).  Note that just for having a sketch available digital, a scanner is often an overkill.

## DIGITIZING INFORMATION

<b>Scan Units of Copiers</b>	Many universities offer copiers that can not create a paper copy, but produce a PDF. They are well suited to scan books.
<b>voice recognition software</b>	You can use voice recognition software like Dragon Dictation to read your ideas again and let the software transcribe it.

## KEEP IN MIND WHEN DIGITIZING INFORMATION FROM PAPER

<b>digitizing handwriting</b>	If you used your handwriting, retype the text. Machine writing comes in handy here and it is never too late to learn to type with 10 fingers. The benefits are enormous.
<b>digitizing typed text</b>	If you have sources that use typed text, use OCR (optical character recognition). Acrobat (the full version, not the reader) offers OCR (Document - OCR Text Recognition), as do some other programs. Make sure you select the right language. If you OCR a German text with the English language settings, umlauts will not be recognized correctly (ä becomes a, ö becomes o, ...). If this has happened to one of your texts, no problem, simply run OCR again, this time with the correct setting.
<b>keep the quality adequate</b>	The collection should allow you easy access to your ideas and remind you of them, it does not have to be a perfect work of art. Correspondingly, keep the quality accurate, e.g., good enough. This means: fast, integrated in the collection (e.g., by being searchable), and small in size. A photograph with a cheap cellphone camera or from a webcam is extremely fast and often enough to get a sketch on the computer.
<b>keep the digitized information accessible (i.e., searchable)</b>	There is a difference between having material in your collection and being able to use it. If you cannot find it, you will not use it. So, make sure your scanned notes can be found via the search function in your collection. This means using tags, or otherwise annotating images (sketches), and transcribing text instead of simply scanning handwritten notes.

## DIGITIZING INFORMATION

<b>keep the infrastructure ready</b>	Whatever you use to digitize your information, make sure that it is ready to quickly digitize what you need to have in your collection. E.g., have the scanner available quickly, have a workflow that gets the images you have on your cellphone to your collection, etc.
<b>careful with reducing filesize</b>	Acrobat allows you to reduce the file size (Document - Reduce File Size). However, the quality suffers somewhat. <div> <div>challenges</div> <div>challenges</div> </div> <p>Have a look at the reduced document and compare it with the original, on the screen and in print. If you need best quality, don't reduce the file size.</p> <p>For books and other original material, you might want to keep the unreduced files somewhere safe in case you ever need the best quality.</p>

## FROM AUDIO

<b>Voice Recognition Software</b>	You can try to use voice recognition software like Dragon Dictate to automatically transcribe your audio input from the saved audio files. In most cases you will likely have a close look at the transcript, but it can deal with the bulk.
<b>Using Quicktime and a Text File</b>	There are programs that help you transcribing audio. An easy way is to use a simple audio player (like Quicktime) and a text file. Switch between text and player with <code>cmd + TAB</code> (Mac) or <code>strg + TAB</code> (Win) and use the <code>SPACE</code> key to pause the audio application. This way you can transcribe audio information without taking your hands off the keyboard.



## MICE

Did you know that there are mice with more than two or three buttons? You can use these mice, which were usually made for computer games, as regular work mouse and assign frequently used actions to the additional buttons. It takes a day or two to get used to it, but from closing windows to switching between virtual desktops, many actions are possible that save time, mostly by reducing the need to switch to the keyboard. I highly recommend using the thumb button (left side of the mouse) for double click, which greatly reduces the number of clicks and tremendously relieves the stress on your index finger.

**EXAMPLE: LOGITECH MX 518 GAMING MOUSE**

This gaming mouse cannot be configured directly under Mac OS X (10.5). You need a program like SteerMouse ([plentycom.jp](http://plentycom.jp)) to configure the buttons. With SteerMouse, every button can be used for Shortcut Keys (e.g., "LEFT ARROW + Cmd", or "Cmd + W"), Scroll Actions, Cursor Actions, Switch Applications, or Click Action (e.g., right, left, double click, etc.).

**USED SETTINGS**

For example, the buttons of the mouse can be configured like this:

1. Left Click
2. Right Click
3. Double Click
4. Cmd + W (closes Window)
5. Cmd + LEFT ARROW (Spaces Left)



6. Cmd + RIGHT ARROW (Spaces Right)
  7. Ctr + LEFT ARROW (Browser Page Back, click with lower part of middle finger!)
- Scroll Wheel Click: Switch Application

It takes some time until the new behavior becomes automatic and drastically saves time, but it's well worth it.

**TIPS**

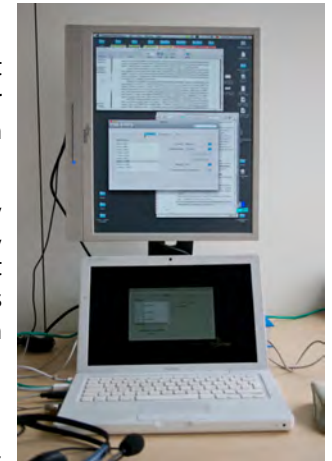
- Use symmetry (e.g., 5. and 6.) — it is easier to remember and internalize.
- A keylogger would show you the amount of different keys you have pressed if you analyze the file. The same thing should be possible for mouse clicks.
- Look whether you can reduce unnecessary click actions or reduce frequent commands to simple clicks. In any case I'd recommend using a dedicated (thumb) button for the double click. There is no reason why anyone should click twice if once is sufficient and it saved me a lot of time and perhaps a few hundred thousand clicks (not only for opening folders and starting applications, but also for "select and enter text" in presentation software, "select and play" in iTunes, etc.).

## ADDITIONAL DISPLAYS

**MULTIPLE PHYSICAL DISPLAYS**

You can use multiple displays with most computers, which is great for editing photos or keeping additional or often used information handy (e.g., your eMail client).

Make sure they do not strain your neck. Personally, I prefer an "Apache"-Setting (from the helicopter, one monitor directly above the other). Note that some monitors can be turned vertical, which is great if you work on page layouts (see photo on the right hand side).



*Apache Setting with an external monitor*

**MULTIPLE VIRTUAL DISPLAYS**

Mac OS and Windows offer virtual displays ("Spaces"). It's essentially like having multiple physical displays, only that they are all displayed on the same monitor. You can quickly switch between these virtual displays with a keyboard shortcut (e.g., cmd + 1, 2, 3, ... on Mac).

The advantage is that you can build up your displays for specific tasks, e.g., using 1 for your writing and outlining software, 2 for your mail client, 3 for your browser, etc.

If you need to switch tasks and check your mails, you do not need to rearrange windows, or hide your currently used program, to see your mail client, you simply press cmd + 2. Afterwards you press cmd + 1 to return to your writing task.

You can assign cmd + ARROW to skip through the virtual displays and assign this keyboard shortcut to buttons on your mouse (see page 322).

## ACADEMIC WORK

Academic Work essentially consists of reading scientific information, doing something with the information (e.g., analyzing it, coming to new conclusions, using the information to conduct studies or experiments), and writing about it. To be considered as science, it has to satisfy high quality standards, which are ensured by peer-review (but see page 302). Only if it passes peer review and it is included in peer-reviewed journals/conferences it is accepted into the domain.

Academic work is very complex, high-risk work. As a truly creative activity, nobody can guarantee that you come up with something new and useful. On the other hand, many tasks in academic work are amendable to improvements in organization, making it less likely that you create something without worth.

## TASKS IN ACADEMIC WORK

The table shows typical tasks in academic work and some tool suggestions:

<b>ToDos/Task Management</b>	Hipster PDA, Notepad, Post-Its, OmniFocus, Things, Remember the Milk, etc., see also page 356
<b>Appointments</b>	iCal, Google Calendar
<b>Communication with Colleagues</b>	eMail, phone, Skype
<b>Coordination with Colleagues</b>	Shared Calendars, Asana, Doodle, see also page 290 and page 382.
<b>Literature Research</b>	Web-Interface, Endnote, etc.
<b>Reference (Liter.) Management</b>	Sente, Endnote, Citavi, Mendeley, DEVONthink, etc., see also page 346
<b>Literature Reading</b>	Sente, Citavi, etc., see also page 348 and page 349
<b>Literature Notes</b>	Sente, Citavi, DEVONthink, Wiki, etc., see also page 350
<b>Ideas</b>	see Collecting Ideas on page 124
<b>Study Planning</b>	Circus Ponies Notebook, see also page 351
<b>Study Documentation</b>	Circus Ponies Notebook, see also page 351
<b>Study Analysis</b>	R, SPSS, SAS, MathLab, etc., see also page 351
<b>Analysis Documentation</b>	Circus Ponies Notebook, see also page 351
<b>Outlining</b>	Circus Ponies Notebook, NeO, OmniOutliner, etc., see also page 338
<b>Writing</b>	Scrivener, see page 340ff
<b>Submission Management</b>	DEVONthink, Wiki, etc.

## ACADEMIC WORK

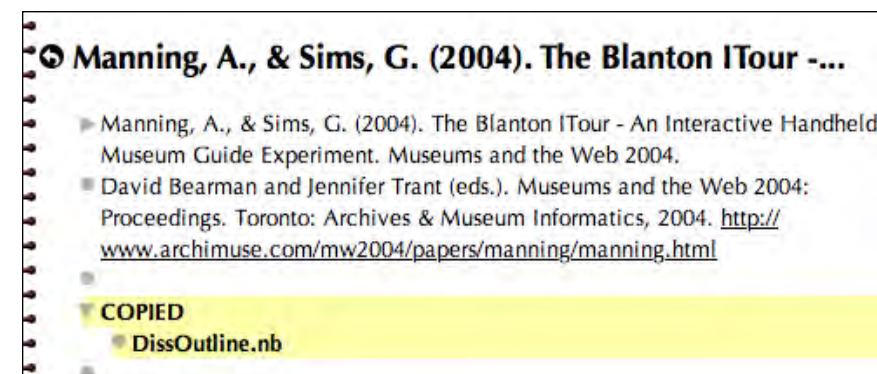
Note that some tasks are independent, e.g., your task management solution does not need to share data with your writing software. Other tasks require data sharing (e.g., Reference Management — Literature Reading) or profit by it (e.g., Literature Notes — Outlining). Make sure you can transfer the text smoothly and quickly.

## CREATING YOUR OWN ACADEMIC WORKFLOW

As with a chain, your academic workflow breaks at the weakest link.

For example, for some people it is literature research: In their opinion they have ideas, but they lack the background knowledge to see that most of them were already done or cannot be done. With better literature research they would improve their knowledge base and come up with truly worthwhile ideas. For others, it is writing: They have troubles writing about the research they have done, find it hard to publishing anything, to contribute to science.

Have a look at your process and where the bottleneck usually is. You find an example workflow on the next two pages. See also „Academic Work Resources“ on page 384.



A workflow might change over time. For example, for my dissertation I used Circus Ponies Notebook (see page 233ff) to keep my research literature (see cut above). It held the necessary information about correct citation and my notes. Tagged with the source (each cell can be tagged) it allowed me to quickly create a Content Outline (see page 338f). I later switched to a DokuWiki (see page 244ff), and then to DEVONthink (see page 237ff), before I came to the workflow on the next two pages. The information loss and effort was minimal, because the digital data could be easily transferred. Never be afraid to improve your workflow/infrastructure.

## EXAMPLE WORKFLOW

The diagram on the right shows an example of an academic workflow.

All **important tasks** are handled by **OmniFocus** (see page 356). It is automatically synced between the Desktop and iPhone version, allowing access (creating, reviewing, removing) to ToDos anywhere, anytime.

**Fixed appointments** are handled with **iCal**, allowing creation of events (and alarms) with the mobile and desktop version.

**Synergy-effect:** OmniFocus also shows the iCal events in the app on the iPhone. Any important **long-term information, ideas** and other **work information** are stored in the "Work Database" in **DEVONthink** (see page 237), e.g., text from eMails, communication notes, protocols, and important documents end up in **DEVONthink**.

Dealing this way with tasks, appointments, and important information means that **Mail** is not used for ToDos or as storage for important information, but for communication only (as it was designed). The inbox is usually empty and all eMails that are read (and todos/appointments/information created) are moved into a single "dealt with" folder (eMails that can be replied to within 2 minutes are dealt with immediately, and the information structure allows to achieve more within two minutes).

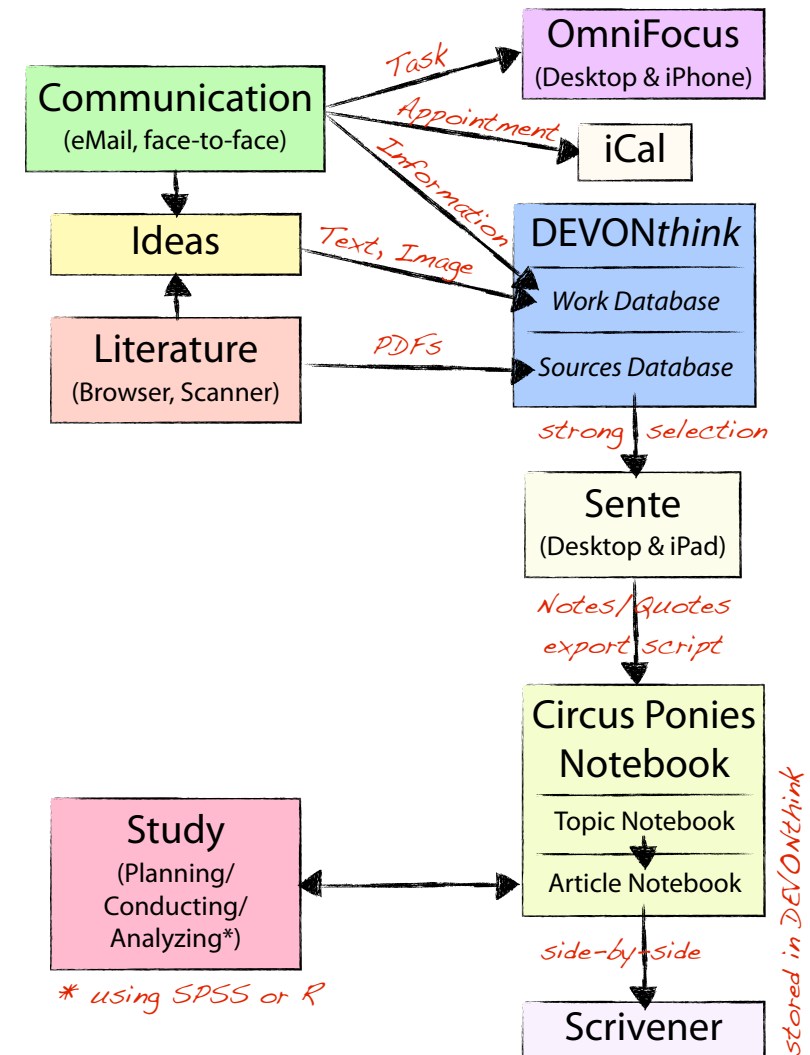
Relevant **literature** (found online, scanned) goes into the "Sources Database" in **DEVONthink**, is named according to a common scheme (author1\_[author2\_ author3\_]year), and is tagged (e.g., topic, read, in\_sente).

Literature that is **selected for reading** (strong selection, as it is easy to find a lot of texts to read) is transferred to **Sente** (see page 346). The desktop and the iPad edition allow easy creation of notes, and an AppleScript can export these notes to RTF files.

**Circus Ponies Notebook** (see page 233) is used for **topic notebooks** (see page 350), meaning that information about the main research topics contain all the relevant information from the read texts. Outliner paper is used and each cell is tagged with the source information, e.g., author1\_author2\_year.

If an **article** is planned, literature (including the source information that is attached to the cell) is copied from the topic notebook to a new **article or project notebook** (see page 351). This notebook is used to **plan the study**, and to **document** the study and the **results** (analysis is done with SPSS or R, data files, syntax files and output files are stored in the article notebook).

If all information is available for an article in the article/project notebook, it is used to create a content outline (see page 338), and then placed next to a **Scrivener** document and used for **writing** (see page 340, and also page 344 for the difference between a content and structure outline).



## DOING A PH.D. THESIS

In many ways, doing a PhD thesis (or academic works that are more simple like a diploma or master of science thesis) is similar to academic work (see page 324). However, there is an important difference: It is your first time you do are scientific work and it serves (mostly) to qualify you for doing the work of a scientist.

Not only is the work itself new, but other factors influence the success, mostly your adviser and your colleagues. This said, the following aspects are useful to keep in mind (see also „Academic Work Resources“ on page 384):

<b>make sure you want to do it</b>	Do it for the right reasons: Becoming a scientist. Not for prestige. It is a career and not a game.
<b>do not underestimate it</b>	Scientific work in a discipline is different from studying the discipline. It is one main project for 3-6 years, you are accountable to your adviser/funding organizations, you are in a strong dependency relationship, you need to gain access to an international (and sometimes interdisciplinary) research community, and you research new knowledge instead of studying existing knowledge.
<b>"Don't Panic!"</b>	Feeling stupid and incompetent is normal <sup>1</sup> . Instead of learning what is known, you research new knowledge. You move beyond the borders of knowledge and push them back. You do not follow others, but move ahead yourself. Like an expedition voyage, you are the first one who steps onto the newly discovered land, but you will also "discover" shallow areas and cliffs on that voyage and you can wreck your ship or vanish in a bank of mist. And yes, there will be dragons. However, they can be defeated — and you can win a lot from them.
<b>know the (local) rules of the game</b>	Have a look at the regulations and a few finished theses that were done at the department to know what is required. Evaluation criteria vary and at some institutions it is very difficult to get a good grade when addressing certain questions or using certain methods.
<b>demands, preparation, and support</b>	A PhD thesis requires staying power/persistence, stress resistance, organization/project-management skills, affinity for writing, and (often) a good working knowledge of the English language ("broken english" being the official scientific language). Prepare, have a strong support network, and make sure you have at least two other things in your life (e.g., family, friends, hobbies, recreational activities) that keep your mood up if (and when) the PhD work becomes unbearable.

## DOING A PH.D. THESIS

### survive the crises in the beginning of the PhD thesis

Typical crises in the beginning are:

- **being overwhelmed by the job**  
Normal, give yourself time to get accustomed to the work, find someone to ask/learn from, ask-watch-learn.
- **finding no suitable thesis topic**  
Takes time to get to know the literature, ask your adviser for hints.
- **trying to learn everything**  
Select consciously which opportunities you use and make a "learning list".
- **paid project work takes up the time**  
Pre-planned projects are usually better planned and tightly scheduled as your dissertation, so you have to fight an uphill battle for the necessary amount of time.
- **avoiding to conduct the first study**  
Call it a pre-study and just use a few people. You need to step into the cold water and test your ideas empirically, do it as early as possible.

### survive the crises in the middle of the PhD thesis

Typical crises in the middle are:

- **having no significant results**  
Happens, you can look deeper in the analysis and/or rethink your hypotheses.
- **having no time to work on the thesis**  
Rethink your priorities and defend your time, see „Time Management“ on page 58.
- **being scooped (someone else published it first)**  
Happens, parallel creativity is not rare, we all work with the same material. Look for differences between the studies.
- **project partner quits**  
Have a plan B in the back of your mind. You might need to change the scope or your questions, but perhaps you can realize it differently and salvage much of your work.



## DOING A PH.D. THESIS

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<b>survive the crises at the end of the PhD thesis</b>	<p>Typical crises at the end are:</p> <ul style="list-style-type: none"> <li>• <b>no idea how to start writing/finding the read thread</b> See „Writing a Book“ on page 336.</li> <li>• <b>having no time to write</b> See „Time Management“ on page 58.</li> <li>• <b>doubts about the value of the work</b> Normal. You only see the choices you have done, not the roads not taken, and you know the topic too well to see its difficulty.</li> <li>• <b>fear of being slaughtered in the thesis defense</b> Usually unfounded, unless a fight between departments is conducted on the backs of the PhD students. Train your presentation skills and practice.</li> <li>• <b>fear of the future after the thesis</b> Still working on that one. Ideally you have acquired skills during your dissertation work that are helpful in other contexts and you have established contacts with others.</li> </ul>
<b>make sure you get feedback</b>	Your adviser, but also your colleagues should be willing and able to give you good feedback <sup>3</sup> . You are qualifying yourself — if you do not get feedback about your work, you stay below your potential. See „Feedback“ on page 160.
<b>choose your adviser very carefully</b>	<p>A PhD thesis is like an apprenticeship. You need good advisory that helps you to develop your skills and integrate you in the community. Scrutinize your adviser (ask around, e.g., the student council) — leadership style is very relevant here. Make sure the adviser leads the department in a cooperative way<sup>2</sup>, e.g., leads by example, takes motivation of employees in tasks and decisions into account, shows interest in their development, and communicates based on appreciation.</p> <p>Your actual advisor might be a different person than the department head. Make sure you can work with this person — you do not need to love each other, but you have to work with each other professionally. Ideal is someone who is excellent in publishing papers (not only as first author).</p>

## DOING A PH.D. THESIS

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<b>choose your department very carefully</b>	Does it have a sense of purpose/mission? What is the climate in the department? What is actually lived? How do they talk about other institutes/departments? What can you realize there? How many PhD students finished/didn't finish? Why? How did they like it there? Can you work with the actual advisor?
<b>choose your colleagues very carefully</b>	Colleagues should challenge you to work better. You should be able to cooperate with them and exchange knowledge, without fearing a "stab in the back".
<b>again: the environment matters!</b>	You are highly qualified and should not be wasted on the wrong job. You are ambitious, in the sense that you want to accomplish something, advance, move forward. Choose the right environment. PhD positions are qualification positions — it is not sufficient that you do your work well, the work must also allow you to move forward and improve/qualify yourself. If all fails, switch positions or get a mentor. No class or program can replace an experienced person who takes interest and commits him- or herself personally.
<b>make the ground rules very clear</b>	Talk to your actual adviser about expectations and schedule — and the scope of advisory. Make sure you meet in regular intervals (even if it is only a five minute update) and adjust to each others knowledge levels.
<b>deal with social problems</b>	Avoid social problems with relationship management/ perspective taking. If you have stress with your adviser/colleagues, get another perspective first (e.g., friend, ombudsman, mediator). Intelligence is unrelated to character, so mobbing is possible even in Academia. If this happens, document it immediately and find witnesses. It is possible to change your adviser (the earlier the better, but be sure about it). Address reoccurring problems with your adviser — these communications are not nice, and you will feel very uncomfortable, but that's not the issue. You <b>need</b> to work with each other — and even if it means that you have to find another advisor you need to clarify important issues.
<b>make sure your topic has impact</b>	Impact is not only the frequency with which a journal is cited, but the direct influence of your work (see page 271). Choose a topic that interests you and you are passionate about. <sup>4</sup> Finding a topic can take time.


## DOING A PH.D. THESIS

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<b>mind the scope of your topic</b>	Keep in mind that it is your first scientific work, not your entire career. Take care to do solid, state-of-the-art work and avoid perfectionism. Narrow down the scope of your work to be worthwhile and achievable. Write about the things you might have done (with two or three lifetimes) in an "ideas for future work" section.
<b>mind the PhD thesis vs. other work balance</b>	Advisers might want to provide you with opportunities (or use you as cheap labor), often without seeing how much you already have to do. Make sure your adviser knows what you do. If the demands are too high, name what you do (x, y, and z) and ask which task you should drop if you also take the new task (n). And fight for the time you need.
<b>document it!</b>	In a project of three to six years you need good documentation, otherwise it will be difficult to remember what you have done (and why). Document everything carefully in a way you can make use of it later. Your ideas, your arguments (with literature references), your decisions, how you did your studies, the results (all steps you did including syntax and annotations, what you were aiming at, what you did), the interpretation, and ideas for future works. Keep a project notebook (see page 351) for this purpose and use it as the basis for the thesis' content outline (see page 338). If you document everything well, writing the thesis will be a breeze.
<b>archive literature and milestones</b>	Archive every article, every conference submission, every course you gave, etc. Wikis work well for this kind of task (you cannot change the original files, see page 195).
<b>be open for different sources regarding methods</b>	Sometimes the best sources for complicated methods are obscure journals, e.g., I found one of the best explanations for planing a factor analysis in the "Southern Online Journal of Nursing Research".
<b>read with purpose</b>	See reading literature on page 348. Think about reading digitally (see page 349).

## DOING A PH.D. THESIS

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<b>manage your literature</b>	At least use a common scheme to name the articles (e.g., author1_[author2_author3_]year.pdf which is also the way you would cite it). Literature-Management-Software (e.g., Sente, Citavi, EndNote, see page 346) can help <sup>5</sup> . 
<b>plan your analysis before you do the study</b>	The basic unit of research is the paper/conference presentation. Think through all the steps to the final paper before starting the data collection/study. Otherwise you might collect data you cannot analyse to answer your research questions (keep scale levels and the time needed for qualitative analysis in mind!).
<b>careful with irreplaceable data</b>	Protect/secure/backup all data (see page 306).
<b>use a content outline for writing</b>	See „Writing with Content Outlines“ on page 338. See also page 336f for tips on writing a book.
<b>mind the criteria for scientific texts</b>	To quote Alley (1996), scientific texts should be precise, clear, honest, concise, familiar, and fluid <sup>6</sup> .
<b>publish your results as soon as possible</b>	Use the LPU (least publishable unit) — if you have enough for a paper, write it. First files also wins in science, the process takes ages, and you need the feedback.
<b>do not be discouraged by hard/unfair feedback</b>	Especially for the social sciences this is common <sup>7</sup> . If a paper is rejected, deal with it emotionally (see page 168ff), take care of the major issues (see 172f) and submit to another journal as soon as possible.
<b>learn to communicate clearly</b>	Often there is a verbal defense of the thesis, so train to convey your message easily and understandable (see page 284ff). Teach and talk to your friends about your work in terms they can understand.
<b>use conferences</b>	They provide you with tight deadlines, direct feedback, access to the community, presentation experience — and are often situated in interesting places.

## DOING A PH.D. THESIS

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**enjoy the ride**

It is a confusing, stressing, and often complicated journey, but well worth the while. In the end, you would have it done differently — that is normal and shows that you have learned something. As catspyjamas said on phinished.org<sup>8</sup>: “Das Kapital wasn’t Marx’s thesis: and my PhD thesis doesn’t have to be my life’s work. It’s a training ground.” it is only the first scientific work you do and hopefully not the last. And to use the Capella faculty quote also cited on phinished.org: “The only good dissertation is a DONE dissertation.”

**stay honest and keep your integrity**

Science is a very competitive, high-risk high-pressure environment. Ideally, it should challenge you to deliver top-quality work. However, sometimes pressures partly due to the very real “publish or perish” mentality or concerns regarding the standing of the institute can nudge you to compromise yourself when it comes to scientific integrity. Omit a data point here, embellish the results a little, do a post hoc analysis there. With all corruption, it usually starts small and easy. However, science corrects itself and when it does, your career is essentially over. Your scientific reputation is something you must *never* lose. If you get the impression that you are hard-pressed to fabricate your results, get out of there fast. Science is better than that.

<sup>1</sup> Schwartz, M. A. (2008). The importance of stupidity in scientific research. *Journal of Cell Science*, 121, 1771.

<sup>2</sup> Schmidt, B., & Richter, A. (2008). Unterstützender Mentor oder abwesender Aufgabenverteiler? – Eine qualitative Interviewstudie zum Führungshandeln von Professorinnen und Professoren aus der Sicht von Promovierenden. *Beiträge zur Hochschulforschung*, 30(4), 34-58.  
Schmidt, B., & Richter, A. (2009). Zwischen Laissez-Faire, Autokratie und Kooperation: Führungsstile von Professorinnen und Professoren. *Beiträge zur Hochschulforschung*, 31(4), 8-35. [both German]

<sup>3</sup> Pausch, R. (2008). *Really Achieving Your Childhood Dreams*. New York: Hyperion.

<sup>4</sup> Perry, C. (1998) A structured approach to presenting theses. Available on line at <http://www.scu.edu.au/schools/gcm/ar/art/cperry.html>

<sup>5</sup> [http://en.wikipedia.org/wiki/Comparison\\_of\\_reference\\_management\\_software](http://en.wikipedia.org/wiki/Comparison_of_reference_management_software)

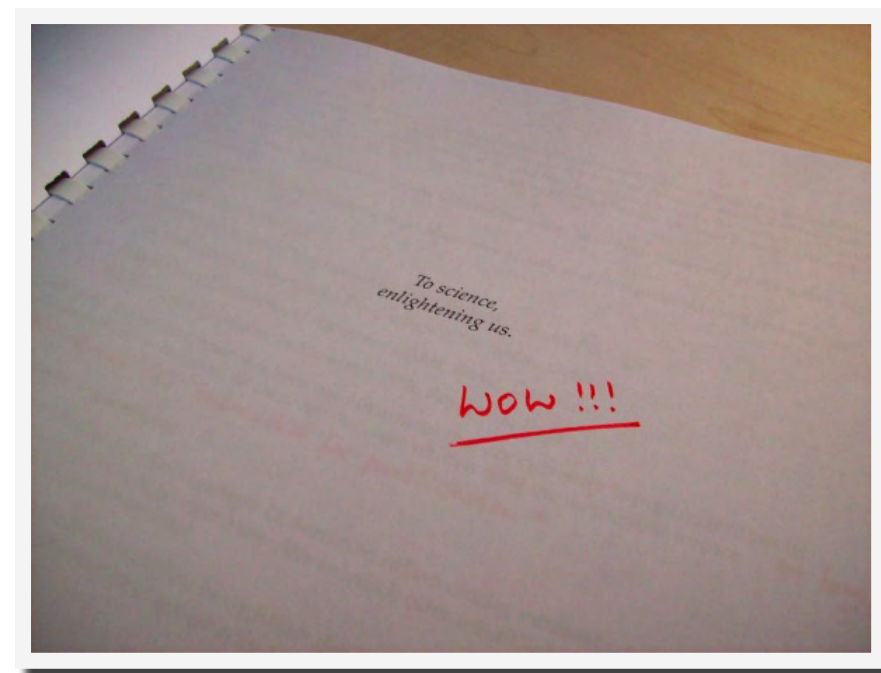
<sup>6</sup> Alley, M. (1996). *The Craft of Scientific Writing* (3rd Edition). New York: Springer.

<sup>7</sup> Trafimow & Rice: Trafimow, D., & Rice, S. (2009). What If Social Scientists Had Reviewed Great Scientific Works of the Past? *Perspectives on Psychological Science*, 4(1), 65-78. DOI: 10.1111/j.1745-6924.2009.01107.x

<sup>8</sup> PhinishD.org is a great forum of people who are all working on their PhD thesis. They share advice and give emotional support.

## DOING A PH.D. THESIS

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*The first comment made by my proof-reader (who also wrote the foreword to this book) — I mean, after reading such a comment, you are willing and highly motivated to slug it out with the comments/correction of mistakes you have made. And like written — it is very helpful to have a social network of people who support you during your dissertation — because you need it.*

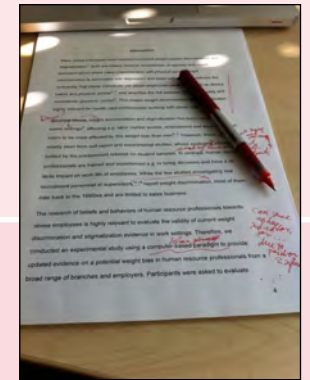
# WRITING A BOOK

Writing a book takes a great deal of organization and hard work — persistence is key here. Few people, if any, just fire up the word processor and start writing "the perfect novel" or the "enlightening text book". There is usually a lot of prior research and organization needed.

<b>structure and content are crucial</b>	Take care to invest a lot of time in the structure and the content. In many cases a content outline (see page 338) is very useful (or even crucial).
<b>use tools that can deal with the content type</b>	For projects in which you collect a lot of information and sort it later according to a clear dimension (e.g., time with biographies), an outliner with multiple columns (e.g., OmniOutliner) or even Microsoft Excel might be more useful (see page 253).
<b>inspiration is not relevant</b>	Studies show that people who write according to a schedule (and do not wait on 'inspiration') write more — and without losing quality. You need the ideas earlier in the process, but writing is a craft, not an art. Something that closely mirrors the process described in this book.
<b>there is more to write with than word</b>	A wordprocessor might not be the best program for writing. Dedicated software for writing books (e.g., Scrivener) is much more suited and supports the process in ways a wordprocessor (like Microsoft Word) cannot (see page 340).
<b>get the right habits</b>	Write continuously (every day at the same time) and use a ritual to get in (e.g., making yourself a cup of tea). Habits take a month or two to establish themselves, so invest the energy until they become established.
<b>facilitate continuing writing</b>	Stop on a "downward slope" (i.e., in the middle of a paragraph when you know how to continue next) and clear up your desk so that you want and can continue writing.
<b>defend your time</b>	Writing needs long stretches of uninterrupted time, which is rare today. So treat it like you would any other important task (e.g., like teaching a class, cf. Silvia, 2007) and do not let others interrupt you (lock the door, go to a different place, turn off your cellphone). Personally I like writing in the university library for exactly this reason.

# WRITING A BOOK

<b>set achievable goals</b>	Goals like a fixed amount of words (can be easily displayed with Scrivener) help you to stay on track and not stop too early.
<b>document your progress</b>	Keeping a log of your writing activity might help you to stay on track. This can also be an "X" (for "I have written today") in your calendar.
<b>writing is re-writing</b>	Your first draft will probably need a lot of work — that is okay. Write a "shitty first draft" (Lamott, 1994) and improve it in the second and third version.
<b>change the media for revising</b>	Print it and read it on paper with a red marker, this will help you to see the kinds of mistakes you cannot see after editing a text for along time.



You find more information in „Writing Resources“ on page 376, including the referenced literature.



## WRITING WITH CONTENT OUTLINES

The aim of a content outline is to provide you with the necessary information in the structure needed to assist you in writing the text. It thereby allows you to write a complex text without having to keep all the information in mind (virtually impossible), or having to stop to research information or doing additional analyses (interrupts the flow).

Thus, a content outline greatly reduces the cognitive load you experience when writing, allows you to write without interrupting the process, and thereby allows you to focus on the stylistic aspects of writing (e.g., criteria for good scientific texts).

The main difference to writing a text is that you focus on getting the information down in the right sequence (the "bones") without actually writing sentences (the "flesh"). You do it prior to writing a text, and once you have finished the content outline, writing the actual text becomes a breeze.

For example, when my content outline (27k+ cells/1338 pages/320k words) of my dissertation was finished, I was able to write the thesis document (250 pages, 71k words) in a month.

Steps to create a content outline

### 1. create a structure outline (see also page 344)

First make sure that you have the main points your text should have, i.e., create a structure outline. For example, the "Introduction — Main Part — Conclusion" or the "Introduction — Theoretical Background — Method — Results — Discussion — Conclusion" parts. It will structure the information you add and make sure that you can easily write the text you need to write. Add information what you must say in a specific section, or what should be clear after reading the section (I use bold + orange text for it).

### 2. add all the necessary information for writing

Keep in mind that you need the bones in the right structure:

- Use one line/cell of the outliner for one piece of information and avoid finished/formulated sentences, as they "stick" together (e.g., "... . Thus ...") and you cannot easily rearrange the structure even when necessary.
- This said, if you have a good idea for a sentence, write it down — you can decide later whether you use it (as is or for inspiration) or not.
- Keep an hierarchical structure. Elements of the same order (e.g., "Introduction", "Results") should have the same indent depth.
- If you enter a lot of data/complex information, write a short summary in its parent cell — this way you can fold in the details and concentrate on the overall picture.

## WRITING WITH CONTENT OUTLINES

### 3. check the content

Go through the outline to see whether all the information you need for writing is there. Now is the time to add notes regarding links/references to other parts (you might miss them when you are occupied with writing). Folding in the sections to compare information that is usually far apart (e.g., introduction and conclusion, or results and discussion) is very helpful and allows you to refer to previously mentioned aspects explicitly.

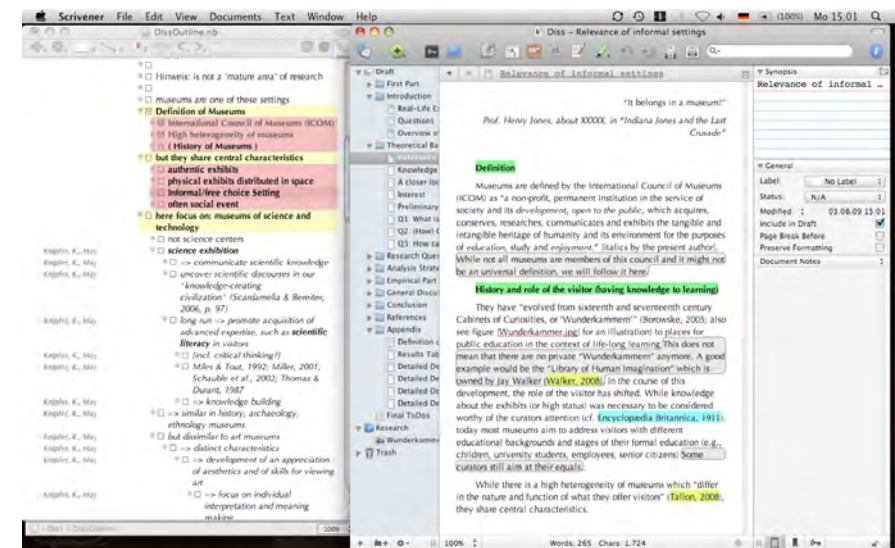
### 4. check the order

When all information is available, check the order. Read the outline as a whole first (top to bottom), then read and reorder each section immediately prior to writing it (it will allow you to have the whole section content in the back of your mind while writing it).

### 5. write

Create a structure outline (step 1, albeit more detailed) in your writing software (e.g., Scrivener's Binder). It will aid in navigation while writing the text (see page 344).

Put the content outline next to your writing software and use checkboxes to indicate which information you have already used (also makes it easy to resume). If you have a writers block while writing, you have most likely a problem with the structure. Review the structure — as you have "only the facts" in it you can quickly change the structure if needed.



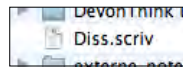
A content outline (Circus Ponies Notebook, left), next to the written text (Scrivener, right). Note that Scrivener's binder can be used very well for structure outlines, but not that well for the detailed content outline.

## SCRIVENER WRITING SOFTWARE

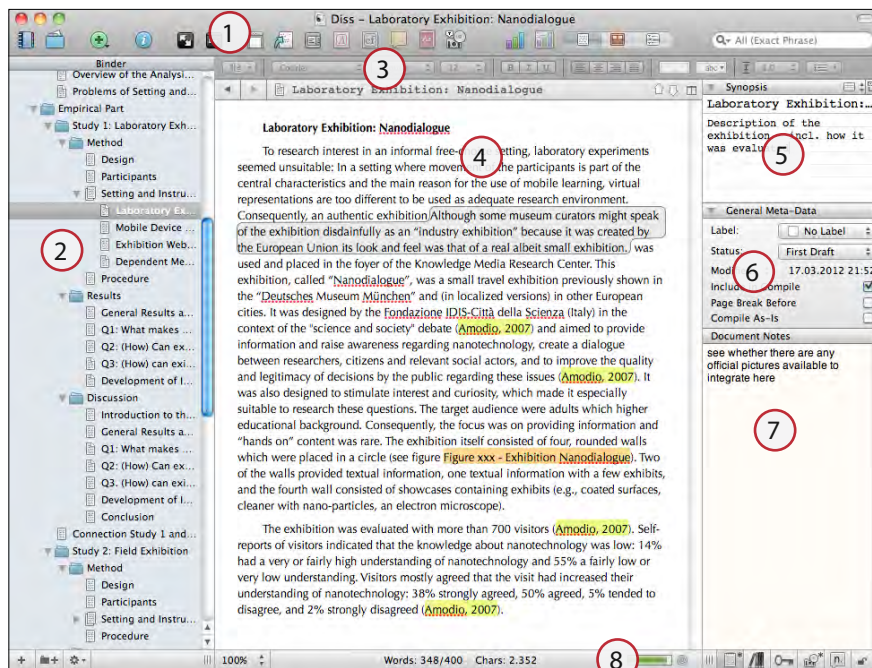
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In contrast to a normal word processor, **Scrivener treats text units, not pages, as the central unit.** Instead of working with a consecutive text that is automatically broken down in pages, you create text documents in the Scrivener document according to the logical structure of the text you want to write. The text documents itself can have any length, although it makes sense to keep them short, focusing only on clearly defined sections of the overall text.

For example, in the Scrivener file shown below, the subfolder "Method" contains text documents named "Design", "Participants", "Setting and Instruments", etc., making up part of the overall text (my dissertation).



File from the outside.



Scrivener file when opened: 1: Toolbar; 2: Binder (document structure, i.e., folders and text documents); 3: formatting bar; 4: writing area for the actual text; 5: synopsis card; 6: general meta data; 7: notes for the current document or the whole project; 8: word target (becomes dark green when target for text file or whole project is reached)

Thus, a **Scrivener file consists of many individual text documents.** You edit parts of the document and can keep them in focus, yet the Binder (2) showing the document structure, allows you to keep the big picture in mind and to quickly navigate in the document. Scrivener lets you create the structure yourself — it is your decision how many text documents you create, how you name and order them. When exported or printed they become one consecutive text.

What might seem unnecessarily complicated (it ends up as one consecutive text anyway) actually allows for some very powerful functions.

## SCRIVENER WRITING SOFTWARE

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## ADVANTAGES

The way Scrivener works has some powerful advantages:

## easy to use

If you have not tried it out, Scrivener might look complicated, but it is actually very easy to use, mostly because it makes something very hard (writing longer texts) much easier. With text units instead of pages as the central unit, you stop to think in pages and concentrate on what you write.

## Binder allows for easy navigation/ (re-) structuring

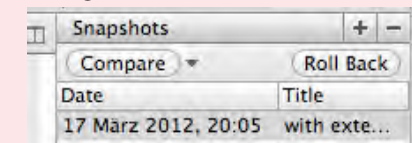
While it may sound strange to divide the document into these "tiny" parts (text documents), it actually makes sense. You can focus on parts of the document, quickly navigate between them, and reorder them. You can use folders as structure elements, indent files, give them custom icons. Great way to keep the structure in mind, especially as you can expand/collapse the hierarchical structure.

## meta-information can be added to text documents/ units

Short descriptions on what should be in the document (text unit) on the synopsis card, images, document notes (Got something you want to remember when writing the discussion? Write it in the document notes for the discussion document), status information like "To Do", "First Draft", "Revised Draft", "Final Draft", "Done", etc. can be added.

## easy version control with snapshots

As your Scrivener document is split up in text documents, you can separately "backup" these text documents/units. By clicking on the snapshot icon, the currently active text file of the document is saved separately within the Scrivener document. Very useful if you want to rewrite a section, but are not sure whether the revision will be better. Snapshots can be compared, differences are highlighted. Way better than "track changes" in Word.



## split view makes sense

In Scrivener the whole text is subdivided in smaller text documents. This means not only that you can find more easier what you want in the other view, but also that entering text in the one view does not move the text in the other view.

## SCRIVENER WRITING SOFTWARE

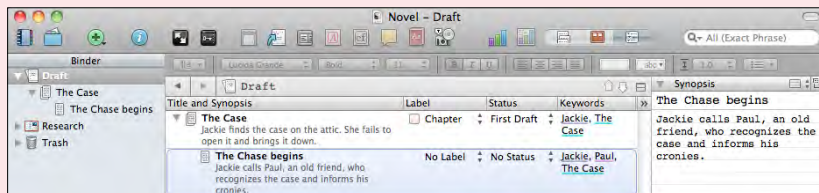
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**statistics and targets**

Scrivener not only allows you to show the amount of words or characters, but also to set target for the amount you want to write. A colored progress bar shows you how you fare — very useful and motivating.

**outline and corkboard view**

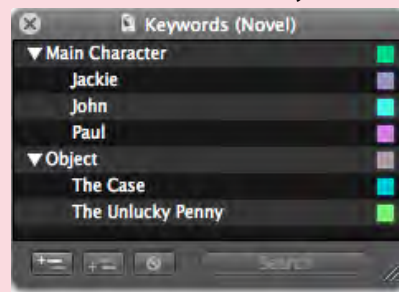
Need a better overview? You can see the binder in an outline view and decide what should be displayed (e.g., Synopsis, tags, status, word count). You can also see the binder on a corkboard (index card with the synopses are shown). Beautiful and useful.



Outline view in Scrivener. Note the hierarchical structure and the tags.

**tags (hierarchical)**

Text documents in the Scrivener file can be tagged. The tags can also be ordered hierarchically.

**auto-save every two seconds and auto-backups**

Scrivener saves the text every two seconds of inactivity and automatically makes backups when you close the file. You can also manually backup the file, in which case you get the file name + the current date and time as name.

**minimalistic view and fullscreen composition view**

The window of Scrivener can be reduced to nothing more than the writing area (4 in the figure on page 340) or set to composition mode. The later covers the whole screen, yet offers some interesting features. Great to focus only on the writing and on nothing else.

**comments**

Comments in Scrivener make sense. They function as bi-directional links to the comment area and as the area expands they are not abbreviated like in Word.

## SCRIVENER WRITING SOFTWARE

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## TIPS

- **Try it out:** People are used to bad software and it is difficult to see/feel the strength of this writing software unless you experience it. There is a free trial version available.
- **Have a look at the introduction videos:** There are videos explaining Scrivener linked on the Scrivener homepage. They are well done and worth watching.
- **Switch if you use a standard word processor:** You can import text you have already started to write (e.g., with Word) into Scrivener, making it easy to make the switch. After importing the text you should split the text into individual documents ("Documents" -> "Split") to create the document structure.
- **Disable Typewriter Scrolling:** If activated, the line you write in is always the vertical center of the screen. Very helpful if you enter text, but obnoxious if you edit text (you move the cursor to the place where you want to edit the text, and the instant you press a button the line moves to the vertical center, forcing you to refocus). You can disable it with Format – Options – Typewriter Scrolling Setting and **you have to disable it separately for the composing/fullscreen mode** (move the cursor to the top of the screen to get the menu bar or press `ctrl + cmd + t`).
- **Use it in combination with a content outline:** Whereas Scrivener is very powerful for writing texts, I strongly recommend doing a content outline first (see page 338) and use both together (see page 344).
- **Do the writing first, the formatting second:** The formatting bar in Scrivener is optional, you can hide it. And in most of the cases you should. Leave the formatting for later, shortly before you export the text (but plan enough time for it).
- **Reference Manager and MathType:** You can integrate a reference manager in Scrivener and you can install the (commercial) MathType package. Useful if you are writing academic texts.

If you write longer texts, have a look at Scrivener. It can assist you tremendously. While it has a dedicated "Research" area where you can collect ideas and other material for your texts and could thus be used as an idea collection, the focus here was on using it for writing. However, it can also be used to collect ideas for a single writing project.



## CONTENT VS. STRUCTURE OUTLINES

Looking at the way content outlines can be used for writing (see page 338), the question is whether the Binder-Outline of Scrivener would not be sufficient for writing. After all, it has an outliner view, and why use two programs when one could do the job?

While both are "outlines" in the sense that cells can be folded in or reordered, there is a fundamental difference between the two outline types.

Content Outline (dedicated outliner, e.g., Circus Ponies Notebook <sup>1</sup> )	Structure Outline (outliner view, e.g., Scrivener <sup>1</sup> )
One cell contains information directly (text, images, movies, etc.).	Each "cell" in the outliner <b>view</b> of Scrivener is a "file". It is essentially the Binder (structure of files) <b>seen</b> in another way.
Cells can be used to contain only one information unit.	Cells (= text files) usually contain more than one information unit.
Great to check whether all information is available and for reworking the structure of a document (due to hierarchical structure where parent cells summarize child cells, review is possible on any level of detail, from whole sections to individual steps in an argument).	Very well suited to jump quickly between different parts of the document, and to see which parts need work (e.g., status information of the "files" like label, Draft Status, Word Count).
information before structure, although both are needed	structure before information, although both are needed

As you can see both are outlines, but there is a huge difference. Thus, I highly recommend using both for writing, Circus Ponies Notebook (see page 233) for the content outline (see page 338), and Scrivener for doing the writing itself (see page 340).

Or to use a metaphor: Imagine a wild, colorful girl, who is interested in anything and everything, and holds an impossible width and depth of information that she can order in any way she needs. That's Circus Ponies Notebook. And now imagine a cool, clear thinker, who is very focused on what he does best. That's Scrivener.

If you combine them you have a very powerful combination for writing.

<sup>1</sup> In the sense that this program is very well suited to do this type of outline. I'm not talking about the outline view of word processor (like Word) here, as they are even less an outliner than Scrivener.

## DIGITIZING BOOKS BY GUTTING THEM

Scanning books without a dedicated book scanner sounds like an insane amount of work, but can be done relatively fast (~60 books/day) with a document scanner (e.g., Fujitsu ScanSnap S1500M) — if you are willing to destroy the book in the process.

To scan a book with a document scanner, open the book so that the thick cover is out of the way, remove the first page (often glued to the cover in a way that makes cutting in the right distance difficult), and then you cut down near the spine with a cutter until the whole spine is separated from the book (use a self-healing mat below). You need to find the right distance that leaves the text on the pages intact, but separates the spine (including the thread and/or glue binding). What sounds gruesome for bibliophiles, is actually not that difficult, as long as you restrict yourself to mass market editions.

After scanning, you end up with a scan where one virtual page equals one printed page (not two sided like with a flatbed scanner) and without black areas around the scan (automatic size detection).

## TIPS

- Scan books sorted according to category (e.g., first all climbing books, then all photography books) but keep the most important category for last. Start with the most precious books first (dulls the pain of cutting books).
- Do not cut where you scan. It might make feeding the next stack of pages easier, but the cutting creates dust that will get into the scanner.
- Use a metal ruler to assist the cutter (not plastic, the cutter will cut into it). Do not force the blade or extend it too far, and elevate the blade more in the lower part of the book. Use a self-healing mat.
- Flick through the cut pages to ensure that they are really separated. Otherwise you will create a paper jam. Remove as much dust and traces of glue as possible.
- Do not try to compete with the scanner (cutting the next book while the previously cut book is scanned). The scanner will outrun you and if you hurry, a book dies needlessly. First cut a stack, then scan, then OCR.
- Use scanning profiles (e.g., Color-Duplex). Get a microfiber rug to clean the scanner. Smooth the output tray with a sheet of paper to avoid jams.
- Make sure that each page is scanned (either manual check or calculating the page numbers).
- Use Acrobat's OCR (see page 319) so that you can copy the text, but be careful with "Reduce File Size" (the quality suffers, so keep the original scans somewhere safe).
- Photograph the cover of hardcovers. Use the photographs in the PDFs as first page.



## REFERENCE MANAGEMENT SOFTWARE

Reference management software are programs dedicated to help you work with scientific literature. If you ever attempt to write a scientific article, reference management tools are a great help. Correct citing can make or break your article, and while mistakes in content might evade a casual reviewer, mistakes in citation can be easily spotted. If everything works as planned, these tools can take off a load of time and effort to get the citations right.

They should have the following functions:

- **Literature search mode:** Access to scientific databases/the web to search for literature in the program itself.
- **Easy import of the literature:** Mostly this means PDF files.
- **Get the metadata information quickly and easily:** Author, title, where it was published and when, etc. — without the source information the text is worthless and causes you frustration when you need to cite it, e.g., it should match your paper with databases and provide you with the correct information. Some programs try to do this automatically (with varying success).
- **Manage the documents:** You need to find them when you need them — this usually means subfolders or better tags + smart folders.
- **Facilitate the crucial part — skimming/reading the texts and making notes (see also page 348):** They can usually display PDFs (ideally beautifully rendered in a full-screen mode), but their note-taking options are often limited (pure text only, no outlines). Ideally, they allow you to export the highlighted text and notes (like Sente<sup>1</sup>, see also page 349) and give you the option of exporting the PDF *without* the notes (would you be willing to give your personal comments to a colleague who asks for the text?).
- **Work with your writing software:** Exchange information with Word, Pages, or better Scrivener to create references and the bibliography of the text in the correct citation style.

Other useful features are:

- **Rating/Sharing literature:** Doing justice to science as a social process. Mendeley incorporates this principle by being part social network site for scientists.
- **App version:** Reading literature on a notebook is rather inconvenient. It helps if you can read, highlight, and annotate the texts on a mobile device (e.g., an iPad). This requires excellent syncing, as it is gut-wrenching if you lose your highlights/annotations.

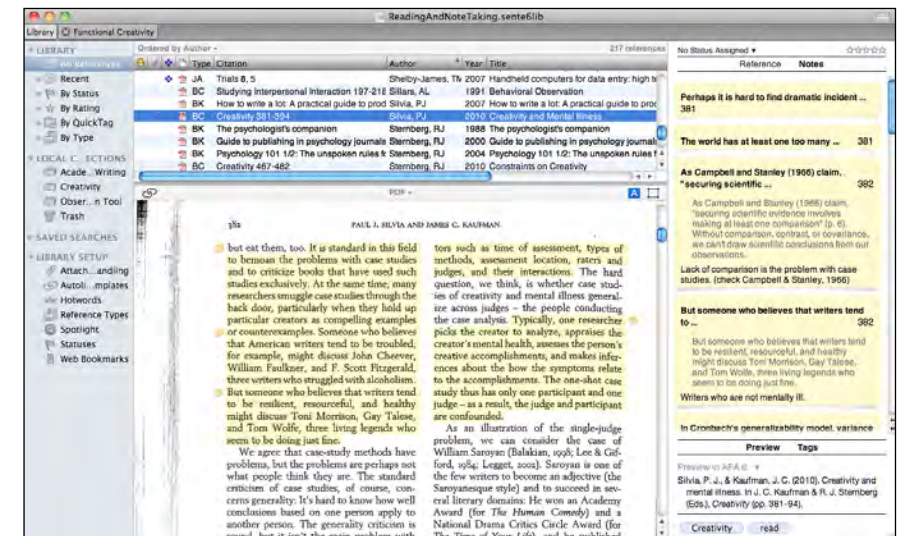
## USAGE

- Try out the trial versions of different management tools until you have found one that works for you. Make sure that you can use the program with your standard writing tool. Other functionality differs vastly, e.g.,

## REFERENCE MANAGEMENT SOFTWARE

Citavi has a knowledge management tool in the background and Sente allows you to automatically generate the page numbers of the direct quotations you highlight and offers hierarchical tags. There are several commercial and open source programs available, see resources on page 380 for some recommendations.

- Make sure that you do not invest in an data island. You will likely have to work with it for decades, so make sure that you can (easily!) export your literature.
- There are viable alternatives to reference management tools, for example, using a digital notebook like Circus Ponies Notebook to hold (links to) the PDFs you read and your notes. The hierarchical outlines are really helpful here. Some use Word to create a quick summary of an article they have read.
- Keep in mind that you have to work with the information you read. They are the building blocks for your scientific work. You need to know what information you have, how to find it, and how to cite it.



Reference management with Sente, a software for Mac (OS X and iPad). Note that it not only allows you to manage storage of literature (sources above the PDF) and generate the correct citation (bottom right), but also comfortably read it: You can highlight text, extract it, and annotate it — and even export this information.

<sup>1</sup> See <https://sente.tenderapp.com/discussions/suggestions/205-new-script-to-export-notes-to-rtf-or-opml>

## READING RESEARCH LITERATURE

In academia, but also if you privately learn a topic, you have to read non-fiction/research literature. There is often an abundance of works available and the topic is usually complex — both can easily overwhelm you.

Keep the following things in mind:

<b>selection, not speed</b>	Keep in mind that it is not the amount nor the speed with which you read articles. You have to narrow down your topic and select texts carefully. Skim the abstract, introduction, discussion, and conclusion to see whether the text is useful to you.
<b>read smart</b>	Read with a sense of discovery (give the author a chance) and read selectively (focus on what is important for you).
<b>use it for your own purposes</b>	It doesn't matter what is written in the paper that much — what is really important is what conclusions you draw from it, how it helps your work, your argument. Facts and thoughts in articles are the Lego bricks for your thesis (which you have to cite correctly).
<b>make notes</b>	Make notes on/in the text first, e.g., highlight/annotate the PDF, in a file with the same name (use a naming convention like <code>authorname_[authorname_]year.pdf</code> ), or write on the print-out, and keep these notes (if made on paper scan the document). In highlighting/making notes, outline the Lego bricks in the text you can work with. Aggregate the authors thoughts and arguments if necessary (but make sure you mark what is your own interpretation!). Outliners (see page 230) are great for this — each cell is an information unit and you can easily create parent cells to write text that aggregates them. I use a different color and "[...]" for my own thoughts.
<b>manage your notes on a level beyond the texts you read</b>	After reading a text, transfer the notes to your other notes — structured by topic (and not by individual texts). Compare it with storing Lego bricks: If you store the bricks (information units) within little sacks (CPN pages) according to source (box you bought), you can easily rebuild the object (whatever the box was, e.g., police station). But you will find it harder to build something on your own. For this purpose, sorting the bricks according to color and form (topic) would make more sense. And working digitally you can do both — store your notes in/on the article and copy & paste them into a different order (e.g., a digital topic notebook, see page 350).

## READING DIGITALLY

eBooks and PDFs have become a viable alternative to traditional paper-based reading with convincing advantages<sup>1</sup>:

- You can have them **easily available** no matter where you are.
- You **save insane amounts of space** (and are more flexible/lightweight when it comes to moving).
- With a good reader/app you can **easily annotate and highlight sentences and paragraphs and export the text/annotations** — perfect for reading scientific literature.

## TIPS

- The best reading experience is usually an eBook reader/tablet (e.g., iPad).
- If you got a scanned version with large (black) borders, consider automatically cropping the pages with Acrobat. It is a one-time action that avoids much scaling later.
- Try different programs to display the PDFs. I found the PDF display of Papers or DEVONthink way better than the display done by Acrobat<sup>2</sup>.
- Use a program that manages syncing of files between your computer and your reader. For example, Sente runs on a Mac and an iPad and syncs the files.
- Use reading lists as digital equivalent of stacks of books to read. Consciously decide what to read with which intention (see page 348).
- Find an easy way to highlight/annotate the text. On an iPad, GoodReader or Sente allow you to do this easily. You can use a griffel<sup>3</sup> to highlight words/sentences.
- If the display on the mobile device is too small, use an App like GoodReader that allows you to convert the PDF text in plain text.
- Include the files in your backup cycle. If you lose the reader you might lose months of work — reading them.
- Use scripts to export the highlighted sentences and your annotations<sup>4</sup>.
- Use a program that allows you to export the files without annotations (or keep a copy separately). If you share your literature, you might not want to hand them your private notes (see also page 346f).

<sup>1</sup> I think the two main disadvantages are that you lose the kinesthetic-olfactory-auditory experience of reading and that you have nothing to read when the power goes.

<sup>2</sup> There are many PDF readers, e.g., Skim (<http://www.macupdate.com/info.php/id/24590/skim>), or PDFpenPro (<http://www.macupdate.com/info.php/id/16857/pdfpenpro>).

<sup>3</sup> For example, Pogo sketch pen (<http://tenonedesign.com/sketch.php>).

<sup>4</sup> For example, for Sente see <https://sente.tenderapp.com/discussions/suggestions/205-new-script-to-export-notes-to-rtf-or-opml>

## KEEPING TOPIC NOTES

If you are dealing with a complex topic it pays to make good notes, especially if you have to work with the information later (like writing articles in Academia, where you have to cite your sources correctly).

**keep different topic notes collections for different topics**

Whereas it can become a problem if the topics overlap, keeping them separate might help you in creating (and remembering) the structure.

**useful structure**

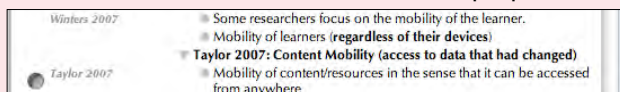
Structure is the main problem here. A lot of aspects of an idea collection (like tags) can help here. Make sure you work with it every day to keep the structure in mind. Personally, I prefer a digital notebook (see page 233), it gives me chapters (dividers), pages, and outliner on each page as elements to create a structure with.

**select what you enter**

Make sure that you do not overburden the topic notes with too much information. You have to be selective. It is not the purpose to recreate the whole research literature here, but the information units you can work with (see page 348).

**keep the source information**

If you need to work with the information again (or even to refer to your sources in an informal discussion), keep the source information. For example, use the keywords/tag function of Circus Ponies Notebook for this purpose:

**quick and easy editing**

Ease of use is even more important than with an idea collection, pressing edit each time (when using a Wiki) might get tedious. Make sure that the software can deal with large amounts of information.

**use extra work documents if you need it for other purposes**

If you need to write an article or restructure the information for any other reason, create an extra version (see content outlines on page 338). Otherwise you either compromise your structure or you create duplicates. Make sure you feed back what you have learned from the work into the collection (e.g., after you have written the article, write down the conclusions you have gathered into the topic notebook).

## PROJECT NOTEBOOK

Related to the topic notes (see page 350) is a project notebook. It can be a digital notebook (see page 232) or any other form of collection that helps you with realizing a complex project over longer time frames (months, years).

For example, a project notebook for a dissertation thesis can include: Todos, content outline for the thesis itself, literature to order, reminders, issues to discuss with advisor, things to remember for the thesis defense, content outlines for papers to publish, notes on technology used (e.g., settings), someday/future research list, ideas for grant proposals, etc. pp.

Keeping a dedicated project notebook has a couple of advantages:

**all information in one place**

A project notebook allows you to have all information available in one big "information package". Whether it is a folder structure in a DEVONthink database (see page 237) or a Circus Ponies Notebook file (see page 233), you know where the information regarding the project is. Thus it should include all information necessary, including (links to) the data.

**exact documentation**

You should focus on an exact documentation of your work. You can prepare in advance for the information you need during the project to avoid missing things when things become complicated (e.g., creating the structure to include the experiments, meetings, etc. that are scheduled).

**no interference with the idea collection**

Keeping a project notebook separate from the rest of the idea collection avoids interference, e.g., when searching for files.

**prepares the structure for later usage**

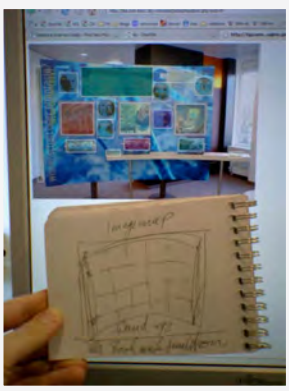
One page in the project notebook should be reserved for the way the project results are used later. For example, if an article is the goal, write down a content outline on the page (see page 338). It allows you to see which information you have and what is still missing.

**you can template (parts of) it**

If you do similar studies, you can copy and paste the notebook or pages of it for the next study. This allows you to easily reproduce what should stay the same and add/change the other parts.



# SKETCHING



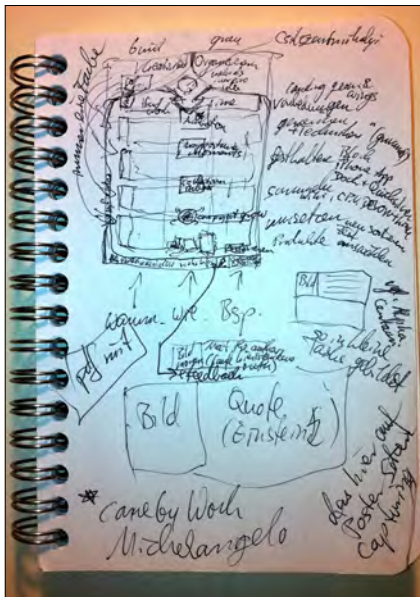
*Sketch of an interface element and the final version.*

A quick sketch is invaluable to make sense of complex phenomena on the fly and communicate with others about them. It gives you something to reference to when you talk about it and keeps the image you had in your mind easily available later.

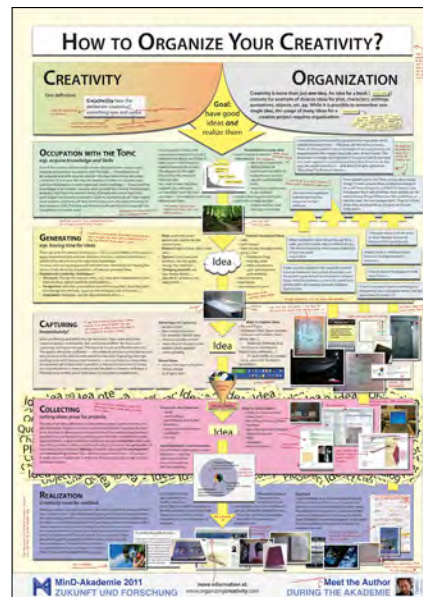
It usually is easier to sketch by hand, e.g., on paper, a napkin or even on a foggy window (photograph it), than to use a graphics program.

However, there are some interesting apps and programs, especially if sketch pens are used. There are also books which focus on communication via sketching.

See resources on page 383 for more information, tools, and literature.



*Sketch for the poster of "How to Organize Your Creativity" for the MinD-Akademie 2011  
(the idea came while bathing)*



## TIME/EFFORT CALCULATION

A time/effort calculation is a rough estimation of the amount of time you need to do something. It is very useful when it comes to repetitive, tedious tasks.

The principle is easy:

1. Measure the amount of time it takes you to do a task.
2. Multiply it by the amount of times you have to do the task.

For example, creating a page in my Wiki for a TEDtalk and including the video, transcript, and description takes me 90 seconds. With 725 TEDtalks (at that time) it would take me 65250 seconds — or about 18 hours, i.e., roughly a day.

You can use this information to **plan the task**. For example, 18 hours is not something you can do in a lunch break. So, parallelization might be an option, if you can do it while you are doing something else (e.g., riding a train, watching other TEDtalks). Creating a music playlist to make the tedious work bearable would also make sense.

It can also give you the **motivation** to look for ways to **increase the speed of the tasks** (see page 272 and 316) or **find a different solution altogether**:

- You can **calculate the gains when you find ways to increase the speed**<sup>1</sup>, e.g., in the example, 30 seconds saved would reduce the total amount of time from 18 to 12 hours.
- You can also **justify using a different solution**<sup>2</sup> like investing 8 hours to write a script that will do it for you overnight (e.g., without costing you any time at all after the initial 8 hours). Some solutions can be used repeatedly in the future, saving you additional time.

Note that **accuracy** depends on gains/losses with repeated practice (**muscle memory** can speed up the task, while **fatigue** and **breaks** reduces the speed) and the **inherent variance of the task duration**. Ideal are tasks with little variation (e.g., tagging images, copy & pasting), not (so) suited are tasks with high variance like reading articles of different complexity or scanning books of different length. However, you can increase the accuracy of the estimation by doing the task repeatedly and then divide the time by the amount of times you have done it. The **average** value is usually more accurate.

In short, keep an eye on the time you invest in something, especially when it comes to tedious tasks. If you think it might take too long, do a time/effort calculation and make sure you are willing invest this time/effort.

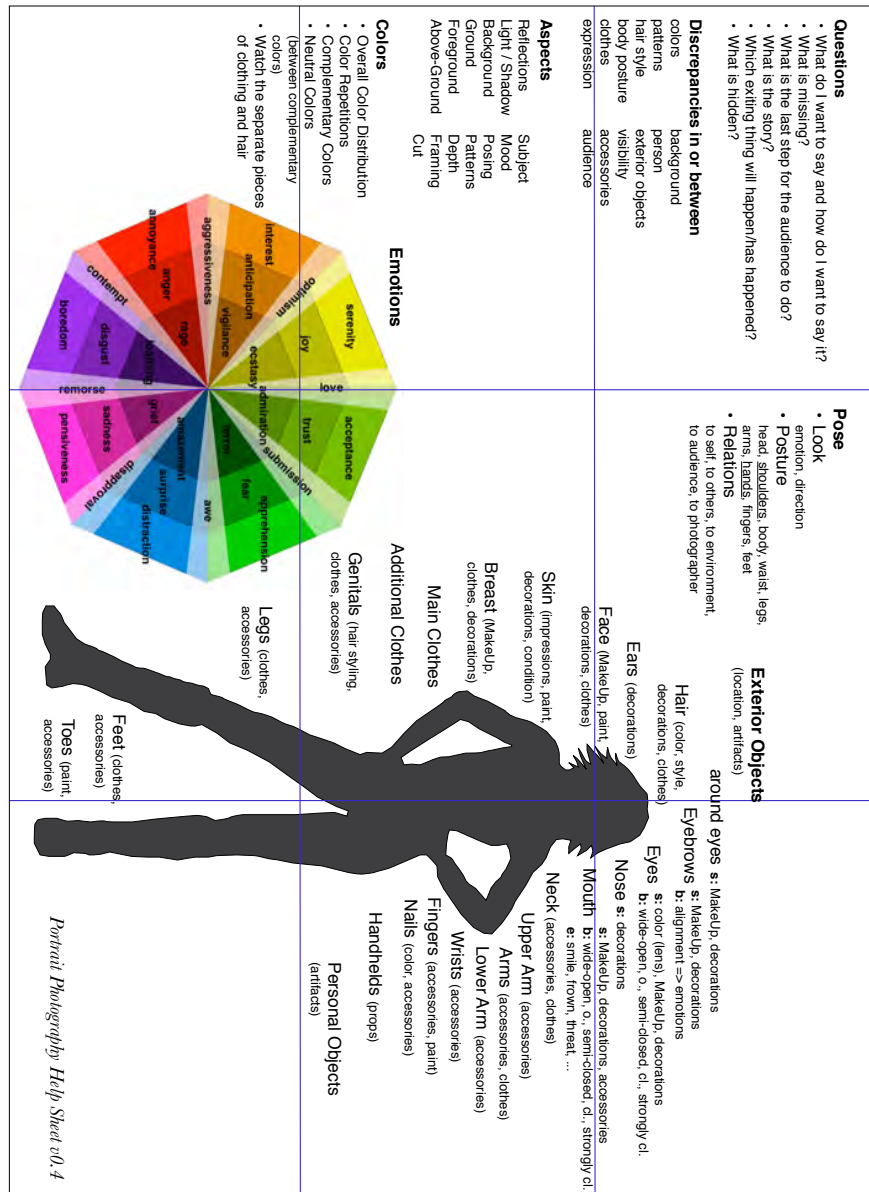
<sup>1</sup> If wish software developers would consider this — especially when they consider the user base (a few thousand to million users) a lot of time can be saved if a click becomes unnecessary.

<sup>2</sup> Especially if you do it at work and also calculate how much money it will cost your employer based on your hourly salary (it is interesting to see in itself how much you are worth per hour).



## CREATIVE HELP SHEETS

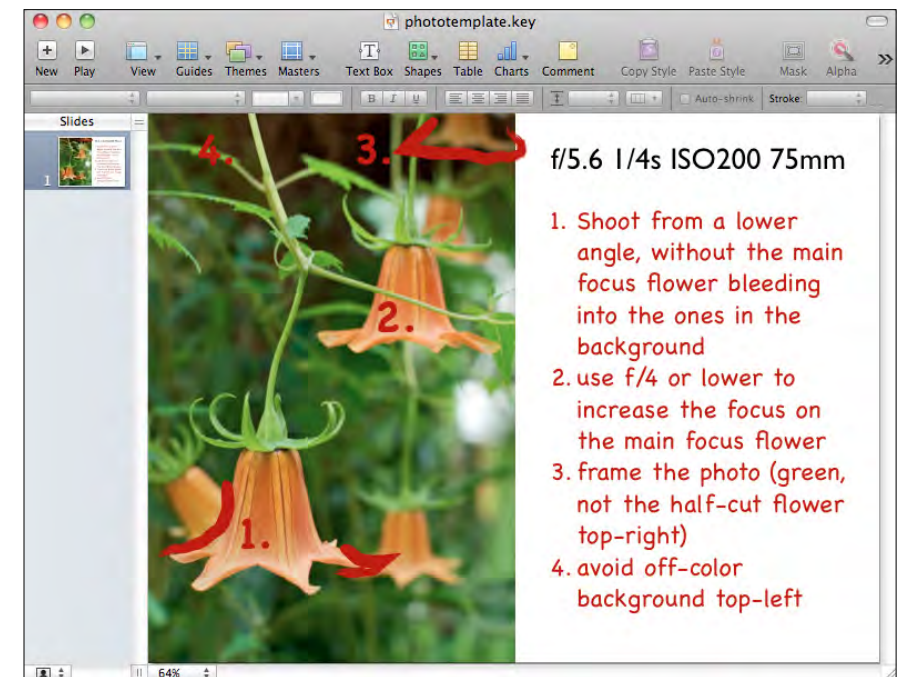
A creative help sheet is a reminder of what you know about a topic, high-level but covering all important aspects. For example, below is an help-sheet for portrait photography. Do not worry that you cannot keep all aspects in mind or even refer to at each shooting. Just having the sheet available and looking at it often will help you remember and "see" the aspects you should keep in mind.



## REMEMBERING WHAT YOU WANT TO CHANGE

You can learn a lot when you revisit the same motif again. Just make sure you remember what you wanted to do.

An easy way to remember is using a template, e.g., in PowerPoint or Keynote, and simply annotate what you want to avoid. You can define an image area and text field for the meta data and points to adhere to with this motif. After adding the image, highlight/mark the issues on the photo and write the main points on the slide:



Export the slides as images (jpg) and put them on your mobile phone or your camera (try it out in advance, not all cameras accept .jpgs that were edited), or simply print it (you can print more than one slide on a page, 6 per page usually work fine). In contrast with simply leaving the images on your camera, you do not have to think on the set which points to adhere to, and if you put them on your mobile phone or print them, you do not need to scroll through the photos again and again.

You will probably make new mistakes when you revisit the same setting (things to avoid next time), and some things might be different, but there is no reason why a photographer should not revisit her motifs like a writer would rewrite a text.

It is a great way to become better.

## USING A TASK MANAGEMENT TOOL

If you have a lot to do, a task management tool can help you keep you on track (see „Organization Resources“ on page 366, also „Task Management“ on page 62). However, the best tool will not replace the necessary commitment for the tasks. I strongly recommend using an integrated solution that runs on your normal computer (easy input) and your mobile device (you *need* to have it available anytime and anywhere). Personally I use OmniFocus, although Things would probably work (nearly) as well.

### TIPS

- Use a **rituals<sup>1</sup> project with daily reoccurring tasks** to be done as the first thing of the day:
  - "Review Annual Goals"/"Review Monthly Goals" to ensure that you stay on track
  - "Review Calendar" to ensure that you do not miss an appointment
  - "Review Waiting For" to stay on top of things, and
  - "Pick Most Important Tasks" (no brainer, but after the rest to ensure that the general direction and the constraints (e.g., appointments) are considered).
- Separate the tasks in **Work**, **Private**, and **Someday/Maybe** Folders. Use projects in these folders. The Someday/Maybe Folder keeps the "if I had time/money/courage" tasks away from the rest.
- Differentiate between high-level reminders (general things you want to do, e.g., "write book x", "think about doing y") and concrete tasks you have to do.
- Differentiate between the **repository function** of the tool (storing all the things you have to do eventually) and the concrete **"do this task today"** function. For the later use an extra project called **"ToDo ToDay"**, to which you add only the tasks you *can* and *will* do on a given day (using a project allows you to sort the tasks).
- Only add tasks to your **"ToDo ToDay"** list that **can be done in a day**. For example, "read chapter x" or "write eMail to y" are valid tasks, "read the Encyclopædia Britannica" is not (a daily reoccurring task like "read 10 pages in Encyclopædia Britannica" would be okay).
- To build habits, a tickle list or streak app (marks each day in the calendar when you did the task) is probably better.
- Most task management tools offer a large amount of features, but keep it simple. Remember that you have to work with it every day, so do not overplan. Review your usage after a few weeks and simplify.

<sup>1</sup> Idea from asianefficiency.com, who have an impressive series about using OmniFocus.

## LIFE-NEWSPAPER

A life-newspaper is a personal overview/retrospective diary of a year in the form and style of a newspaper (or newsletter, example on the right from Apple's Pages newsletter templates).

It covers major topics like business/science (work), travels, education (courses taken), health, social life, technology (new equipment), literature (good books read), sports, work, finances, art, culture, quotations, and realized projects.

It is created retrospectively to get a higher-level perspective and focus on the important parts during the year. Given that it is sorted according to topic it is more useful than a chronological diary.



### TIPS

- As it is created retrospectively, you need to remind yourself what happened that year. Sources are eMails (esp. if you have pen-pals), your archive (see page 190ff), your apartment (what changed?), your work records, social network sites (e.g., Facebook, Twitter history), etc. If you use a diary or a life-logging App (e.g., Memento), skimming through the notes (or using tags) also provides you with excellent data.
- You can create it easily with a Newsletter template (e.g., in Apple's Pages, see image). Afterwards export it to PDF to have it available in the future.
- Given that a serious life-newspaper provides personal information condensed and sorted according to topic, the wrong person who reads it gets highly private information on a silver platter. Encryption is recommended, but be careful. The outlook is decades, so make sure you remember the password.
- Skim through the life-newspapers occasionally. You get the highlights and the really, really bad moments in one go, which is quite the emotional roller-coaster. Not bad per se, but intense, very intense — and you learn a lot when you reflect over the years.

# Resources

About the Resources - About Creativity Resources  
- Stimulation Resources - Organization Resources -  
Information and How-To Resources - "Highest Art"  
Resources - Service Resources - Text Editor Resources  
- Mind Map Resources - Outliner Resources - Digital  
Notebook Resources - Notes Management System  
Resources - Wiki Resources - Writing Resources - Text  
Layout Resources - Reference Management Software  
Resources - Photography Postprocessing Resources  
- Collaboration Resources - Drawing/Sketching  
Resources - Academic Work Resources - Statistic  
Resources - Presentation Resources

## ABOUT THE RESOURCES

### ABOUT THE RESOURCES RECOMMENDED IN THIS BOOK

If you do not know the programs or sources mentioned in the book, kindly refer to these links. For a good starting point regarding more information visit Wikipedia ([en.wikipedia.org](http://en.wikipedia.org)). There is usually an reference page of different software types (e.g., photo editors, post processing software, wiki engines) and detailed descriptions of the specific software.

While I personally love Circus Ponies Notebook, DokuWiki, DEVONthink, and Scrivener, I will not vouch for any of these (or the other) programs. Your tastes might not be the same.

Have a look at these (or other) programs and decide for yourself what you will use or not. But be careful that you still have the choice to export your data and choose another program. Do not get trapped on a data island.

### RECOMMENDATIONS

- The software marked with an arrow is highly recommended. This does not mean that it is the best one for you, but you should include it in your considerations.

absolutely no warranty	I do not give any warranty that the links or the software does work, nor will I take any warranty or responsibility for any damages by these links or the mentioned software. Not even for the software I recommend. Use a virus scanner, keep your firewall up, and act sensible to protect your computer.
trial versions	Trial versions are available for many of the more expensive programs, but be careful: You cannot use them beyond the trial period. This means that you have a very good tool, but only for a short amount of time. Be sure you are able to buy the product you like after the trial period is over, or you will not be able to repeat or continue what you have done.
look around	When you are searching for a program take a look at the forums on the internet that are dedicated to the purpose you want to use the program for. Usually they discuss tools and will present you with countless personal reports which program is good and which is not (and a lot of tricks in using it). Keep in mind that their criteria might be different from yours. Do also have a look at the ubiquitous test reports that are also freely available on the internet. Compare them and make up your own mind.



## ABOUT CREATIVITY RESOURCES

## GENERAL

- **Csikszentmihalyi, M. (1997). *Creativity*. New York: Harper Collins.**  
Very good book about what creativity is (domain-field-individual) with many examples of creative individuals.
- **Runco, M. A. (2007). *Creativity*. Burlington, MA: Elsevier Academic Press.**  
Scientific textbook on creativity. Easy to read and very well done. Many examples of creativity techniques and whether and how they work.

## BEING CREATIVE

- **Glee**  
American series about a school choir — impressive, if candy-coated. It shows you that you should not be afraid to make a fool out of yourself — otherwise you'll never risk trying to reach your dream.
- **Storr, A. (1988). *The School of Genius*. Carlton Books Limited.**  
An interesting book about creative individuals, for example, that many of them stayed single to focus on their creative works (although I think that being creative is such a rollercoaster ride that it really helps to have a soulmate — and a strong social network).

## COPYRIGHT

- **TEDtalk: Blakley, J. (2010). Lessons from fashion's free culture. ([http://www.ted.com/talks/johanna\\_blakley\\_lessons\\_from\\_fashion\\_s\\_free\\_culture.html](http://www.ted.com/talks/johanna_blakley_lessons_from_fashion_s_free_culture.html))**  
Talk about copyright in fashion: Apparently in the US, it's very hard to protect fashion design. There is no copyright protection, only trademark protection, because dresses are too utilitarian to own. Thus, designers have to be creative constantly, because their newest design will immediately be copied by other companies. It forces them to up their game, accelerates development, and allows them "to paint with a broader pallet of design choices". You can actually take from the best and ignore the rest — and get away with it!

## STRESS OF BEING CREATIVE AND OTHER STRESSORS

- **TEDtalk: Elizabeth Gilbert on nurturing creativity ([http://www.ted.com/talks/lang/eng/elizabeth\\_gilbert\\_on\\_genius.html](http://www.ted.com/talks/lang/eng/elizabeth_gilbert_on_genius.html))**  
Gilbert talks about the expectations of success (and failure) after having published a very successful book, and the ways to deal with these expectations. She is alone on the stage, pure talk, no Powerpoint, but what she says and how she says it is simply perfect.
- **Reivich, K., & Shatté, A. (2002). *The Resilience Factor*. New York: Three Rivers Press.**  
Good book about dealing with stressors and negative events. The authors

## ABOUT CREATIVITY RESOURCES

- are psychologists and use cognitive behavioral therapy as a basis for improving resilience.
- **Schramm, J.D. (2011). Break the silence for suicide attempt survivors ([www.ted.com/talks/jd\\_schramm.html](http://www.ted.com/talks/jd_schramm.html)) Interesting TED Talk about Suicide**  
Interesting TEDTalk about suicide — or rather of surviving it. Very interesting.
- **Kleiner, A. "How not to commit Suicide"**  
Describes what happens to the person when a suicide attempt fails. As usual with this topic, not a nice read, but — well, it gives an interesting perspectives. The suicide notes are especially heartbreaking.
- **Jamison, K. R. (1999). *Night Falls Fast — understanding suicide*. New York: Vintage Books.**  
Very impressive book showing depression as the disease that it is. Not an easy read.
- **Johnstone, M. (2006). *Living with a Black Dog. His name is depression*. Kansas City, MO: Andrews McMeel Publishing.**  
Depicts depression as a black dog who invades the life of a person. It shows how depression can happen, what it means in daily life, and what can be done against it.
- **Being a little different ... (sexual orientation/school)**  
There is an interesting article by Dan Savage (<http://www.thestranger.com/seattle/SavageLove?oid=4940874>) and a corresponding YouTube Channel ([www.youtube.com/itgetsbetterproject](http://www.youtube.com/itgetsbetterproject)) and an interesting statement by Ellen DeGeneres (<http://ellen.warnerbros.com/videos/?autoplay=true&mediaKey=58f77b71-c461-4fa9-afa6-25cd78c02237>).
- **Graham, P. (2004). *Hackers & Painters*. CA: O'Reilly.**  
Interesting book of essays, especially chapter 1: "Why Nerds Are Unpopular" (<http://www.paulgraham.com/nerds.html>). Very interesting perspective of how schools are like prisons and nerds have different aims.

## STIMULATION RESOURCES

## TALKS &amp; PRESENTATIONS

- **TED-Talks** (<http://www.ted.com>)  
TED stands for Technology Entertainment Design and the talks are (mostly) interesting, fascinating, and almost never boring.
- **Authors@Google** (search on [YouTube.com](http://www.youtube.com) for “Authors” and “Google”)  
Authors are invited to promote their book at an Google-Office. Sounds like advertisement, but the presentations are often quite informative, especially when they talk about why or how they did their book.
- **Khan Academy** (<http://www.khanacademy.org>)  
Shows videos explaining difficult subjects with simple sketches.
- **RSA Animate videos** (<http://www.youtube.com/user/theRSAorg>)  
Brilliantly done animations.
- **YouTube** (<http://www.youtube.com>)  
The breath of videos available is very stimulating, esp. presentations. There are also Game Walkthroughs available for many games.

## COMIC STRIPS

Usually a great start into the day, something that makes you smile. You can put all the links into one bookmarks folder in the Bookmarks Toolbar of Firefox and click on the folder and select “Open All in Tabs”.

- **Dilbert by Scott Adams** (<http://www.dilbert.com>)  
An engineer working in a cube farm — if you work or ever worked for a large company this comic is for you.
- **User Friendly by J.D. “Illiad” Frazer** (<http://www.userfriendly.org>)  
Geeks working for an internet provider — recommended if you work with computers.
- **Non Sequitur by Wiley Miller** (<http://www.gocomics.com/nonsequitur>)  
Looking on the daily absurdities of life — highly recommended if you think about the world we live in.
- **PhD-Comics by Jorge Cham** (<http://www.phdcomics.com/comics.php>)  
For all grad school students working at their doctoral dissertation. So true, but no one on the outside would believe you.
- **xkcd by Randall Munroe** (<http://www.xkcd.com>)  
Brilliant “webcomic of romance, sarcasm, math, and language”. The comics are drawn simply, but very well done and usually to the point.
- **Savage Chickens** (<http://www.savagechickens.com>)  
Dry humor, but often very funny.
- **“Sandman” by Neil Gaiman**  
Not a comic strip but a comic (graphic novel) series — very impressive series about Dream. Beautiful ideas.

## STIMULATION RESOURCES

## SPECIFIC ASPECTS

- **Modern Art: MoMA’s “I See”** (<http://www.moma.org/explore/multimedia/videos/37>)  
MoMA has made an incredible spot about appreciating modern art. If you ever wondered what modern art was all about, this is for you. It also shows you that you might not be alone if your work is not appreciated, if you cannot communicate your ideas, and that the dream of reaching someone, at some time, might not be a futile one.
- **What Art Should Do: Ryan Woodward’s “Thought of You”** (<http://www.youtube.com/watch?v=OBk3ynRbtsw>)  
Beautifully drawn animation and one hell of dealing with a midlife crisis. It shows what art should be do: touching you emotionally. Have a look at the “behind the scenes” videos: <http://vimeo.com/21096567> and <http://vimeo.com/16330140> to understand how and *why* he did create the video.
- **Music on YouTube: Lara6683 & ViolinTay** (<http://www.youtube.com/user/lara6683> and <http://www.youtube.com/user/ViolinTay>)  
Two very good musicians playing video game music and movie soundtracks on YouTube.
- **Music on YouTube: Walk Off The Earth** (<http://www.youtube.com/user/walkofftheearth>)  
Became famous with their “Somebody That I Used to Know” cover, although they have other really good pieces as well.

## PHOTOGRAPHY, OPEN FOR ALL

- **deviantART** (<http://www.deviantart.com>)  
A large online community for artists where people can exhibit their works, mostly photos and images, but also literature, drawing, sculpturing, etc. More artistic in nature than flickr, more mature and less censored (you need an account to see the mature material). Sorted in categories, and with a system that gives your contributions at least some exposure.
- **flickr** (<http://www.flickr.com>)  
Probably the most famous and largest photo site on the net.
- **Worth1000** (<http://www.worth1000.com>)  
Most of the manipulated picture on this site are worth a 1000 words.

## PHOTOGRAPHY, PROFESSIONAL

- **1x.com** (<http://www.1x.com>)  
Photos by professionals.
- **Slate Today’s Pictures** (<http://todayspictures.slate.com>)  
Showing photos from the Magnum Photoagency for a different theme every (week)day.

## ORGANIZATION RESOURCES

## PRESENTATIONS

- **O'Brien, D. (2004). Life Hacks: Tech Secrets of Overprolific Alpha Geeks** (<http://quernstone.com/notcon04/>)  
Great presentation showing how some people organize their work.

## PROGRAMS/APPS

- **OmniFocus** ([www.omnigroup.com/products/omnifocus/](http://www.omnigroup.com/products/omnifocus/))  
Expensive but very powerful task management app. Excellent syncing between OS X and iOS. (Mac, iOS).
- **Things** ([culturedcode.com/things/](http://culturedcode.com/things/))  
A good task management app.

## WEBSITES

- **43folders** (<http://www.43folders.com>)  
A blog about life hacks (e.g., tips, tricks and ideas to make your life simpler, if you do not complicate it by over-organizing it).
- **LifeDev** (<http://lifedev.net>)  
A blog about “empowering creative people”. I found a lot of similarity between my approach and some articles at LifeDev. Highly recommended.
- **Organizing Creativity** (<http://www.organizingcreativity.com>)  
The website/blog for this book. Postings go beyond this book.
- **D\*I\*Y Planner** (<http://www.diyplanner.com>)  
A blog regarding productivity and creativity with paper. Many, many templates and a lot of interesting information.
- **zenhabits** (<http://zenhabits.net>)  
A blog about “simple productivity”. They also published a nice book called “Zen To Done” about simple productivity.
- **asianefficiency.com**  
Very interesting blog, has an excellent series about using OmniFocus.

## BOOKS

- **Allen, D. (). Getting Things Done: The Art of Stress-Free Productivity.** New York: Penguin Books.  
An organizing system by David Allen. Has a lot of followers on the net. Very comprehensive and worth a look if you have to deal with a lot of input and appointments.
- **Wessel, D. (2012). Organizing Creativity.**  
Argh! Recursion! Run for your life!!! ☺

## INFORMATION AND HOW-TO RESOURCES

- **StackExchange** (<http://www.stackexchange.com>)  
A very interesting “network of 82 question and answer sites” (including cooking, statistics, photography, writing, and personal productivity). What makes it different from typical FAQ sites and forums is that it is community driven, allows you to edit your questions (and answers), and it uses voting to get the most helpful/best answers to the top. Very useful to quickly get a good answer to a question that bugs you.
- **wikiHow** (<http://www.wikihow.com>)  
How-to Manual That You Can Edit — provides general information not only on creative topics.
- **instructables** (<http://www.instructables.com>)  
Instructions for a lot of projects and a good source of inspiration.
- **The Scientific American’s Experiments** (<http://www.brightscience.com>)  
A CD with over 1000 experiments that were published in the Scientific American’s “The Amateur Scientist” column.
- **The Internet Archive** (<http://www.archive.org>)  
Allows you to access previously existing versions of websites. Very useful if you are looking for an old information that is gone now.
- **Alternative to** ([alternativeto.net](http://alternativeto.net))  
Site that shows alternatives to programs you search for. Very useful to get an overview of what is available.

## "HIGHEST ART" RESOURCES

As a contribution to "everyday" creativity or the "highest art" (as a Heinlein character called it) — some books about something that can be the most beautiful or the most agonizing thing, or both at the same time:

- **Sincero, J. (2009). *The Straight Girls Guide to Sleeping with Chicks*. New York: Fireside Book.**  
A very interesting book — for women, esp. those who have not found out what stimulates them (please read it), and men who want to enlarge their repertoire.
- **Easton, D., & Liszt, C. A. (1997). *The Ethical Slut. A guide to infinite sexual possibilities*. San Francisco, CA: Greenery Press.**  
Very interesting ideas if you (might) want to live an open relationship — and keep your standards.
- **Miller, P., & Devon, M. (1995). *Screw the Roses, Send Me the Thorns. The Romance and Sexual Sorcery of Sadomasochism*. Connecticut: Mystic Rose Books.**  
There are a lot of misconceptions about BDSM. Some people think it's abuse, others think it's the only sex that really counts. Both are far off. This book gives a good introduction to SM, written from the perspective of two people enjoying SM.
- **Wiseman, J. (1996). *SM 101. A Realistic Introduction. 2nd Edition*. San Francisco, CA: Greenery Press.**  
Also a very good introduction to SM, written more from an individual perspective.
- **Easton, D., & Hardy, J. W. (2003). *The New Topping Book*. Oakland, CA: Greenery Press.**  
A good book focusing on the person doing the dominance or inflicting the "pain". Easy to read.
- **Easton, D., & Hardy, J. W. (2001). *The New Bottoming Book*. Oakland, CA: Greenery Press.**  
A good book focusing on the person who enjoys the incredible attention during a session.
- **Hardy, J. W. (1996). *The Compleat Spanker*. Emeryville, CA: Greenery Press.**  
A book dedicated to spanking. A very good if somewhat old (but still relevant) source.
- **Wiseman, J. (2000). *Erotic Bondage Handbook*. Emeryville, CA: Greenery Press.**  
A good book on bondage.

## SERVICE RESOURCES

- **CreateSpace (<http://www.createspace.com>)**  
Self-publishing company, belongs to Amazon.com and all books are easily made available there.
- **Lulu ([www.lulu.com](http://www.lulu.com))**  
A self-publishing company on the internet. An easy way to get commercial grade bound books from your written works (or comics, or calendars).
- **cafepress ([www.cafepress.com](http://www.cafepress.com))**  
A store/manufacture where you can design, create and sell apparel, sticks, buttons, magnets, housewares, prints and cards, hats and bags, books and audio and data CDs.



## TEXT EDITOR RESOURCES

- **TextWrangler** (<http://www.barebones.com/products/textwrangler>)  
One of the best free editors for Mac. (Mac).
- **Notepad++** (<http://notepad-plus.sourceforge.net/uk/site.htm>)  
Better than the standard Windows Notepad but far from perfect. (Windows).
- **KeyNote** (<http://www.tranglos.com/free/keynote.html>)  
Tabbed notebook and personal information manager, with tree structure and strong encryption. Open source. (Windows).
- **TreePad** (<http://www.treepad.com>)  
Promoted as "Personal Information Manager, Organizer, Database, and Word Processor". (Windows).
- **BrainStorm** (<http://www.brainstormsw.com>)  
Expandable editor for windows. (Windows).
- **ndxcards.com** (<http://www.dxcards.com>)  
Outliner-Index-card based editor/note-taking system. (Windows).

## MIND MAP RESOURCES

- **Freeplane** ([freeplane.sourceforge.net](http://freeplane.sourceforge.net))  
Platform-independent and OpenSource program for creating mind maps. Used by some for writing articles. (Mac, Windows, Linux).
- **Cmap Tools** (<http://cmap.ihmc.us>)  
Powerful MindMapping software, allows the online-sharing of Maps. (Mac, Windows).
- **Free Mind** ([http://freemind.sourceforge.net/wiki/index.php/Main\\_Page](http://freemind.sourceforge.net/wiki/index.php/Main_Page))  
Free Java MindMapping Software. (Mac, Windows).
- **MyMind** (<http://www.sebastian-krauss.de/software/#mymind>)  
MindMapping/Outliner combination. (Mac).
- **bubbl.us** (<http://bubbl.us>)  
Free, online MindMapping. (Mac, Windows).
- **Inspiration** (<http://inspiration.com/productinfo/inspiration>)  
"Visual thinking and learning tool". (Mac, Windows).
- **Mindjet** (<http://www.mindjet.com/products/overview.aspx>)  
Visually capture and share information. Programs for Mac and Windows.
- **NovaMind** (<http://www.nova-mind.com>)  
Powerful MindMapping software (family). (Mac, Windows).
- **Microsoft Office** (<http://www.microsoft.com>)  
Don't laugh. While trying to make mind maps with Words draw utility is a tedious process, PowerPoint is a little bit better. They have the advantage that they are pre-installed on nearly any PC which makes them good for sharing mind maps, but on the other hand they were not developed for this. You have to draw everything and anything by hand! While these two programs might help you if you are stuck without any tools (but strangely, Microsoft Word or PowerPoint) a dedicated mind mapping software is highly recommended. (Windows, Mac).

## OUTLINER RESOURCES

- **Circus Ponies Notebook** (<http://www.circusponies.com>)  
While not a dedicated outliner, CP Notebook, offers pages in outliner format. See also page 233. (Mac).
- **Omni Outliner** (<http://www.omnigroup.com/applications/omnioutliner>)  
Dedicated outliner from one of the best companies ever (Mac).
- **Neo** ([http://d-lit.com/macosex/neo\\_outliner/](http://d-lit.com/macosex/neo_outliner/))  
Outliner with a lot of powerful functions, including cloning, cheaper than Omni Outliner (Mac).

## DIGITAL NOTEBOOK RESOURCES

- **Circus Ponies Notebook** (<http://www.circusponies.com>)  
A highly recommended program that reproduces the look and feel of a traditional notebook with all the advantages of a digital solution. See also page 233. (Mac).
- **AquaMinds NoteTaker** (<http://www.aquaminds.com>)  
A digital notebook similar to the Circus Ponies version. (Mac).
- **Microsoft Word** (<http://www.microsoft.com>)  
Microsoft actually tries to reproduce the look of a notebook, albeit not as good as a dedicated software. (Windows, Mac).
- **Microsoft OneNote** (<http://www.microsoft.com>)  
A digital notebook running under Windows. (Windows).

See also the list in Wikipedia with a Comparison of notetaking software: [http://en.wikipedia.org/wiki/Comparison\\_of\\_notetaking\\_software](http://en.wikipedia.org/wiki/Comparison_of_notetaking_software)

## NOTES MANAGEMENT SYSTEM RESOURCES

### FILES AND FOLDERS BASED

- **DEVONthink** (<http://www.devon-technologies.com/products/devonthink>)  
A folder and text based notes management system, consisting of a very powerful database and AI. See also page 237. (Mac).
- **DEVONnote** (<http://www.devon-technologies.com/products/devonnote>)  
A folder and text based notes management system, the smaller brother of DEVONthink. (Mac).
- **MacJournal** (<http://www.marinersoftware.com>)  
Program to help you organize Notes and other information. (Mac).
- **Evernote** (<http://www.evernote.com>)  
Website and Program/App for many different operating systems that lets you capture and exchange notes quickly, including handwriting recognition — optimized for syncing notes and handwriting recognition. (Mac, Windows, iOS, Android).

### VISUAL BASED

- **Tinderbox** (<http://www.eastgate.com/Tinderbox>)  
Program using a visual/graphic metaphor, needs a lot of screen real-estate but useful for some working styles and projects. (Mac).
- **Curio** (<http://www.zengobi.com/products/curio/>)  
Interesting program that draws heavily on the visual metaphor. (Mac).

## WIKI RESOURCES

There are several wiki engines, for an overview see the list in Wikipedia ([http://en.wikipedia.org/wiki/Comparison\\_of\\_wiki\\_software](http://en.wikipedia.org/wiki/Comparison_of_wiki_software)). Personally I recommend DokuWiki: it is fast, reliable, uses folders and text files for structure and data storage and offers a wide variety of plug ins.

- **DokuWiki** (<http://www.dokuwiki.org/dokuwiki>)  
Wiki Engine made for small companies and single users. Text-File based, fast, reliable, a lot of useful plugins. (Webserver+PHP).  
Good Plugins are: cloud, code, gallery, xbr, orphanswanted, pagelist, tag, and wrap.
- **Media Wiki** (<http://www.mediawiki.org>)  
Wiki Engine used by Wikipedia. (Webserver+PHP+SQL).

## WRITING RESOURCES

## APPLE MACINTOSH PROGRAMS

- **Scrivener** (<http://www.literatureandlatte.com>)  
One of the best writing software for all kinds of books and articles. (Mac & Windows).
- **Ulysses** (<http://www.blue-tec.com/ulysses>)  
Interesting word processor. (Mac).
- **Mellel** (<http://www.mellel.com>)  
An interesting word processor for creative and technical writing. (Mac).
- **CopyWrite** (<http://www.bartastechnologies.com/products/copywrite>)  
Writing software that looks similar to Scrivener. (Mac).
- **Jer's Novel Writer** (<http://www.jerssoftwarehut.com>)  
Relatively simple word processor for writing projects. (Mac).
- **Avenir** (<http://www.returnself.com>)  
Writing software that offers categories like actors, scenes, locations, tasks, etc. to help you planning your novel. (Mac).
- **Storyist** (<http://www.storyist.com>)  
A program similar to Scrivener but with more structure included (e.g., categories like Settings, Characters, etc.). Personally I like a more flexible approach when writing stories. (Mac).
- **WriteltNow** (<http://www.ravensheadservices.com>)  
A writing software with a simple interface that has timelines as a nice feature. (Mac).
- **MacJournal** (<http://www.marinersoftware.com>)  
Program to help you organize Notes and other information. (Mac).
- **StoryMill** (<http://www.marinersoftware.com>)  
Writing software with timeline functions and other features. (Mac).
- **Nisus Writer** (<http://www.nisus.com>)  
Word Processor for writers. (Mac).
- **WriteRoom** (<http://hogbaysoftware.com/products/writeroom>)  
Essentially an editor with a full screen function that prevents you from seeing the distracting elements of your desktop. Better than notepad but many other editors have this feature. (Mac).

## WRITING RESOURCES

## MICROSOFT WINDOWS PROGRAMS

The problem with the Windows software is not (only) that it is often shareware, but that you see and feel that it is shareware. Often there are lots of functions, but the simple and elegant look and feel is missing. If you use Windows, take a look at Scrivener, ported from the Mac, and easily the best program for writing on Windows.

- **Scrivener** (<http://www.literatureandlatte.com>)  
One of the best writing software for books, especially fiction. (Mac & Windows).
- **Liquid Story Binder** (<http://www.blackobelisksoftware.com>)  
A writing software for windows — typical windows software with windows, windows, windows. (Windows).
- **RoughDraft** (<http://www.salsbury.f2s.com/rd.htm>)  
Small donationware writing software. (Windows).
- **Page Four** (<http://www.softwareforwriting.com/pagefour.html>)  
Tabbed word processor and outliner for writers. (Windows).
- **WriteWay** (<http://www.writewaypro.com>)  
Windows writing software with many functions. (Windows).
- **Story View** (<http://www.screenplay.com/products/sv/index.htm>)  
A visual outliner for writing stories. (Windows).
- **NewNovelist** (<http://www.newnovelist.com>)  
Program that aims to help writers to plan their stories. (Windows).

## LITERATURE

- **Silvia, P. J. (2007). *How to Write a Lot*. Washington D.C.: APA.**  
Excellent book to help you deal with barriers to writing (e.g., need dedicated time, need a new computer, need to wait for inspiration, etc. Recommends creating a schedule and sticking to it.
- **Alley, M. (1996). *The Craft of Scientific Writing (3rd Edition)*. New York: Springer.**  
Excellent book showing that technical/scientific writing is a matter of craft (meaning that it can be learned and does not depend in inspiration). Also provides a very good overview of the criteria of scientific writing.
- **Lamott, A. (1994). *bird by bird*. New York: Anchor Books.**  
Wonderful book for aspiring (fiction) writers, although some tips are also useful for technical writing (like doing a "shitty first draft" first, then improving it through revision).
- **Bem, D. J. (1987). Writing the empirical journal article. In M. P. Zanna & J. M. Darley (Eds.), *The compleat academic: A practical guide for the***



## WRITING RESOURCES

*beginning social scientist* (pp. 171-201). New York: Random House.

Good text about writing articles — the story you tell and the shape of the text.

- Yaffe, P. (2009). How to Generate Reader Interest in What You Write. *ACM Ubiquity*, 10(7).  
Good text on raising interest, something that is often neglected.
- Academic Phrasebank (<http://www.phrasebank.manchester.ac.uk>)  
Useful repository of commonly used phrases in scientific articles. If English is not your native language and you are stuck, have a look here.
- Trafimow, D., & Rice, S. (2009). What If Social Scientists Had Reviewed Great Scientific Works of the Past? *Perspectives on Psychological Science*, 4(1), 65-78. DOI: 10.1111/j.1745-6924.2009.01107.x  
An article highlighting the problems with peer-review in the social sciences. Written with humor and to the point.

## TEXT LAYOUT RESOURCES

- Adobe InDesign (<http://www.adobe.com/products/indesign>)  
Powerful but expensive. If you are student, Adobe has cheaper student versions. (Mac, Windows).
- Pages (<http://www.apple.com>)  
A part of Apple's iWorks, makes it very easy to create flyers, books, etc. but the functionality is not sufficient for a full-fledged book and the OS X PDF-Export is not supported by every publisher. (Mac).
- QuarkXPress (<http://www.quark.com>)  
Professional DTP software. (Mac, Windows).
- LaTeX (<http://www.latex-project.org>)  
Essentially a language to use the TeX typesetting program. If you want to produce excellent typesetting results (careful if you use sophisticated layout with images), LaTeX is your choice. Different editors are available. (Mac, Windows).

## 380 REFERENCE MANAGEMENT SOFTWARE RESOURCES

There is a good overview of software (commercial and free, for installing and web-based) at [http://en.wikipedia.org/wiki/Comparison\\_of\\_reference\\_management\\_software](http://en.wikipedia.org/wiki/Comparison_of_reference_management_software).

- **Sente (<http://www.thirdstreetsoftware.com>)**  
A reference manager with a very good notes function (automatically takes the page number into account) and a well-thought-out way to assign tags. A versions for the iPad makes using it on the move and reading articles very convenient.
- **Citavi (<http://www.citavi.com/en/index.html>)**  
Commercial but affordable program. Made also to support the research process and not only as a reference management tool. (Windows).
  - **Zotero (<http://www.zotero.org>)**  
Browser (Firefox) based reference manager.
  - **EndNote (<http://www.endnote.com>)**  
Commercial program, powerful but expensive. (Mac, Windows).
  - **Mendeley (<http://www.mendeley.com>)**  
A mixture between a very powerful online/offline reference management system and a very interesting social network for scientists (share interesting articles). (Mac, Windows).
  - **Docear ([www.docear.org](http://www.docear.org))**  
Software that integrates a PDF reader (with annotations) with a Mind Mapping tool.
  - **Reference Manager (<http://www.refman.com>)**  
Commercial program but very powerful. (Windows).
  - **JabRef (<http://jabref.sourceforge.net>)**  
Free reference program that uses Java. (Mac, Windows).
  - **Wikindx (<http://wikindx.sourceforge.net>)**  
Free reference management program that supports multiple users. (PHP + SQL).

## PHOTOGRAPHY POSTPROCESSING RESOURCES 381

- **Adobe Photoshop (<http://www.adobe.com/products/photoshop>)**  
Perhaps the most powerful software for editing images, although others are more comfortable to use. Extremely powerful and an extreme amount of functions. (Mac, Windows).
- **Adobe Lightroom (<http://www.adobe.com/products/photoshoplightroom>)**  
Specialized editing for photos. Often more than enough for post-processing. For specialized jobs there is no way past its more versatile sister Photoshop. (Mac, Windows).
- **Aperture (<http://www.apple.com/aperture>)**  
Tightly integrated into the Mac OS and roughly equivalent to Lightroom. Lightroom seems to have better functions, Aperture is stronger regarding the design (e.g., creating something with the photos) and seamlessly integrated into the Mac OS. (Mac).
  - **iPhoto (<http://www.apple.com/ilife/iphoto>)**  
Apple's attempt at handling photos. Not as powerful as Aperture but nice for amateurs. (Mac).
  - **Picasa (<http://picasa.google.com>)**  
Googles attempt at handling photos. Interesting and free. (Windows).
  - **Camera+ (<http://campl.us>)**  
An camera app for iOS. Has some interesting effects that can lead to astonishing photos. (iOS)

## COLLABORATION RESOURCES

## PROGRAMS

Creativity often happens in teams. The following tools can aid you in working together with others and focussing on the content, not on the interaction (and its deficits).

- **Asana ([www.asana.com](http://www.asana.com))**  
Webtool that lets groups coordinate their work — who does what, who does how much, what are the next steps, etc. Looks very powerful.
- **Doodle ([www.doodle.com](http://www.doodle.com))**  
The classic tool to quickly pool what a lot of people think about different options.
- **GoogleDocs ([docs.google.com](http://docs.google.com))**  
A lot of useful tools for collaboration, e.g., simultaneous working on a shared text document.
- **GroupZap ([www.groupzap.com](http://www.groupzap.com))**  
A website where you can collaboratively work on the same shared whiteboard. You can write Post-Its, easily move and scale them, draw lines, etc. There is also an edit history and a replay modus. If you ever had a quick phone conversation where you wanted to develop something together you see the value of this immediately.
- **Bounce (<http://www.bounceapp.com>)**  
Website that allows you to easily give comments about other websites. Bounce grabs a photo of the website (you can also upload images directly) and lets you draw areas, which you can annotate with comments.

## PRESENTATIONS

- **Merlin Mann's "Meetings" presentation (<http://www.43folders.com/2010/10/06/broken-meetings>)**  
Excellent presentation with a list of points to keep in mind when it comes to good (and bad) meetings.



## DRAWING/SKETCHING RESOURCES

PROGRAMS<sup>1</sup>

- **Autodesk SketchBook Express (free) and Autodesk SketchBook Pro (<http://usa.autodesk.com>)**  
Powerful programs for digital drawing.

APPS<sup>1</sup>

- **SketchBook Mobile (<http://usa.autodesk.com/adsk/servlet/pc/item?siteID=123112&id=13872203>)**  
The mobile version, very useful for drawing on iPads and iPhones.
- **Brushes (<http://www.brushesapp.com/>)**  
An excellent program for drawing on iPads and iPhones.

## TOOLS

- **Pogo sketch pen (<http://tenonedesign.com/sketch.php>)**  
Pen that works on an iPhone/iPad screen.
- **Wacom Inkling Pen ([www.wacom.com/en/Products/Inkling.aspx](http://www.wacom.com/en/Products/Inkling.aspx))**  
A pen that digitizes what you write — without needing special paper.
- **Lifescape Pen ([www.livescribe.com](http://www.livescribe.com))**  
Needs special paper but seems to be more accurate than the Wacom alternative.

## STENCIL PACKS

- **Ultimate iPhone Stencil for OmniGraffle (<http://graffletopia.com/stencils/413>)**  
Stencil pack to design iPhone interfaces.
- **teehan+lax Photoshop file (<http://www.teehanlax.com/blog/2009/06/18/iphone-gui-psd-30/>)**  
Stencil pack to design iPhone interfaces.

## BOOKS

- **Sketching at Work: Eppler, M. J.; Pfister, R. A.: *Sketching at Work: A Guide to Visual Problem Solving and Communication for Managers, Consultants, Sales Professionals, and Trainers*. St. Gallen: mcm institute, 2011. [www.sketchingatwork.com](http://www.sketchingatwork.com)**  
Interesting book about the powers of sketching for meetings with a lot of ideas on how to use sketches for more effective meetings.

<sup>1</sup> Programs/Apps for Sketching are very powerful and suit our digital age. However, I wonder what you would put in a museum if Picasso had used it.

## ACADEMIC WORK RESOURCES

- **Cham's "PhD Comics"** (<http://www.phdcomics.com/comics.php>)  
Great comic to keep a level head about the demands of the academic setting. It is funny because it is true.
- **Sternberg, R. J. (2003). *Psychology 101 1/2 The Unspoken Rules for Success in Academia*. Washington, DC: APA.**  
Written by a eminent psychologist about academic life. Not only relevant for psychology.
- **Pausch, R. (2008). *Really Achieving Your Childhood Dreams*. New York: Hyperion.**  
A computer scientist looks back on his life and what he has learned from it. Very well worth reading, not only because it addresses many aspects of academic life.
- **Schwartz, M. A. (2008). The importance of stupidity in scientific research. *Journal of Cell Science*, 121, 1771.**  
One page article, showing that it is normal to feel stupid while doing research.
- **Patterson, D. A. (2009). Your Students Are Your Legacy. *Communications of the ACM*, 32(3), 30-33. doi:10.1145/1467247.1467259**  
If you ever wondered what advising students is good for (and what you as doctoral student should expect from an adviser) this article is recommended. He covers a lot of issues in these four pages, from the ground rules for Ph.D. students ("Show initiative, for fortune favors the bold", "Sink or swim", "Educate your professor"), via establishing the right environment (which helps "Acquiring research taste", gives "Frequent feedback", "Foster camaraderie and enthusiasm") and the techniques to reach these goals ("Exciting multidisciplinary projects", "Research retreats", and "Open collaborative laboratory") to actual advising ("each student is different", "bolster confidence", "practice public speaking", "spend the time", "give feedback, quickly and often", "be a trusted counselor", and "you're a role model; act like one"). He also mentions that students often find their research topic worthless and what to do against this and he gives clear advice for advisors: "help if they stumble", "aid non-native speakers", "try co-advising", and "mentorship doesn't end at graduation". Highly recommended.
- **Schmidt, B., & Richter, A. (2008). Unterstützender Mentor oder abwesender Aufgabenverteiler? – Eine qualitative Interviewstudie zum Führungshandeln von Professorinnen und Professoren aus der Sicht von Promovierenden. *Beiträge zur Hochschulforschung*, 30(4), 34-58.**  
and Schmidt, B., & Richter, A. (2009). Zwischen Laissez-Faire, Autokratie und Kooperation: Führungsstile von Professorinnen und Professoren. *Beiträge zur Hochschulforschung*, 31(4), 8-35.  
Two studies in German about the effects of leadership styles of

## ACADEMIC WORK RESOURCES

- professors. Leadership behavior is not a matter of personal preference, but has consequences on multiple measures, e.g., affective commitment, achievement motivation, fluctuation, quality of the work relationship, and total work performance of the department. Leadership behavior that is high in cooperative, low in autocratic and low in laissez-faire style leads to the best results. However, many academics do not see themselves as leaders and do not think that they should show leadership behavior. Often the reason is the (false) argument that academic freedom and training independent scientists precludes leadership, thus resulting in no (i.e., laissez-faire) leadership behavior. However, mentorship — giving advice and feedback — allows the advancement of skills and work and keeps the independence and self-directed work of the young academics.
- **Perry, C. (1998). *A structured approach to presenting theses*. Available on line at <http://www.scu.edu.au/schools/gcm/ar/art/cperry.html>**  
Shows criteria for good research topics for PhD theses. Among others: "cover a field which fascinates the student sufficiently for him or her to endure what could be years of hard and solitary work [...] build on the student's previous studies, for example, his or her course work in a Master's degree [...] be in an area of 'warm' research activity rather than in a 'cold', overworked area or in a 'hot', too- competitive, soon-to-be extinguished area [...] be in an area near the main streams of a discipline and not at the margins of a discipline or straddling two disciplines - being near the main streams makes it easier to find thesis examiners, to gain academic positions, and to get acceptance of journal articles about the research [...] be manageable, producing interesting results and a thesis in the shortest time possible [...] have accessible sources of data [...] open into a program of research projects after the thesis is completed [...] and provide skills and information for obtaining a job in a non-research field, if a research or academic job is not available or not desired."
  - **Booth, W. C., Colomb, G. G., & Williams, J. M. (2003). *The Craft of Research. (Second Edition)*. Chicago: The University of Chicago Press.**  
Good book showing the fundamentals of research.
  - **Goodwin, C. J. (2009). *Research in Psychology. Methods and Design*. New York: Wiley.**  
Good book on research design.
  - **Edwards, P. N. (2008). *How to Read a Book*. <http://pne.people.si.umich.edu/PDF/howtoread.pdf>**  
Good text that shows you what is important when reading scientific information and how you can "read" a 300 pages book in 5-6 hours.
  - **Phinised (www.phinised.org)**  
Great forum of people who are all working on their PhD thesis. They share advice and give emotional support.



## ACADEMIC WORK RESOURCES

- **Blog "A Digital Workflow for Academic Research"** (<http://www.organognosi.com>)  
Interesting postings about academic work(flow) and very useful scripts for working with DEVONthink.
- **"So you want to get a PhD in [psychology | humanities | etc]"** (search on [YouTube.com](https://www.youtube.com) for "So you want to get a PhD in")  
Short videos showing the dark sides of academic work in different disciplines. The sound — well, it's computer voices, and the dialogue is somewhat redundant, but the content is ... sometimes surprisingly to the point.

## STATISTIC RESOURCES

## LITERATURE

- **Wright, D. B. (2003).** Making friends with your data: Improving how statistics are conducted and reported. *British Journal of Educational Psychology*, 73, 123-136.  
A good article about how to analyze your data.
- **Pallant, J. (2007).** *SPSS Survival Manual*. McGraw-Hill, Open University Press.  
Probably the best book on how to apply statistics in the social sciences. While it is written for using SPSS, the excellent information on the prerequisites for statistical tests, how the results are to be interpreted and reported can be widely applied. Strongly recommended.
- **Field, A. (2005).** *Discovering Statistics Using SPSS (2nd Edition)*. London: Sage.  
A very good book showing what statistics is for. Focused on SPSS but usable for other analysis software as well.
- **Froman, R. D. (2001).** Elements to Consider in Planning the Use of Factor Analysis. *Southern Online Journal of Nursing Research*, 2(5). Retrieved January 9, 2009, from [http://www.snrs.org/publications/SOJNR\\_articles/iss05vol02.pdf](http://www.snrs.org/publications/SOJNR_articles/iss05vol02.pdf)  
An example for a strange source that provides very good information, in this case about factor analysis.
- **Books by Edward R. Tufte**  
Writes beautiful books on information visualization.
- **Information Is Beautiful (InformationIsBeautiful.net)**  
Website showing beautiful examples of information visualizations.

## PROGRAMS

- **R ([www.r-project.org](http://www.r-project.org))**  
Free software package for statistical analysis.
- **SPSS (<http://www-01.ibm.com/software/de/analytics/spss/>)**  
Expensive, unfriendly to use, and not really recommended, but like Microsoft Word for writing it is unfortunately standard in a lot of environments.
- **NVivo9 ([www.qsrinternational.com/products\\_nvivo.aspx](http://www.qsrinternational.com/products_nvivo.aspx))**  
Data analysis tool that works for qualitative and quantitative data. Good introduction video: [http://www.youtube.com/watch?v=x\\_UYavbr8g8](http://www.youtube.com/watch?v=x_UYavbr8g8)
- **AtlasTi ([www.atlasti.de](http://www.atlasti.de))**  
Program to analyze qualitative data.

## PRESENTATION RESOURCES

- **Reynolds, G. (2008). *Presentation Zen: Simple Ideas on Presentation Design and Delivery*. Berkeley, CA: New Riders.**  
Excellent book on giving a good presentation, i.e., establishing a "meaningful connection with the audience". A breath of fresh air after the whole PowerPoint fad.
- **Reynolds, G. (2011). *The naked presenter. Delivering Powerful Presentations With or Without Slides*. Berkeley, CA: New Riders.**  
Another excellent book, focussing — among others — on presentations without slides. Highly recommended.
- **TED talks (<http://www.ted.com>)**  
Great collection of often excellent presentations. If you are looking for best practice (for you!), chances are that you might find a presenter who has a similar but slightly better style than you from whom you can learn.
- **Edwards, P. N. (2010). *How to Give an Academic Talk*. (<http://pne.people.si.umich.edu/essays.html>)**  
A free text giving a good overview of what is important in giving a good academic talk.

# Afterword

**Your Feedback**

**History of this Project**

**Final Remarks**

## YOUR FEEDBACK

I am interested to know what you think of this book, what you did miss, what you did like, what you did not like.

Drop me a line at [danwessel@organizingcreativity.com](mailto:danwessel@organizingcreativity.com) or use the form at the Organizing Creativity Blog:

<http://www.organizingcreativity.com/feedback>

If you like, you can also answer one or more of the following questions:

- How do you organize your creativity?
- What does work for you?
- What does not work for you?
- What would you recommend?
- What helps you to be creative?
- Which skills help you to be creative?
- Which tools help you to be creative?
- Which aspects of this book do you like?
- Which aspects of this book didn't you like?
- With which aspects of this book do you agree?
- With which aspects of this book do you disagree and why?
- Is there anything else you think is important for creativity or its organization? If so, what is it?
- In which areas are you creative?



## HISTORY OF THIS PROJECT

The idea for this project started in 2007, when a friend of mine told me about the MinD-Akademie, a student conference organized by the MinD Hochschule Netzwerk. The topic in 2007 was "creativity". Given that a few months before, I had started to use a wiki to collect my ideas and organize my dissertation (a pretty large creative project), I became interested in holding a presentation about organizing creativity.

I conducted a survey of Mensa and MHN members regarding the way the organize their creativity. Few did — but I saw this more as a need than a lack of interest. I looked around, thought somewhat more on the topic, read some books, and held the presentation in October 2007. Due to the amount of information I did want to present, but had to cut down to fit in the presentation, I wanted to present it in a more coherent and complete form.

So I decided to write a book about it.

## THE FIRST BOOK

The ideas for this book were first captured (see page 96) with a paper notepad (see page 203) or directly with a textfile on the PC (see page 314) and collected (see page 124) in my DokuWiki (see page 244). I later used Circus Ponies Notebook (see page 233) to sort them. I made a prototype with Pages and when the prototype reached about 200 pages, I copy and pasted the contents into a Scrivener file (see page 340). When the Scrivener file was finished I proof-read it, made sure the outline was correct, and copy and pasted everything to a modified Pages file.

Afterwards I exported (printed) it as a PDF file and uploaded it to Lulu, the book on demand service I used. Then I received an error message telling me that "Your document could not be created: oc\_complete\_printversion\_pl.pdf: This file was created with Mac OS X 10.5.4 Quartz PDFContext / Pages. We cannot print files created with this application." I spend the next few hours cursing and taking a page or two of my book (persistence, dealing with setbacks) and finally used Acrobat 8 on a Windows PC to remove all meta data and optimize the file (without changing the fonts that were embedded or the images). Lulu accepted this manipulated PDF file and hoping that the PDF printed well, I ordered a copy. In the meantime I split the one 400 pages file back into pages files that contained the individual chapters and continued working on the content (it was fun and I needed the distraction).

When the copy came I proof-read it, assessed the layout and gave it some people for feedback. I then corrected the Pages files and uploaded an exported (printed) PDF file again. After a few months I wanted to have a version of this book on Amazon.com and found that Createspace was probably more suited for this purpose. I was also not satisfied with some aspects of the Pages-file, e.g., no automatic cross references and an unstable display of the file.

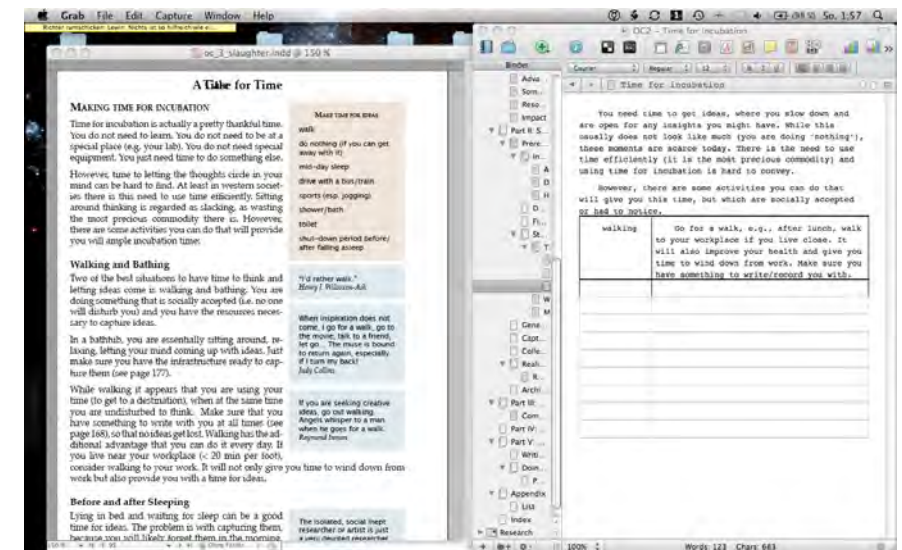
## HISTORY OF THIS PROJECT

Consequently I made an InDesign version of the Pages-file (manually) and used the CS4 cross-references tool (Hyperlinks). After some fiddling with the layout I uploaded the file to Createspace and published it there. I also put it online in my blog to made it widely available.

It is still there at: <http://www.organizingcreativity.com>

## THE SECOND BOOK

After some time I realized that the first book was too complex, too long and not practical enough. So I decided to cut it down to about half the amount of pages and focus more on practical aspects, and shorten the texts.



Cutting down the first version — from the InDesign file (left) back to Scrivener by reducing the amount of ... "long-windedness" (right). Scrivener did an excellent job of helping me revise the information.

After editing the content with Scrivener and updating it, I created a new InDesign file in a new layout. I integrated the blog entries (should have done this while working with Scrivener, but I became impatient), and checked the content.

A asked a very good friend to write a foreword, which she did (thank you ), and checked the content again. Finally I uploaded the content to Createspace and I uploaded a PDF file to my blog (<http://www.organizingcreativity.com>). And one of these versions is the one you are reading right now. ☺

## FINAL REMARKS

In this book I have tried to give an overview about organizing creativity, beginning what creativity is and why it should be organized, how to generate, capture, collect, realize and archive ideas, and possible tools and general tips.

If you think that organizing your creativity sucks the fun right out of it, then don't do it. This book is about giving you more options to choose from, and "none of the above" is always a valid choice.

But I hope at least some of the information was new to you, and that some of the information was or is useful to you. Even if I did just remind you of things you already know, do, or should do, or have planned to do.

I hope that you value and fight for your ideas, if they are good (for something ... beneficial). No matter if you are an artist, a scientist or a regular person who just wants to make a loved one smile (e.g., see page 368).

Finally, I would like to thank all the visitors of my website/blog "Organizing Creativity" (<http://www.organizingcreativity.com>), who, even only by the imprint they have left in my log files, have shown me that my work is valued.

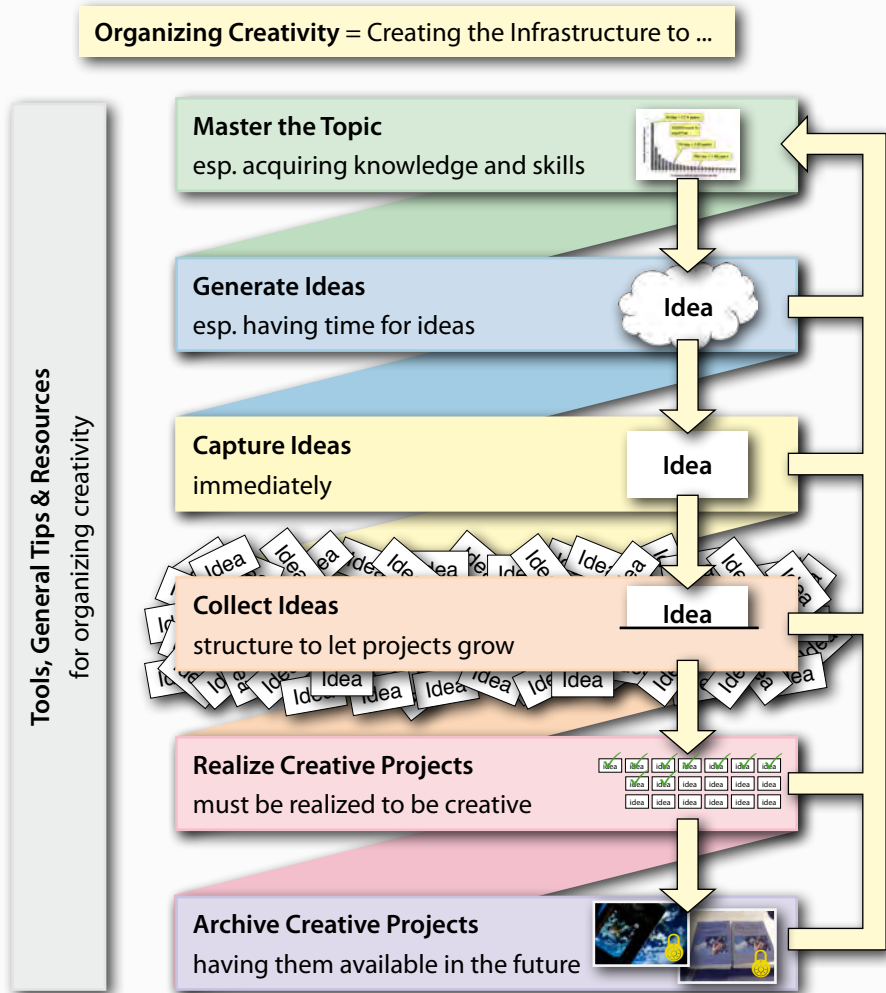
*Thank you & best regards*

*Daniel Wessel*



Creativity, deliberately creating something that is new and useful, is more than just one idea. Whether in art, science, or for private creative projects, a good idea needs countless other ideas. An idea for a plot needs ideas for characters, settings, and dialogues, an idea for a study needs ideas for dependent variables, instructions, materials. And even private projects need to be fleshed out.

To deal with these ideas and to actually realize the projects, creativity needs an unlikely ally — organization.



In this book, we look at creativity, organization, ways to organize creativity by mastering the topic, generating ideas, capturing ideas, collecting ideas, realizing and archiving creative projects, and at tools, general tips, and resources.

This book aims to enlarge your options when working in science (incl. engineering and commercial projects), art, or on private projects, to improve the chance of realizing creative projects. The focus is on creating the infrastructure for having ideas and realizing them.

More information on [www.organizingcreativity.com](http://www.organizingcreativity.com)