

ORGANIZING CREATIVITY

How to generate, capture, collect, and realize ideas
to improve individual creativity.



Daniel Wessel

Organizing Creativity

**How to generate, capture, collect, and realize ideas
to improve individual creativity.**

I would like to thank ...

... the muses who inspired me to write this book.

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Thank you.

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I know that scanning a book and sharing it online makes it instantly available and is a nice way to promote oneself and to 'help' others, but please refrain from doing so. This book took me over *a year and a half* of my life to write, time I will not get back.

While (essentially) stealing a book might be regarded as a compliment by some as a sign that my work is appreciated, *I actually prefer money*. If you got an illegal copy, please consider making a donation. You find my address at www.organizingcreativity.com or at www.ipsych.org.

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*To all muses,
inspiring us.*

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Introduction

WE LIVE IN THE GOLDEN AGE OF CREATIVITY.

People were probably always creative and used the countless opportunities that a day presents to follow their creative urges. But today's world has given us opportunities to be creative on a much larger and broader scale.

Art

Materials to do art, be it photography, painting, video or nearly everything else, have become available and affordable for the average person. A canvas costs less than 10 Euro. Digital photos cost almost nothing, blurring the line between amateurs and professionals. Courses for nearly any hobby are available in most larger cities. If not, groups on every hobby and vast information resources can be found on the internet. The person of the year 2006 according to *Time magazine* was ... You. The user of the digital world, who has transformed from a mere consumer

When my daughter was about seven years old, she asked me one day what I did at work. I told her I worked at the college – that my job was to teach people how to draw. She stared at me, incredulous, and said, “You mean they forget?”

Howard Ikemoto

of information and entertainment to a producer. The digital world has given us the opportunity to become any kind of artist, be it a director, a writer, a publisher, a photographer or anything else. Open source tools are available that allow anyone, who is willing to learn how to use them, to create animated movies (e.g. Blender.org) or professionally edit images (e.g. GIMP). Writers can publish their own blogs or even books (e.g. via Lulu.com), without lecturers and publishers, and much more. YouTube allows anyone to share their videos with the world. Even art that is done without any digital media benefits from the internet. Instructions are available for free, materials can be ordered from specialized shops around the world, and the products itself can be photographed, recorded, videotaped or scanned to be displayed on flickr, YouTube, myspace or any other site to share it with the world.

Science

The information available, through the internet and bookstores, places current scientific research in the hands of any person who is interested in and willing to learn about it. Laymen, be it clinical patients or concerned environmentalists, can and do learn about dangers to their health and environment and debate with experts. Open source tools like R (<http://www.r-project.org>) allow anyone to do their own statistical analysis. Amateur astronomers share information over the internet. Surveys and experiments can be done online. Instructions for scientific experiments can be found on the internet (e.g. <http://www.brightscience.com>), small computers are commercially available that can be equipped with different probes to gather environmental data (e.g. Nova 5000, <http://www.nova1to1.com>), as are different materials and chemicals to experiment with.

“Nothing shocks me. I’m a scientist.”

Indiana Jones

Engineering

Power tools and workbenches can be found in many homes. In the past, some incredible inventions have originated in people's garages, e.g. the Apple Com-

“Wait a minute, Doc. Ah ... Are you telling me that you built a time machine ... out of a DeLorean?”

“The way I see it, if you’re gonna build a time machine into a car, why not do it with some style?”

Marty McFly and Dr. Emmett Brown in “Back to the Future” (1985)

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puter or the intermittent wipers. Recently 3D printers in fablabs became available that allow the creation of custom parts in small (even single) units, allowing the production of parts for inventions with were difficult to produce before. This allows people who want to build something to do so in independence from larger companies.

Commercial projects

While it is still very hard to be successful as an inventor, the heavy emphasis on computers have opened new avenues of ways in which people can earn money creatively. Digital products are often easier to produce than physical products. Teams whose members are dispersed around the world can collaboratively work on a program (cp. Open Source Movement) and individuals can produce incredible software (e.g. Scrivener). Paypal and other ways to electronically transfer money allow individuals to have customers around the world yet never leaving their room.

"A reporter asked me not long ago whether I had ever expected a commercial internet to operate. 'Yes,' I answered, 'that didn't surprise me. Finding URLs in lipstick advertisements really threw me though.'"

Fred Baker, IETF (Internet Engineering Task Force) Chair

Private Projects

Even for persons who do not have the ambition to produce great art or contribute to science, but "simply" want to express themselves or bring a smile on the face of a loved one, the time is perfect. Nearly all of us did tinker as children, constructing things or making presents for others. As adults few of us do. While everyone can buy a present, to see what the other person would like and invest the time to make a gift ourselves is special.

"Mike dear, a present ought not to be very expensive - unless you are trying to get a girl to marry you, or something. Especially 'something'. But a present should show that you thought about it and considered that person's tastes. Something he would enjoy but probably would not buy for himself."

Jill in "Stranger In A Strange Land" by Robert A. Heinlein

Remark: In later parts of the chapter I simplify these areas of creativity by referring to arts, science (which includes in this case engineering and commercial applications) and private projects.

WHAT IS MISSING?

With all these opportunities — what is missing? If you look at the options people have it is strange that so few actually *are* creative on a larger scale. Most people have ideas, and often they are proud of having them, but few are actually realized. The demands of the everyday life often interfere with creative projects, they are often too large, too unwieldy or too complex to be realized. The opportunities are there but few invest the time and effort necessary to become really proficient in what they do. And often people wish to make larger projects, but they do not know how to do this.

Organize it

No matter if you want to improve your creativity in art, or science, or simply for private projects, an effective way to do this is by **organizing your creativity**. This book tries to show the importance of organization for creativity and ways to do it. It takes a look at *creativity in general, creativity and (personal) organization, generating ideas, capturing them temporarily and collecting them for long term storage*. It also

Introduction

addresses how to *realize the ideas* and *archive* them when the project is finished.

It is important to note that creativity and the best way to organize it is an *highly individual issue*. While I think that the general process applies to most people, there is no single best way to do it. You have to find your own way of generating, capturing, collecting and realizing ideas and creative projects. The aim of this book is to enlarge the room of options you have by showing you other ways to do it. Perhaps you find something that suits you.

One thing that I will stress repeatedly in this book is that creativity takes both hard work and time. A good idea is not something that one has without first investing effort and time to learn something about the area one wants to be creative in. It is no shortcut to success. Besides for generating ideas, hard work and time are also indispensable for realizing ideas. Realizing an idea is often more difficult than it first appears. We rarely imagine the problems we have when we try to implement an idea or all the steps that are necessary to do so.

While some of the information in this book might sound trivial for some readers, I hope that you find something of use in this book. Something that helps you to be more creative, i.e. have better ideas and realize them. Have fun reading this book and organizing your creativity.

Best regards

Daniel Wessel

There is no reason why good cannot triumph as often as evil. The triumph of anything is a matter of organization. If there are such things as angels, I hope they are organised along the lines of the Mafia.
"The Sirens of Titan" by Kurt Vonnegut

Overview of the contents of this book

This book is ordered into the following chapters:

In the **first chapter** we will have a look at **creativity**, what it is, common misconceptions, its advantages and disadvantages, your responsibility and the requirements for creativity.

The **second chapter** deals with personal **organization and creativity**. Why it is beneficial to organize creativity, apparent exceptions when creativity seemed to have occurred without organization, how to organize creativity and how to start it.

The **third chapter** deals with **generating ideas**, starting with a description of the creative process, pleadings for hard work and time, blocks to creativity and techniques and tactics to generate ideas and to find problems.

The **fourth chapter** deals with **capturing ideas**. Why and how you should capture ideas, criteria to evaluate capturing methods, the quality of tools to capture ideas, the inevitable missed ideas, specific ways to capture ideas and capturing idea scenarios.

The **fifth chapter** deal with **collecting ideas**. Why and how to collect them, how to organize the idea collection, prioritizing projects, evaluating idea collection methods and different ways of collecting ideas. It also deals with starting an idea collection, digitalizing information and protecting your idea collection, including encryption and compressing.

The **sixth chapter** deals with **realizing ideas**, what creativity is essentially about. It addresses how to decide which idea to realize, repeats the pleading for hard work and time, how to realize ideas and problem during the realization phase. It also deals with feedback, communicating ideas and the worst (and best) case scenarios.

The **seventh chapter** deals with **archiving ideas**, why and how you should do it.

The **eighth and final chapter** concludes the book with **final remarks** and an **appendix** that contains the links to the programs that are mentioned in this book.

Disclaimers

PRACTICABILITY BEFORE SCIENTIFIC ACCURACY

This book was written with best intentions in mind ... and we all know, where that road leads.

While this book has a basis in psychological research and practical experience, it was written more as a practical guide with a lot of personal opinion included (which was both liberating and confusing: I wrote page after page and thought: How do I (think I) know this stuff?¹). It is not a scientific book about the one road that leads to the perfect organization of individual creativity, because I do not think that such a road exists.

However, the things mentioned in this book do work, at least for some. Since creativity and organization are things that must suit the individual and the given situation, you have to find out for yourself which of the stated information and tips *work for you at a given time* and which do not. And some will not. The main aim was to enlarge the room of options one has to be creative, to spell them out, to change the perception a little to value ones own ideas and individual creativity.

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

LANGUAGE

The book was published via Lulu, which is somewhere between a vanity press and a normal publisher. This means that I did all the work myself, from text to layout. This also means that I did not have a publishing editors or professional proof-readers. I apologize in advance for any grammatical or spelling errors in this book.

GENDER USAGE

In almost all cases I have used the masculine form for easier readability. No discrimination is intended.

"I wouldn't mind been called chairman of the board as long as I could be chairman of the board."
Female manager about the gender noun debate

TECHNICAL TERMS

Some of the terms used in this book might be unclear. Since this is a book about organizing creativity, I will explain only a few of them. If you do not know a term, Wikipedia (en.wikipedia.org) has very good explanations for most of them. I apologize for the inconvenience but on paper, space is expensive. Keep in mind that this is not a technical book with detailed instructions, e.g. how to configure a wiki or a web server, you find better information in the help files or in forums on the web. The digital world is too fast paced to provide this information on paper. Given the variety of operating systems and the way they change, I will also not give detailed instructions how to do specific actions, e.g. copy files or sort a file listing according to the save date. The space in this book is too valuable for that.

1 This usually stops dead the writing flow, which is why I wrote this passage down to forget about it.

About the Author

BUT WHAT DO I KNOW ABOUT ORGANIZING CREATIVITY?

I have been very interested in organization and creativity for a long time. Nearly all my life I have worked on private creative projects parallel to the job I was doing (e.g. visiting school, the university or post-graduate studies). I have written stories, created and bound books, build objects like a dream-catcher or a chocolate piano, created a 2500+ pages book of quotations and pictures, made postcards, wrote programs, sewn equipment like a PDA arm holder, made different sorts of calendars, and much, much more.

During my studies of psychology I learned something about organization, as a topic in organizational psychology and by experience when trying to cope with the amount of information to learn. Working with the computer since sixth grade and having different office jobs also contributed to my experience in organizing information.

When the MinD-Hochschul-Netzwerk (MHN, Mensa in Deutschland University Network) held an academy about creativity, I joined both topics and made a presentation about “organizing creativity”. To prepare for the presentation, I conducted a survey how the members of MHN and Mensa organized their creativity. Since few consciously did, I decided to write a book about it, which you are now holding in your hands.

SOME BASIC FACTS

Daniel Wessel

Born 1977

Diploma in Psychology
2005

Long-time interest in creativity and organization

Hobbies: Tinkering,
Writing, Photography,
Designing

Homepage:

<http://www.ipsych.org>

I'm afraid of coaching, of writer's classes, of writer's magazines, of books on how to write. They give me 'centipede trouble' — you know the yarn about the centipede who was asked how he managed all his feet? He tried to answer, stopped to think about it, and was never able to walk another step.

Robert A. Heinlein

Sources

CONTENT

Especially in a book about creativity one should state the sources. The theoretical aspects are mostly based on the works of Mihaly Csikszentmihalyi, Mark A. Runco and my own thoughts. The practical aspects are based on a survey I did, but mostly on my own observations, thoughts and practical experience. While researching on the internet I found multiple blog entries and web pages that did mirror my thoughts, sometimes even with the same keywords (e.g. "capturing ideas"). However, as far as I know, the perspective of organizing creativity from its basic ideas to the realization of a complete project is new and my own idea.

LAYOUT

The layout of this book is influenced by the iWeb Theme "Elegant". Given that I did create this book on my own, without a publishing company that would be able to negotiate the rights of pictures, illustrations, etc., there are few pictures in this book. I would love to illustrate the points with pictures from movies, artists, advertisements, etc. and there would be many to choose from, but I cannot do so. Not without getting into legal trouble. So, the few pictures and photos are used are made by me (and you can see the reason why I quit drawing).

Aims of this book

WHY DO I HAVE AN INTEREST IN THE SUCCESSFUL REALIZATION OF YOUR IDEAS?

Because your ideas the might change the world, hopefully for the better, no matter whether you “just” want to bring a smile on the face of someone you love or if you plan to tackle one of the major problems of this planet. If we want to change the world, if we want to leave something more than a exhausted planet for our children, we need ideas. Better ideas than the ones that brought us here. And they *must stop just being ideas*. We need to realize them.

There are vastly different areas where such creativity is possible. From the solo artists to groups of scientists, from the kinesthetic dancer to the thoughtful academician, from “everyday” creativity to creative solutions for highly specific problems, from low sized student budgets to the vast resources of a global company, creativity is possible and shown by people in all areas in all times.

It is difficult to address all of these areas in a single book. Some techniques, tactics and tools are applicable to a lot of situations and areas. It does not matter what your creativity is, if the number one rule in capturing ideas is to get your idea down as soon as possible. It does not matter if you work on a painting or try to solve a technical problem if a tactic tells you to change your perspective.

But this book can not and will not give universal principles that work all the time in all fields for everyone. It can't promise to unleash creativity or provide you with brilliant ideas. This is not possible and not the aim of this book. What works in creativity is specific for the person and the environment, for the problem and the time, so some recommendations will need some creative modifications to work for you and some will not work for you at all.

So, the aims of this book are to ...

Take up an organizational view of individual creativity

A lot of books about creativity talk just about “creativity techniques” but leave them in a vacuum. What do you do with your ideas once you have them? Creativity is more than having ideas. It is getting the necessary knowledge and skills, spend time and effort on a domain, having ideas and collecting them until you have enough ideas for a creative project and you can realize it. The book gives an overview not only of the creativity toolbox but of the whole processing street itself.

Value individual creativity

I have made the experience that while creativity is valued per se, creative persons below superstar/genius level have a hard time getting accepted or be tolerated for their creativity. Children are told to be creative but “please do not blot!”, adults are told to be open minded but get odd looks when they state new ideas in a meeting or show a playful attitude to serious problems. I hope that this book might be a little contribution that creativity is valuable. That ideas should not be discarded or forgotten but carefully evaluated. That you should try to realize *the good ones*.

“We can't solve problems by using the same kind of thinking we used when we created them.”

Albert Einstein (1879-1955)

“We are not consumers, we are artists. We are not cows but enlightened beings, creators in our own right.”

Unknown

Aims of this book

Value time, effort, and determination to become knowledgeable and skilled

In recent years there has been a cult of the amateur: Wikipedia, MySpace, Flickr, YouTube — art and even science is done by people who have no formal training in the subject and would not be considered an expert by any formal institution. While individual creativity seems to be valued, I hope that this book can also motivate to invest the effort to become more than “just” an amateur, because there is a lot of crap out there. We live in a time where the knowledge, training and materials are available to reach expert status in almost any area. While the time of the polymaths is over, even “narrow” individual creativity should be sufficiently valued to do it right, i.e. as best as possible. And this requires time, effort and determination to get the relevant knowledge and skills.

Receive feedback on this book

This book is the first edition and far from perfect, but then nothing ever is. However, I plan to continuously improve it. Since creativity covers an incredible wide area and I have only information about what works in a part of it, I would like to ask for your feedback about this book. What did you like? What did you not like? Yes, even what did you hate and made you angry. What works for you, what does not? If you like, kindly tell me what you know about the subject, what works for you and what you think about this book (even if you do not like it, tell me why). Your ways of organizing your creativity might be useful for others too and lead to the improvement of this book.

Make me some money

While I wrote the book primarily *because I had too and it was fun*, one other reason was to make me some money. It is one of the strongest and simplest indicators that ones work is appreciated and I can need it. But I have tried to keep the price as low as possible. In the end, a book does not cost much (and can even be read for free in a library) and I do not get more than €5 per (sold) book, about the price you would pay if you had invited me to a coffee and a muffin. The rest is for production and publisher.

FEEDBACK ADDRESSES

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POSSIBLE QUESTIONS FOR FEEDBACK

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?

With which aspects of this book do you agree?

With which aspects of this book do you disagree and why?

Why do some people act as if making money offended their delicate minds? I am out for a legitimate profit, and not ashamed of it; the fact that people will pay money for my goods and services shows that my work is useful.

“Magic Inc.” by Robert A. Heinlein

Aims of this book

ABOUT THESE AIMS

Whether this book reaches this aims or not, depends on all readers (including you). I do not think that everyone will like it, or that (all) the aims of the book are compatible with (all) the aims of (all) the reader(s), but as long as the readers (including you) get at least something out of it, I am satisfied.

A truly good book teaches me better than to read it. I must soon lay it down, and commence living on its hint What I began by reading, I must finish by acting.

Henry David Thoreau

WHY A BOOK?

Why an old-fashioned book and not a webpage or .pdf-file? There are some reasons for this: few people like to read on the computer, a website is difficult to print, a book lasts longer and can be cited more easily, with websites, copyright and navigation becomes a nightmare and plagiarism is too easy, it is difficult to get payed for ones work and it is a good feeling to see ones work in print.

Creativity

In this chapter we will have a close look at creativity, what it is (page 15), some misconceptions about creativity (page 25), and the advantages and disadvantages of creativity (page 32). We will also deal with your responsibility for your creativity (page 36), the requirements that are necessary for creativity to flourish (page 40), what is not needed (page 53), and helpful skills (page 57).

What is Creativity?

DEFINITION

There are a lot of different definitions of creativity, scientific and laypersons. Most people have their own definition of creativity, which often includes producing something original, something of value, even if it is only valuable for one person, and something that fulfills a purpose.

In this book it is not only having an idea or ideas (although this is a necessity) but also developing the idea(s) far enough that it (they) can be realized as a creative project. For this book, it does not matter in which area this creativity happens: be it art, science (which here includes engineering and commercial applications) or private projects.

The principles are the same.

What is Creativity?

First take a look at the factors that are involved in creativity. 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 this work as creative. So creativity is the result of an individual working in an area (domain) whose work is considered by someone (field) as creative.

Individual

Person who “is” creative and is often associated with the creativity.

Domain

Symbol system, immaterial, e.g. mathematics, physics, art of drawing.

Field

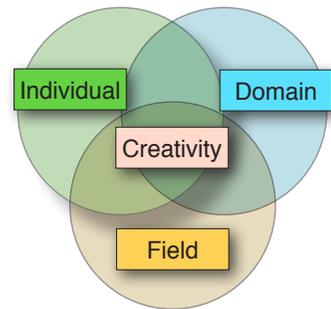
People who work in the domain or use its products/processes (e.g. the public in art, fellow researchers in science).

Creativity: the process of having original ideas that have value.

Sir Ken Robinson

CREATIVE

arts – products – behavior
– thinking – genius – eras
– ideas – solution – ...



The next pages will describe how these three factors determine creativity.

What is Creativity?

THE INDIVIDUAL

The individual is the one who produces the creative work. We usually think that Leonardo da Vinci, Thomas Alva Edison or Salvador Dali were creative.

However, that is only part of the story.

I'd like to meet the man who invented sex and see what he's working on now.
Unknown

Limitations of the Individual

In nearly all cases we only see the person who is creative. This person did something, is active, moving, manipulating, i.e. plain to see. But we often overlook the domain and the field. The setting he is in, the materials around him and the available knowledge, the zeitgeist, the mood and pressures of the field, the friends, the colleagues, the public, these influences *are usually not seen but they exist and are crucial*. We like to attribute great art and scientific discoveries to the people who "did it", and in a way we are right, it was their work. But they *did not work in a vacuum*. There were influences that were pointing them (and mostly others, although not with the same speed or intensity) into this specific direction. You see this clearly in the cases where people had the same idea at nearly the same time, independently from each other (see parallel creativity on page 341).

"I'm the science officer, it's my job to have a better idea."
Jadzia Dax in Star Trek DS9: "Paradise"

"Don't you ever imagine things differently from what they are?"
"No."
"Oh Marilla, how much you miss."
Anne Shirley and Marilla Cuthbert in "Anne"

Take a look beyond the person

Try to have a close look at an renowned artist or scientist — what did influence him to do his creative work? From whom did he learn? What were his early works, the learning pieces and how did the work improve over time. Often, we have no record of early works: the individual was not famous at that time, the works were not regarded as worth keeping and the quality probably did not meet the required standards for keeping or publishing.

Anyone can be creative

We all know people who could not possibly be creative. Some of us see one of the every day in the mirror.

But this is not true.

Creativity is determined by the attribution of creativity to the work by the field (see page 21), and if the field consists only of yourself, it is easy to be creative, for yourself.

Anyone who thinks people lack originality should watch them folding road-maps.
Franklin P. Jopnes

But that is not real creativity!

Is it not? That is your opinion, and you are not necessarily part of my relevant field. ;-)

My theory is that the hardest work anyone does in life is to appear normal.
"Ed TV"

No matter what other people say, you can make things differently than they are usually done (and hopefully, better). You can have new ideas (whether they are new to the world or not) and you can realize them. You might not be mentioned as a great artist or a

What is Creativity?

great scientist, but you nevertheless can call yourself creative.

Attributes of creative individuals change over time

Most of us have pretty clear images about the way a creative individual looks like. The suicidal poet, the crazy painter, the mad scientist. However, these images change over time. While it might be tempting to mirror these characters it will only give others the (short) impression that you are creative, while in reality, you are only cloaking yourself in a character without anything beneath it. You do not have to be different to be creative. You can be yourself, which is unique enough.

There are however some attributes and skills which are useful for creativity and which are presented from page 40 onwards.

“Everybody has a secret world inside of them. I mean everybody. All of the people in the whole world — no matter how dull and boring they are on the outside. Inside them they’ve all got unimaginable, magnificent, wonderful, stupid, amazing worlds ... Not just one world. Hundreds of them. Thousands, maybe.”
“Sandman” by Neil Gaiman

“People envy or even hate me for my ideas, but they do not see the price I have to pay for them. ... We all pay our prices. This is mine.”
Creative about his migraine episodes he associates with his creative ability

What is Creativity?

THE DOMAIN

Creativity is situated within a domain, i.e. the immaterial symbol system (e.g. mathematics, physics, art of drawing), the building blocks available to you, from which you create creative works.

Probably the first association of creativity is arts. Without doubt, art would not be possible without creativity, but not all creativity is art. Engineers, innovators and scientists need to be as creative as artists, although in the constraints of the facts and what works in the physical work. Even business and education need creativity to adapt to changing circumstances. Creativity can also happen in daily activities, the “everyday creativity”, e.g. tinkering with children, drawing for oneself, even preparing a good meal that has just a little extra touch. This creativity is often unorganized and can profit from a more reflective approach.

SOME AREAS OF CREATIVITY

art (e.g. architecture, cinematography, comedy, dance, design, music, photography, poetry, writing)

business

daily activities (e.g. tinkering, interior design, preparing meals)

education

science

engineering

...

Domains Differ

If you have a broad interest consider carefully which domain you choose (see also page 93). Depending on your *personal fit to the domain* you might be very creative or completely at loss.

Dimensions where domains differ are:

Size

The size, i.e. amount of information that belongs to a domain, varies. Some are in its infancy, some have a long and/or very active history and are well-developed. This influences most of the following other aspects of domains.

“If I have become great, it is by standing on the shoulders of giants.”

Sir Isaac Newton

Structure

Domains differ in structure, some are well structured and relatively easy to learn, some are still developing a coherent structure. This will influence the time it takes to get to know the domain.

Materials & Methods

The materials & methods available also differ, e.g. in grade of development or price. Digital photography was in its infancy a couple of years ago, inferior quality for a high price. At the beginning of the 21st century it has entered a golden age: the quality is excellent and the price (beyond the acquisition costs) nearly zero. In science, some domains have excellent methods for data gathering, some are still trying to find out how to measure the things that interest them. If you are not interested in developing new measures, the former might be more suiting to you.

With going digital photography has entered its golden age.

Unknown

What is Creativity?

Open Questions

Domains also vary in the amount of open problems they have that are looking for a creative solution, especially in science. Finding new problems is in itself a creative endeavor and varies in difficulty.

Field

The field of a domain also differs, especially regarding the openness to new, creative ideas (e.g. philosophy compared to Christian theology), to new members working in the field in general (contributor to a common cause or competitor for scarce resources) and regarding the size of the field (e.g. quantum mechanics vs. pop music).

Visibility

Some domains in science as in art are easily noticeable, some are hard to see. Biotechnology and nanotechnology currently draw more attention from the public than anthropology or sociology. It is much more easy to show your creativity and get noticed for it if you play a guitar in a band than if you bind books.

Also the amount of creative work you can produce (and thus the visibility of your creativity) can vary immensely. In some areas you can publish multiple studies a year, others are so complex that they take many years. It is faster to compose individual songs than symphonies for an orchestra.

Keep this in mind if it is important for you and your self-image to be regarded as creative and you aim for a reputation.

Remark: This might sound petty but it can hurt if after a few years your colleagues at work do not regard you as creative because all your creative hobbies are difficult to show to the general public.

You have to learn the domain

Newton said it best when he stated: "If I have become great, it is by standing on the shoulders of giants." To have new ideas that become widely accepted as creative, you need to know what is already there. Otherwise the idea is still new, but only to you. The field will not accept it as creative work but, in the best case, as an example of ignorance or sloppy research, and, in the worst case, as plagiarism. I will repeat this a few times in this book, but I think it is very important to know that creativity is no substitute for solid knowledge about the domain. Yes, creativity means doing something different, discarding the old ways, finding new ones, but to do so, you have to have material to work with and you have to use it

"If we knew what it was we were doing, it would not be called research, would it?"
Albert Einstein

"There are many hypotheses in science which are wrong. That's perfectly all right; they're the aperture to finding out what's right. Science is a self-correcting process. To be accepted, new ideas must survive the most rigorous standards of evidence and scrutiny."
COSMOS 13 part television series - Carl Sagan

PRIORITIZE

You have to set priorities with which domain(s) you want to occupy yourself. Due to the high specialization in most domains and the large number of participants, the amount of knowledge and work that is produced is staggering. You cannot become a polymath anymore so focus on the domain that is most important for you.
See page 83 and page 207.

If I had found out anything, it was that they could print it faster than I could study it.
"Have Space Suit, Will Travel" by Robert A. Heinlein

The best way to become acquainted with a subject is to write a book about it.
Benjamin Disraeli

What is Creativity?

correctly (i.e. understand it). Otherwise it is only random action with a few happy accidents.

You define the domain

Domains often seem clearly defined and they give the creative individual his job description: "I'm a scientist > psychologist > social psychologist." or "I'm an artist > painter > portraitist." Sometimes it includes the kind of methods as well, e.g. empirical social psychologist or oil-portrait painter. However, these definitions are artificial constructs and you can (and probably should) transcend their borders. Nobody forces you to stay inside what is commonly accepted as the domain (except the screams of colleagues: "This is not physics! or science! or art!"). While you should probably stop at barriers like "This is not science!" if you cannot produce working results, the inclusion of methods and perspectives from other disciplines can help you define, grasp and analyze your subject much better and stimulate ideas. See page 44 and page 84 for interdisciplinary work.

The chief characteristic of the religion of science is that it works.

Isaac Asimov

Sometimes, the merging of different domains can lead to exciting new domains, like biophysics in science or cooperative projects in art.

What is Creativity?

THE FIELD

The field consists of the people, who judge whether your work is creative or not. If you want to be widely recognized (e.g. become a pop singer), it can be quite large (the general public), if you do a creative project for yourself, it consists only of yourself. Sometimes the field is very specific, e.g. if you aim for a Nobel Prize the field is the committee of “The Royal Swedish Academy of Sciences” (or whoever decides in your domain), or if you want to make a creative gift the field is the person who receives it (although you may not want to give it to her if you do not judge it as creative also). Sometimes the field is so large, that the evaluations will differ widely (e.g. you write a fiction book for the general public and the reactions are from love to hate).

I showed my masterpiece to the grown-ups, and asked them whether the drawing frightened them. But they answered: “Frightened? Why should any one be frightened by a hat?” My drawing was not a picture of a hat. It was a picture of a boa constrictor digesting an elephant.
Narrator in “The Little Prince”

Functions

The field has the following functions:

Filter through Judgment of Creativity

Creativity is not an inherent quality of an object or a developed process. It is an attribution of the field. The field determines if something is creative or not and filters what gets accepted into the domain. Given the amount of people who consider themselves artists or scientists the domain would be chaotic and grow like a cancer cell to gargantuan proportions if everything gets accepted into it without any filter. The public or the colleagues would not have a clue where to spend their limited attention. Great creative achievements are needed to change the domain with the consent of the field (Csikszentmihalyi, 1997). If you want to be remembered for your creativity or facilitate change, take a good look at those who must judge your work as creative to reach this goal. These people are your field and you must convince them that your work is creative.

Your manuscript is both good and original; but the part that is good is not original, and the part that is original is not good.
Samuel Johnson

Access Control to Resources

In some areas the field also filters the access to needed resources. This is especially important in scientific fields, e.g. access to a supercollider or telescopes whose costs and valuable time are a highly coveted resource. It is also important in arts, where gallery owners, publishers or other distributors have limited space and determine what is hot or not. In many domains it is unfortunately not only necessary to do excellent creative work, but also to know the right people and be at the right time at the right place (e.g. at a laboratory that has the machine you need and where people support you in your work).

But a machine that was powerful enough to accelerate particles to the grand unification energy would have to be as big as the Solar System — and would be unlikely to be funded in the present economic climate.
Stephen Hawking

What is Creativity?

Important Restrictions

Although we talked about the field like there is only one and permanent field, there are some important restrictions to this view.

Different Filters in different Fields

While the field filters the created works and allows only those into the domain which meet its criteria, different fields have filters of different permeability. Some are very restrictive what gets accepted into the domain (e.g. theology) while some are more lenient (e.g. astrophysics).

Changing judgement of creativity over time

Was van Gogh an artist? A stupid question, of course he was. But not so much during his lifetime. The field at that time thought he was a madman who drew strange pictures (Csikszentmihalyi, 1997). Over time, the field (people who determine what is art and what is not) changed, and with them the judgment of van Gogh's work. Depending on how well it fits the current zeitgeist, your work can fade in and out of public consciousness and favor over time, and only a few brilliant people remain there for centuries. There can also be instances where ideological issues cloud the judgment of creativity (e.g. "Entartete Kunst" [degenerate art] in Nazi Germany, social theories of western scientists in the UdSSR and *vice versa* of Russian scientists in the western world during the cold war). Science is constantly improving itself and your theories might be remembered only as a valuable contribution and be moved to the history of science as theories are improved (e.g. psychoanalysis in empirical psychology). On the other hand, well-thought out theories might be rejected by the current generation of scientists because they do not fit into the current zeitgeist or paradigm. Scientists have been ostracized because they proposed models that were currently not in favor, and even if they were proven right years later (if they are remembered at all). Unfortunately, the damage done to their careers and psychological well being cannot be undone.

Different judgement of creativity over place

The judgement of creativity can differ depending where you are. Different people have different backgrounds and so their judgements are not the same. If you are not recognized where you are, if the environment is too hostile for your ideas, you might strongly consider moving to a place where you find recognition if you do not want to adapt to the field.

FUTURE FIELDS

Tired about the world? Finding no suitable people for which you would like to be creative? The field does not have to exist yet. You can create, write or build for future audiences — if you can get your work there. Look at time capsules for the difficulties of keeping something intact for thousands of years.

DON'T LET THE ENVIRONMENT KILL YOU(R CREATIVITY)

Nothing is worse than a stifling environment for creativity. Your creativity will slowly die until you have accepted the "fact", that you are not creative, never were, and never even wanted to be. Even if you are not free to move to a different place (which is a major step and should be carefully considered) you can always try to find people who share your perspective. Look outside the family, the classroom or workplace. Look in art courses or at conference. Look on the web. There are always people who will like your work. Find them. Do not let a harsh field kill your creative impulses. However, make sure that you are really good.

"And while the soulless minions of orthodoxy refuse to follow up on his important research I could hear the clarion call of destiny ringing in my ears."
Dr. Elias Giger in *Star Trek DS9*: "In the Cards"

What is Creativity?

Changing influence of the field: The Long Tail

In recent years the importance of a small, closed field of trend setters in art has been reduced considerably. Modern technology not only allows almost everyone to be creative (given the low costs and availability of material) but also gives access to new distribution channels. The internet itself and special pages like YouTube, flickr, DeviantArt, MySpace and countless others allow everyone to get their work out there, independent of major filters like record companies or publishing companies who “know what the people want”. People begin to organize themselves to find the products that appeal to them specifically instead of the lowest common denominator (also called “the mass market”). And if enough people *like your work and can find it*, you can appeal directly to them. Even in science with its increasing specialization there are more and more subgroups with special interest which can be reached directly.

What is displayed via these new channels might not be considered art in the traditional sense and without the strong filter of a small group of experts a lot of crap comes through, and artists will have a hard time getting notices in that maelstrom, but if you can reach enough people it might be a first step in getting noticed by the world at large via word-of-the-mouth advertisement.

Different fields for different work

A person can have different fields for different projects and their scope can change. Sometimes one does work on a project only for oneself, sometimes it must be accepted by larger audiences. It is also possible that a project that was intended for a small field appealed to a much larger field (and, sadly of course, the reverse). This is difficult to plan: Just because you like something does not necessarily mean that others like it too, nor does the fact that you hate your work mean that there are not (a lot of) people out there who like it (a lot).

Different judgements for different people

Creative judgements should be fair. Unfortunately, they are done by human beings. Even awards for outstanding scientific achievements like the Nobel Prize have been criticized in the past for being biased against sex, position or scientific degree. Having a brilliant idea and working it out is not sufficient to get the recognition for it. Often you have to fight not only for your idea, but also for your recognition. And sometimes this is not possible. People working in companies where the head of the department gets the credit can tell you a thing or two about it.

You can define the field

Does this mean that you need the blessings of others for creativity? No, because the field can consist only of yourself. You can judge that something you did was creative, even if no one else does think so. If you only want to do things for yourself and have fun, this might be enough (others, i.e. those not part of your field, may consider it a waste of time).

DEFINE YOUR FIELD

Determine which kind of creative work you want to do. Who can or may judge if you are creative or not? Is it a personal project? Only you. A present? The person for whom you make it. A general artwork? Here things get trickier. A scientific study or theory? Who works in the field who is not biased against your theory? Who is objective enough to judge its quality? Find out who is important for you and whose feedback is worth something to you. Listen to them and not to everybody with an opinion and an own agenda (which might be biased against you).

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You can ignore the field

In principle, you can decide what kind of evaluations of the field you accept or not. If you are not depended on the field, neither financial, nor organizational, you can even ignore their evaluations completely. While this probably will not lead to the acceptance of your works into the domain (which the field controls), it is a viable option. You can even reject positive evaluations. Jean-Paul Sartre declined the Nobel Prize in Literature 1964 because he always refused official honors. While the benefits of ignoring the field are questionable at best, you can focus on your work and do uninfluenced by other people.

CONCLUSION

Creativity is the interplay between the individual, the domain and the field. Keep this in mind if you want to be creative, if you want to assess the quality of your work and when you choose your domain.

Misconceptions About Creativity

WHAT CREATIVITY IS NOT ...

There are several misconceptions about creativity. Creativity is not madness, nor defined by the tools, nor destruction, nor fixed, nor easy and certainly not yours alone. We will look at the different misconceptions one after the other.

Creativity is not Madness

Creativity is not only doing something new, something original, something unconventional, but also something that has a purpose, that is *good for something*. Yes, some artists have a streak for ... unconventional or eccentric behavior and the archetype of a creative scientist is usually a little mad, but being creative does not mean just throwing color at the canvas or tinkering with machinery without knowing what it does. If you (act like you) are insane you are original, but no one (but your wardens) will care. You have to be different from the rest to be original but still be able to keep the contact with the people around you and the facts so that others can understand you. Explore new worlds but keep a trail behind you so that others can follow you. Cross rivers but leave bridges.

Pitfall: Becoming a madman

It might be tempting to act like a madman, violating the norms of decency (in art) or of ethics (in science).

But the rules or norms are there for a reason, if only to make you think very hard if you have a really good reason for breaking it. While acting like a maniac might give you instant reputation, it will rarely be the recognition you strive for. Unless you have an aim that can be seen in your work (other than getting famous, that is), people will see right through you. If not immediately than after some time and once you got your reputation as *mad idiot* your career (in art and science) is pretty much finished. While artists might be difficult to judge, it is actually easier for scientists and engineers: their work must lead to predictions that can be supported by empirical evidence (science) or they must simply work (engineering).

“Being weird isn’t enough. Originality with no purpose in mind, is not creativity. It is insanity but not art. Original, but not useful.”
Unknown

Not only must we be good, but we must also be good for something.
Henry David Thoreau

Damien Hirst’s response to those who said that anyone could have done this artwork was, “But you didn’t, did you?”.
Wikipedia

Creativity is defined by the works, not the accessories or tools

Madness is only one of the attributes we assign to artists or creative scientists. Especially artists and subgroups like painters, designers or writer are associated with specific attributes or ‘equipment’. It might be tempting to embrace this. *Don’t*. Just because some designers have a tendency for black clothes and stylish glasses and writers are either drinking or smoking (or both), does not mean that this has anything to do with their creativity. If this is your default style, fine, but do not clad yourself like a creative in the hope to increase your creativity. It will not work. It will only draw energy, make you feel uncomfortable, will be easily seen through by anybody who knows your work and you will be marked as a poser.

Buying a Nikon doesn’t make you a photographer. It makes you a Nikon owner.
Unknown

Misconceptions About Creativity

Pitfall: Becoming a poser

Sadly, marketing tries to convince us that certain things will make us more creative. I have a colleague who tries to look like an artist by cladding himself with a Moleskine notebook, an Powerbook, an iPod Touch and a pseudonym, but who has never made a piece of art in his whole life (save taking the role of an intelligent playlist in a local disco or the play button in a cinema). Don't buy into it. It's a waste of time and money. Artists have always made what they felt the inner need to do, not what others were trying to sell them, and real scientists, well, frankly, they are too busy trying to grasp the complexity of their domain to even care about that. Use the tools that are useful for your work and wear the things you feel comfortable in. Your creativity is in what you do not in what you have (unless it's creativity, of course).

Creativity is not Destruction

It is easy to be against something. It is easy to destroy other artworks, to criticize them with wit, irony, sarcasm and cynicism. Few can build a tower, but nearly anyone can destroy it by removing certain stones. But this is not creativity. This is not art. It might be fun, but it will not last, nor be remembered, unless you can put something better in its place.

Pitfall: Becoming a (full time) critic

Since it is easier to destroy something existing instead of creating something new, you might be tempted to become a critic in your domain. There are endless opportunities: Reviews and conferences in science, newspaper articles and gallery openings in arts. If you want to support others and help them to improve your work, excellent (see page 305 for information on feedback). But it is not creativity, because whatever you say, you will always come secondary to the person you try to criticize because your criticism relates to his work. And if you are destroying it, you are weakening your already low impression in the community. It is like tearing a hole in a boat that does not swim to well in the first place: in the end you only sink yourself with the boat. You might try it the other way and praise the creative works of others, but here too, you will only come secondary. Few bootlickers of great creatives are remembered, the creative usually outshines them and — strangely — the competition is high. Even giving well-thought out feedback that helps the creative, which is very hard to give (see page 305), you will only take a minor supporting role.

Criticism is important but you will neither be respected, nor loved, nor remembered, if you do not also go out and create something. Find something you like, you want to put effort in, and stay with it until you have become skilled and create your own reputation.

Creativity is not fixed

If you consider creativity as the interaction between the individual, the domain and the field, there is an important consequence: creativity is not fixed. It is not

"If you want to be smart, be smart in the shower."
Gene Buckley, President of Sikorsky Aircraft

Making fun of Zootoday is like shooting fish in a barrel; it's morally wrong, but it's still fun.
photoshopdisasters.blogspot.com

A "critic" is a man who creates nothing and thereby feels qualified to judge the work of creative men. There is logic in this; he is unbiased — he hates all creative people equally.
Excerpt from the Notebooks of Lazarus Long in "Time Enough For Love" by Robert A. Heinlein

Misconceptions About Creativity

something you either have or not (individual), neither is it something that is only possible in a certain area (domain) or the property of a selected group of critics (field). It come from the interaction of all three aspects, and all of them can change.

You learn more over time, have singular ideas, different perspectives, good and bad days. Your influence in the field will vary and so will your knowledge of the domain.

The domain will change over time, as more and more people contribute to and refine it. This will change the perception of your individual contribution and provide you with new ideas.

The people who compose the field will also change. The old guard will be replace by a new generation with different values, attitudes and knowledge. Artists gain fame over the time if their works suit the current zeitgeist and fade again if they do not.

People often say "I am (not) creative" which is true if the field composes only of themselves. But in the broader context creativity is not something that is fixed in an individual or under his control.

Pitfall: Seeing Creativity as Stable

In the book "Why smart people can be so stupid" one of the contributors, Carol S. Dweck, argues that the believe that intelligence is fixed leads to self-handicapped behavior among smart people who share this believe, because any bad outcome on a task that requires intelligence will be seen as sign that they are not smart enough *and they cannot do anything about it*. I think that a similar believe can bring creatives to fall, if they think that creativity is something stable that has nothing to do with effort, mood, luck or other aspects of the situation they are in, nor the changing evaluation of the field or their knowledge of the domain. They try something, receive a negative outcome because they lack the skill or knowledge, and interpret this as a sign that they are not creative, or at least, not creative in this domain. A more self-serving view (of intelligence and creativity) is that it is changeable and depends on effort. Of course you will not produce Rodin's "Caryatid Who has Fallen under the Weight of her Stone" when you first try to make a statue, you will be lucky to produce the stone. Nor will your first study being published in top-raking journals like "Science" or "Nature", it will likely not be published at all. This does not mean that you are not creative enough, it just means that you will take time and effort to become that good.

Creativity is not fixed, but you will not become creative by doing nothing. You have to learn, and to work, regularly and for a long time.

To be nobody but yourself in a world which is doing its best night and day to make you like everybody else means to fight the hardest battle any human being can fight and never stop fighting.
e.e. cummings

Up to a point a man's life is shaped by environment, heredity, and movements and changes in the world about him. Then there comes a time when it lies within his grasp to shape the clay of his life into the sort of thing he wishes to be. Only the weak blame parents, their race, their times, lack of good fortune, or the quirks of fate. Everyone has it within his power to say, "This I am today; that I will be tomorrow."
Louis L'Amour

Working hard does not mean that you are doing something wrong or have no talent, it does mean that you are putting effort in your work.
unknown

An idea not coupled with action will never get any bigger than the brain cell it occupied.
Arnold Glasow

Misconceptions About Creativity

Creativity is not easy

Having ideas is actually the easiest part. What is extremely hard work is getting the information and skills, the material for the ideas, in the first place (learning the domain) and realizing the idea after it occurred. It is easy to have an idea for a great plot or a hypothesis. But it takes hard work to get the necessary knowledge and skills (see page 81 and page 285), to realize it, e.g. write the novel or design and conduct the experiments to actually produce something of value.

Pitfall: Seeing Geniuses/Masters as perfect

Many creatives have a deep insecurity about the quality of their work. They look to the famous, the ones who did it, be it da Vinci, Edison or Feynman or Michelangelo, Picasso or Madonna and think: "I can never be that good." And yes, compared with the works of the great, one will (probably) always come second. But there are a few factors that one should keep in mind when comparing oneself to the great ones: often their flawed experiments that would have given a more realistic picture of their limitations were not considered worth keeping, so only their best works did survive or are presented in galleries. While you can see your limitations, time (and

If people knew how hard I had to work to gain my mastery, it wouldn't seem wonderful at all.
Michelangelo

(About Newton) Nature to him was an open book, whose letters he could read without effort.
Quoted in G Simmons Calculus Gems (New York 1992)

their own censorship in form of unpublished or abandoned projects) prevents you from seeing theirs. While their work might be great, you do not know how much help they had, either directly or by forgotten sources of inspiration. Many were full-time artists or scientists who have invested a great deal of time in their project and with that much effort, there were bound to be a few good ones. So if you are at the beginning of your career, it is no wonder that you do not have the same record of successes or quality of work. And the quality of their work is often exaggerated: yes, Mozart did compose as a child, so what? When we hear this we usually fill in the gap of the kind of music he composed and think that he did compose masterpieces as a child (after all, he was Mozart, a *genius*). *But he did not*. His compositions as a child were not masterpieces, how could they, when he was still learning the domain? The works we would consider as "Mozart pieces" came later when he had spend years studying the domain.

So do not let the real or imagines success of others, either living or dead, intimidate you. You are responsible for your own work, in your own time, in your own way. You are not and will never be a second da Vinci or Edison or Michelangelo or Madonna. This time has passed. You cannot walk in their footsteps (nor should you, you could not overtake them). You are living in an other time, in another situation and with other options. Look at yourself and your situation and create yourself the best you can be — often, this is enough.

Pitfall: Thinking that talent is everything, effort is nothing

We often have the impression of a gifted creative individual as a genius who does everything without any effort. Consequently we think that effort is unnecessary and a sign that one lacks talent. It is not. Effort is necessary, even essential for creativity. It does not matter how smart or talented you are, unless you have the necessary knowledge and skills of science or art, you will not be able to be creative. Knowledge and skills have to be learned and this takes a long time. To be creative,

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you need dedication, continuous practice which requires a strong motivation, over decades. Your talent can show you which domain you should choose, but without effort you will not produce anything of value.

Pitfall: Expecting creativity to be the silver bullet

Some people think that they do not need knowledge, experience or skills to be creative. They think that there is a simple and elegant solution to every problem that can be found by everyone if this person is just creative enough. And besides, you are trying to do things differently so why bother with the things that will soon be obsolete? Unfortunately, it will not work this way. Perhaps there are some lucky bums who stumble upon solutions to problems without working for it. But it is more likely that the way to a simple solution is not simple. It takes a lot of learning, a lot of work and effort to find it (which means that after years of hard work you will hear people saying: “But that’s trivial.” — yeah, if you know it, it is). And you have to learn the knowledge and skills to create something, to have material to work with. It shows you where the special cases are, the fringes, the problems. Unless you know the domain you will not be able to work creatively. You will be the equivalent of a monkey with a typewriter and nobody will have the nerve nor the time to continuously check if you produced anything good.

The Egg of Columbus is a story of how to make an egg stand on end. The story is used to illustrate the notion that it takes genius to discover something new but that once it has been shown to others then anyone can do it.

Wikipedia

Pitfall: Creating paper solutions

One of the most heartbreaking and gut-wrenching moments in creativity is, when you see a fierce supporter of an idea without merit. Someone who did not have his facts right in the beginning so he has an idea that is not working. Or someone who has an idea that could work but who makes no effort to implement his idea to see if it actually works (and how well). You see this kind of ideologists in all kinds of areas, from science (esp. in education) to arts. They have paper solutions, just a vague idea that they scribbled down, but that has no chance of becoming realized. The idea is either wrong and they do not even know it, or they expect others to praise them for their brilliance and do the work for them. They are trying to convince others (often not even members of the field) of their idea, instead of trying to implement it themselves and fixing it in the process if the idea is not perfect (and most ideas are not).

Do not mistake creativity for having ideas alone. To be creative, the idea has to be well-founded (i.e. it must work, even if it is corrected during the realization stage) and it must be implemented (by yourself or with your strong support). Everything else is just playing with soap bubbles: Fun but without merit in the end.

Pitfall: Following pseudoscience/-art

Often as a consequence of their dissatisfying experience with paper solutions (see previous point) some people think that the established scientists or artists simply do not recognize their genius (or of their ideas). Some seek alternative means of publication,

“Arthur Schopenhauer said that all truth passed through three stages: First, it is ridiculed. Second, it is violently opposed. Third, it is accepted as being self-evident. But that does not mean that just because they ridicule and oppose you, your idea has any merit, nor does this mean that it is a truth or even self-evident. Most likely you’re just wrong.”

Daniel Wessel

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e.g. via web pages, third-class or even pseudoscience journals.

While there are instances when scientists refused to acknowledge new ideas that later proved to be right, in most cases they are correct. They deal with a countless ideas from well meaning creatives that are not good because their creator has missed some important principles (like the second law of thermodynamics or free will) or simply reinvented the wheel.

If you ever have the impression that you (or your ideas) are not valued as they should, ask the people who reject it why. Try to find out their reasons and be willing to listen to them if they want to explain it (they are by no way not obligated to do so). In most cases they will have a valid reason to do so that goes beyond “I do not like it” (at least, outside of art).

Pitfall: Taking on the mantle of dissatisfied

You see this type in universities (mostly in the last rows): People who think that since knowledge is continuously refined everything we know is wrong and not worth knowing. Consequently they scoff at learning. Scoffing is — of course — much easier than learning and actually working to improving the knowledge. There are also self-proclaimed artists that scoff at training or producing art, because they have not the money but do not want to ‘sell out’.

It is easy to claim potential (which you cannot see) or to find reasons why it is not worth to be creative (“in this rotten, commercialized world”). But creativity is

not meant to be easy. To be creative you have to work against the odds, improve the knowledge that is there, make a contribution even if you wont be able to provide the final true knowledge. To take up work for the money so that you have the money to work for yourself. This is much harder than being dissatisfied and scoff at the world. But this is the only thing that makes life worth living for creative people.

“... when people thought the Earth was flat, they were wrong. When people thought the Earth was spherical they were wrong. But if you think that thinking the Earth is spherical is just as wrong as thinking the Earth is flat, then your view is wronger than both of them put together.”

“The Relativity of Wrong” by Isaac Asimov

Creativity is not yours alone

If you have worked hard and put a lot of effort in learning your domain and developing the necessary skills, you might have a brilliant idea. You might think that this idea is unique and only yours. Most likely it is not. In nearly any domain there are countless professionals and amateurs working on problems, inventing or producing works of art. There are countless examples over time of parallel creativity (see page 341), of people who developed the same idea independently from each other. Often it is a matter of luck, or time, or opportunity, who filed the idea first, who published his work first, or who had the better promotor. Sometimes you will find out, that others had the idea a long time ago. Sometimes you work is similar but dissimilar enough to be considered well on its own.

There is no way around this, ideas are free and muses whisper in many ears. There are some who try to secure areas of a domain by trademarking some words (e.g. “learning by design” in psychology) but this is not only a waste of time but also pretty petty. Ideas should compete freely against each other and not become entangled in dubious legal constraints.

Creativity is a highly competitive area. Do not be disappointed if you loose some

Misconceptions About Creativity

battles, if others are better (at times) or use your ideas in a way that transcends your imagination.

Advantages and Disadvantages of Creativity

CREATIVITY IS NEITHER INHERENTLY POSITIVE NOR NEGATIVE

While we often view creativity as something positive, and it often is, but it can also be negative. You can use ideas to improve the world, but you can also have ideas that bring hell on earth. Creative can bring you fun, fame and fortune, but it can also ruin, ostracize and kill you.

Personal Advantages

Why do *you* want to be creative? There are different reasons to do so and they influence how one should be creative:

Fun

Working creatively, to create something, can be huge fun and a welcome change to the otherwise boring everyday life. Few things are needed and you the field is relatively small. For larger projects which surely take a lot of time and effort, fun is needed or they hardly come into being.

Fame and Remembrance

Some people are motivated by their wish to become famous and be remembered after their death. It is about reputation. It is a powerful driving force but very hard to achieve. You have to hit not only the nerve of the current field but also of the field in the future. Given the (trivial but true) fact that nothing lasts forever and even our sun will burn out in 5 billion years, fame and remembrance seems to be an understandable but misplaced motivation. Take care that you understand the field, hit the zeitgeist, and get your work out there. The chances to achieve this goal however, are very small.

Satisfying the need to be creative

Some people just feel the *creative urge*, *the need*, in them and want to let it out. They want to express themselves. Being creative is what they are and creating works allows them to be what they are. If they could not be creative, their creativity would either find little ways to show itself or they would wither and die.

Advantages for Society

Society can profit from creatives in a number of ways:

Enlarge mankind's options

Some creatives want to "light a candle and push back the boundaries of darkness" for the world or at least for their country or city (Taipei is a good example of the last one). They want to provide mankind with knowledge to make it more powerful, improve the situation by giving it more options. However, good intentions are no substitute for careful evaluation, especially of the side effects (see page 36).

Some architects are trying to become immortal not by 'freezing music' but by coating their structure in ice, prohibiting any change of tune, no matter how times' requirements or tastes have changed, until all there is left is a ruin which no one likes to use.
Unknown

"Don't be disappointed, Aunt Hilda. Pop has to work; it's his nature. Me, too. Work is necessary to us. Without it, we're lost."
"Well ... yes. But working because you want to is the best sort of play."
"The Number of the Beast" by Robert A. Heinlein

"You know what Michelangelo used to say? That the sculptures he made were already there before he started, hidden in the marble. All he need to do was remove the unneeded bits. It wasn't quite that easy with you, Data. But the need to do it, my need to do it, was no different than Michelangelo's need."
Star Trek TNG: "Brothers"

Advantages and Disadvantages of Creativity

Improve mankind

Artists sometimes strive to educate mankind about itself, to hold a mirror to society and force it to face (and hopefully change) itself. Some scientists take a more direct approach.

Bring Fun

Creativity can not only lead to fun for the creative person, in arts they often have a wide audience. In private, creative works also make the best gifts. They are often unique and highly adapted to the specific person. A lot of people tinker presents for their friends and loved ones. But be careful if you invest a lot of time and soul in creative projects as presents — if the person is not equally creative, you will not get anything remotely “valuable” “back” which might spoil the mental cost and rewards balance of the relationship. I stopped creating these kinds of presents for exactly this reason — might sound selfish, materialistic and petty, but try it for ten years, then we will talk again.

Personal Disadvantages

Creativity is not safe, especially not for the creative:

Open Resistance and personal danger

Creative ideas change the current way of thinking, of doing, of how things are and were for a long time. People often feel threatened by change, especially if they have invested a lot in current status quo: money spend or invested in current infrastructure or products, time, learned knowledge, expertise, jobs, position they reached and hold within certain structures or actions/behaviors — there are countless things that can be threatened. Often we do not like that we have to change, that we must do things differently because it is not something we have choose but something that force upon us from others. They force us to change and we feel insecure, threatened and we resist. Especially if we feel (or know) that we cannot change, that we cannot pull our money out or will have difficulties to learn a whole new set of skills.

For these (and other) reasons, creative people will often feel resistance, sometimes even from other creative people since there is often only a certain amount of time, attention, money, etc. so there is a natural competition and this competition gets attacked. Sometimes it is not only single individuals but whole companies, governments or religious institutions. And they will even turn on one of their own, e.g. not realize an invention that would leave them with less profit even if it would

There has grown up in the minds of certain groups in this country the notion that because a man or a corporation has made a profit out of the public for a number of years, the government and the courts are charged with the duty of guaranteeing such profit in the future, even in the face of changing circumstances and contrary public interest. This strange doctrine is not supported by statute nor common law. Neither individuals nor corporations have any right to come into court and ask that the clock of history be stopped, or turned back, for their private benefit.

The Judge in “Life-Line” by Robert A. Heinlein

Obscenity is whatever gives the Judge an erection.

Unknown

“Science must be innovative. It brings change. That’s why science and bureaucracy fight a constant war.”

Dune Vol. 6: “Chapterhouse Dune”

New opinions are always suspected, and usually opposed, without any other reason but because they are not common.

“An Essay Concerning Human Understanding” by John Locke

Advantages and Disadvantages of Creativity

be beneficial for the world at large (e.g. environment friendly cars) or fire an ordained priest. Sometimes, they attack members of different domains, e.g. representatives of churches who attack science (not only impressive cases like Galileo, even today scientists, especially in medicine and genetics, face religious opposition). Artists are not immune: art has been labeled as pornography or “entartet” [degenerated] and censorship is an issue even today (Never heard about it? Of course not.).

The quantity and quality of the resistance can vastly differ, depending on the domain, the field and on special circumstances (e.g. enemies made, promoters that fight like bulldogs for you). Sometimes this means some minor difficulties (e.g. rude remarks), sometimes it means loss of job or isolation from the field, even death threats or actual death like burning at the stake or gallows, in earlier times (or in areas of the world, where it is still pretty early).

Isolation

Creativity needs a lot of time — for example, to learn the knowledge and train the skills you need time for yourself. Your attention is often fixed on the projects, drawing attention and time from social events (unless you consider it creative to be a wit at a party which I do not). You will probably venture far into a domain, often where others cannot or will not follow, making interaction difficult.

Personal Danger by the Domain

In some areas the domains themselves are dangerous. Creativity works in the not (yet) known and researchers (or test subjects) are the first to find out what works, what does not work, and what works different than expected (sometimes *impressively different*). Researchers can be killed by the material or the areas in which they are working in. Marie Curie died of Leukemia, probably due to the radioactive material she was working with, and aviation pioneers not only went up but also down, sometimes a lot faster than anticipated.

Disadvantages for Society

While creativity is necessary to improve society and we are forced to do so, because we cannot live forever the way we are doing now, new ideas can make matters worse.

Negative effects of science

Often side effects of technology are not anticipated (i.e. looked for) or accepted (i.e. swept under the carpet because the gain of knowledge or money is just *too good*). It is hard to foresee which ideas will be beneficial in the end, or for some time. While weap-

If Thomas Edison invented electric light today, Dan Rather would report it on CBS News as “candle making industry threatened”.
Newt Gingrich, US Congressman and House Speaker, 1995

If my theory of relativity is proven successful, Germany will claim me as German and France will declare that I am a citizen of the world. If my theory should prove to be untrue, then France will say that I am a German, and Germany will say that I am a Jew.
Albert Einstein

I like you, but I wouldn't want to see you working with sub-atomic particles.
Unknown

It was equally imperative that this chain of reactions should always tend to dampen, to die out. It must not build up, or the uranium mass would explode within a time interval too short to be measured by any means whatsoever.
Nor would there be anyone left to measure it.
“Blowups Happen” by Robert A. Heinlein

Advantages and Disadvantages of Creativity

ons of mass destruction can turn earth to cinders they have brought us an uneasy peace for 60 years. But their evaluation changes in an age where they become small enough to be interesting for terrorist and easy enough to acquire to become a valid threat.

Negative effects of art

Great art can inspire, but the question is, what they inspire people to do. While some effects of art are exaggerated, e.g. the influence of suicide literature or music (it is more complex than just: “reading/listening kills”), art influences us every day. Propaganda for governments or cooperations (i.e. advertisement) do not necessarily make the world better (except for the governments and companies, of course). And sometimes, its effects are quite dangerous or even deadly (e.g. fashion trends that promote bulimia or anorexia nervosa).

“I wonder what the author of that republican song thought when he saw young men walking to certain death, with his song on their lips?”

Daniel Wessel

Consequences

1st Consequence: Take responsibility for your creativity

Even if you never wanted it to happen, you have to take responsibility for your creativity. You want to be honored for the benefits, so make sure that you accept the responsibility for the dangers.

While many will never make anything dangerous, it should nevertheless be mentioned and kept in mind. See the next pages about responsibility in creativity.

2nd Consequence: Plan Ahead

Some negative consequences of ones own creativity can be foreseen if you devote the necessary attention to it. See who will be threatened by the change you bring, who will loose: Who is invested in the status quo? Who are your competitors? Make sure you know how to deal with the opposition and prepare for it. One way is to seek allies, e.g. Darwin had Huxley as his “bulldog” who fought for him (or rather his theory of natural selection).

The people will take a certain amount of reform, then they want a rest. But the reforms stay. People don't really want change, any change at all [...]. But we progress, as we must — if we are to go out to the stars.

Bonforte's double in “Double Star” by Robert A. Heinlein

3rd Consequence: Follow up

Since some dangers appear only over time, follow up your creative projects after you released them into the wild. You do not know what might happen with them when you created them, but their affects will probably become very obvious with time. If they are negative or if someone uses it to produce negative effects, take steps to intervene. After all, you are its creator and share a certain responsibility.

Responsibility

YOU ARE RESPONSIBLE FOR YOUR CREATIVITY

As mentioned, creativity is not inherently good or bad. It is doing things differently than they are done before and a field (of whomever this consists) that determines that it was creative. But different is not always better and even when things are truly bad a change can always make it worse. This is not only a matter of military technology that finds new (and creative ways) of killing people or of finding out that an commercial airliner is essentially a giant cruise missile if you do not care whether you live or not. Even seemingly beneficial creative ideas can have unintended side-effects that occur only over time or in special circumstances.

This raises the matter of personal responsibility. Creatives cannot shake this responsibility (“It was only my job.”) or try to hide from it (like the physicists in Dürrenmatts “Die Physiker” [The Physicists]). Even if one has never intended the purposes for which ones work is used one still has a responsibility for it. You created it, it is your child, you are responsible for it, especially in the early stages where you know it best and can guide its uses.

But what can one person/team do?

You cannot control everything, especially not turn back the time, but you can do some things:

Show everyday responsibility: Protect the environment

Sometimes creativity includes materials that are a danger to the environment, make sure that even on that small scale level you protect the environment. If you have to use products that are harmful, imagine what would happen if you scale up your prototype to commercial production lines and take steps to reduce this impact.

Be on the lookout for side-effects

There are a lot of creative works that were hailed as salvation but had unintended side effect. In science DDT was considered as a miracle pesticide (and it is, but unfortunately, it is more than that) and nuclear power was supposed to give us electricity “too cheap to meter”. In art, songs that were written to promote unity can be misused to inspire war against outsiders and pictures that were supposed to convey a deep meaning can be misused to sell products. Many of the side-effects could not be foreseen in the early stages of development, but one could have looked for it.

In dreams begin responsibilities.
WB Yeats

BOOKS

“Blowups Happen” by Robert A. Heinlein

“Die Physiker” [The Physicists] by Friedrich Dürrenmatt

The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.

“Isaac Asimov’s Book of Science and Nature Quotations” by Isaac Asimov, 1988

“I’ll tell you the problem with the scientific power that you’re using here: it didn’t require any discipline to attain it. You read what others had done and you took the next step. You didn’t earn the knowledge for yourselves, so you don’t take any responsibility for it. You stood on the shoulders of geniuses to accomplish something as fast as you could and before you even knew what you had patented it and packaged it and slapped it on a plastic lunchbox, and now you’re selling it, you want to sell it!”

Ian Malcolm in “Jurassic Park”

Responsibility

- What can it be used for?
- How can it be misused?
- How will it be understood?
- Will others see the dangers?
- Can others understand the dangers?

It is hard to have a critical look at ones baby and think hard about the kind of harm it can do. Many creatives are too proud, to fixated on promoting their idea that they cannot see the possible consequences (and they *worked so hard for it, made so many sacrifices of time, money and opportunities*). In many areas there are other people who watch for the side-effects (e.g. ethic counsel). While they are important, it is more important that you look for the side-effects yourself, and take responsibility for your ideas.

Educate the public

Tell the public what happens and that you do not agree with the way your work is used. If you did work on the project, you have the expertise and your word has impact. Contact groups that can help you (e.g. environmental groups) but be careful who you chose as allies. Other groups often have their own agenda and methods and even if their aims match yours (well enough), their methods might discredit or even criminalize you.

Communicate clearly

Conveying scientific information to lay persons can be hard, but find ways to make yourself heard. If the CEO does not understand even the executive summary about the dangers of your invention, perhaps a mob of angry citizens or a media outcry will force him to listen. Perhaps government officials have more authority if they get to know what might happen to the environment if the company does not change its work. You are creative, think creatively to prevent the harm that your creativity might bring.

Blow the whistle Anonymously

Even if you cannot do so openly due to legal or personal repercussions, blow the whistle anonymously. There are enough ways to send documents or information to the media (unless the media is your problem). See the "Handbook for Bloggers and Cyber-Dissidents" by Reporters Without Borders for more information.

There must be no barriers to freedom of inquiry. There is no place for dogma in science. The scientist is free, and must be free to ask any question, to doubt any assertion, to seek for any evidence, to correct any errors.

J. Robert Oppenheimer, Life, 10 October 1949

"I did not say it was true, but you will admit that I can convince the public that you are deliberate villains. As to it being a difference of opinion ... you are none of you atomic physicists; you are not entitled to hold opinions in this matter." [...] Lentz discussed it. He dwelt on the appreciation that would be due them from a grateful world. He invited them to make a noble sacrifice, and, with subtle misdirection, tempted them to think of themselves as heroes. He deliberately played on one of the most deep-rooted of simian instincts, the desire for approval from one's kind, deserved or not.

Dr. Lentz, about his proposed campaign to make the Board of Directors of a possibly world-destroying reactor either villains or heroes depending on their cooperation to transfer the plant to outer space, in "Blowups Happen" by Robert A. Heinlein

Not everything that is possible should be invented, and not everything that exists should be used.

Unknown

"I didn't say it was my fault. I said it was my responsibility. I know the difference."

Rose Walker, in Sandman: "The Kindly Ones:4" by Neil Gaiman

Responsibility

Work against it (or improve it)

You were creative enough to bring it into the world, who says that you cannot try to stop it or improve it to a point where the dangers vanish? Find ways (that do not make matters worse) to stop the danger, e.g. develop a better process to reach the same goals without the side effects.

This also applies to artists

This is not only a problem for scientists. Artists, especially in advertisement business (including propaganda) face similar problems. Art can inspire, can rouse emotions — be careful for what it is used. There are ways to use ones creativity against the dumbing of the public. Adbusters for example makes campaigns against advertisement.

Responsibility cannot be shared (or diffused)

Social psychology has shown a clear diffusion of responsibility effect: *the more people* are present in an emergency, *the less likely* it is that someone helps. Each person is looking at the other persons if they should help and since everybody is waiting for anybody to do something, nobody does anything, further impeding helpful behavior. Work is now often in teams since the domains have gotten more complex each person is only doing a small part. The project for the large hadron collider¹ for example took over two thousand physicists and engineers from thirty-four countries working together. How can any single of them be responsible? By making sure they see at last part of the picture they are working on and trying to get a grasp about what happens there. The people who can fill in the gaps are colleagues and available for questions in most cases, so ignorance is no excuse. The fact that one is only part of the workgroup, even one of a thousand workers, is no excuse for personal responsibility. It did not work for Nazi bureaucrats and it does not work in a science or art project (in the case of the hadron collider the only difference will be that St. Peter's Gate will replace Nürnberg). Keep in mind that no matter how many people are working on the project, you are *personally fully responsible* since you contributed to the work.

Invested money or effort is no excuse

The worst moment for the personal conscious to pipe up is when you (or your organization) has already invested a lot of time and effort in it and you suddenly see that what you are doing might be dangerous. I do not think that it will happen often, because when you have build, e.g. a hadron supercollider and sud-

¹ I do not want to imply that the Hadron collider is dangerous or will destroy earth, I use it as an example for a large project that could possibly do it. I do not know if it will. But I would like for a board of critical scientists who evaluate the dangers independently from the people who have an vested interest in its construction.

This book was too much effort to be swallowed by a black hole.

WHISTLE BLOWING

Anonymous whistle blowing can be done over the internet.

Reporters Without Borders has a "Handbook for Bloggers and Cyber-Dissidents" on their website.

Be careful which kind of confidential information you give out. Are some facts known only to you? Did you receive a version of the events or documents that is manipulated slightly (e.g. choice of words, marks on paper) that could be traced back to you?

Do not use any piece of infrastructure of your employer. They know it too well and it could be traced back to you.

You might face legal or social repercussions, even if what you did was ethical correct they might still crucify you in court.

"Go ahead, Giles. Do it. Tell me to kill my sister."

Buffy, after realizing that the only way to stop the Apocalypse might be to kill the key to other dimensions, which is her sister, in "Buffy - The Vampire Slayer"

Responsibility

denly someone recalculates the danger and comes with a high possibility of a non-collapsing black hole (and “high” might be 0.000001), nobody will look at the superstructure that did cost more than five billion dollars and was the work of over two thousand scientists and engineers and say: “O.k., let’s forget the whole thing and tear it down.” This explains the urgent need for external control. A group of people that have invested nothing in the project, who are able to keep their emotional distance, yet are involved in the program enough to understand it.

If you ever work in a domain with possible negative consequences, sure that there are people who supervise ethics and environmental dangers, because you are probably not willing to kill your baby yourself, even if you should.

Answer questions that matter

Responsibility does not start with the creative process and the realization of an idea. You should show responsibility regarding the problem you try to have ideas to. Find problems that are important, that affect people where your solution can actually help other people or “push the human race forward”.

There was no doubt that whoever had shut [the door] wanted it to stay shut. Dozens of nails secured it to the door frame. Planks had been nailed right across. And finally it had, up until this morning, been hidden by a bookcase that had been put in front of it.

“And there’s the sign, Ridcully,” said the Dean. “You have read it, I assume. You know? The sign which says ‘Do not, under any circumstances, open this door?’” “Of course I’ve read it,” said Ridcully. “Why d’yer think I want it opened?” [Footnote: This exchange contains almost all you need to know about human civilization. At least, those bits of it that are now under the sea, fenced off or still smoking.]

“Hogfather” by Terry Pratchett

Most “scientists” are bottle washers and button sorters.

Excerpt from the Notebooks of Lazarus Long in “Time Enough For Love” by Robert A. Heinlein

What is needed to be creative?

We will now take a look at the required abilities and structural requirements for creativity. However, keep in mind that it is not possible to “fail” this list, since everyone has the abilities at least to some degree. But it gives you an idea which abilities are important and in which areas you can improve yourself.

MOTIVATION

Given the effort and time it takes to get the knowledge of a domain, ideas and results, you need a strong motivation to be creative. You will have to make a lot of sacrifices and invest a lot of time and resources in a project and you must be willing to do so.

“Daß ich erkenne, was die Welt | Im Innersten zusammenhält,”

[That I the force may recognise | That binds creation's inmost energies]

“Faust” by Johann Wolfgang von Goethe

Curiosity

One of the most useful motivations that you should strive to cultivate is curiosity. The questioning attitude, the craving to find out, to understand, to try, and not to rely on one's expertise or imagination alone, can be a powerful drive. If you want to understand things instead of just knowing the facts or going through the motions, your learning and training goes much deeper. Curiosity often gets lost when expertise kicks in. It is very satisfying to think one knows all about a topic and can foresee what will get good results and what will not, but it stifles creativity. Even if you are right 99 of 100 times, you will miss the one critical case where your predictions are wrong if you do not try it. Keep your curiosity to find out what actually happens and how things could be from a different perspective. Keep asking the childish questions like: “Why?” and “What would happen, if ...?”. Curiosity helps you to treat every experiment, even the “failed” ones, as helpful experiences.

Curiosity kills the cat — but it also makes her go where no cat has gone before.

Daniel Wessel

The most exciting phrase to hear in science, the one that heralds the most discoveries, is not “Eureka!” (I found it!) but “That's funny...”

Isaac Asimov

Goals

Short and long-term goals help you to keep on track while you are learning, training or thinking. While you can break down complex projects in small steps, goals that reach over the current project can help you to keep focusses on the domain and your work therein. There are a lot of different goals which artists and scientists strive for, e.g. fame, create things, see ideas implemented, understanding, or finding solutions to complex problems.

“I think success has been very important to me. I wanted it to heal some inner wound of some kind. I wanted revenge. I wanted to dance on the graves of a few people who made me unhappy, and I've done it.”

Anthony Hopkins

Interest

While curiosity is a general attribute, specific interest in the domain and its problems is necessary. You need to care about it, be intrinsically motivated to improve yourself. Otherwise it is very hard to spend the amount of time and effort on something that is “only a job” and it will prevent you from using your spare time to

What is needed to be creative?

work on problems because it is “only a job”. See page 18 for finding a domain you like.

Fun

You need positive feedback to continue working on something, and fun is the best way of receiving it. Fun in this context is the deep satisfaction you have, when you work creatively in a domain you love, on problems you find interesting. It is the “getting lost in the work”, forgetting the world around you because it is so intrinsically motivating. This does not mean that the work is always fun; there will be times when you hate doing what you normally love. That is when frustration tolerance and determination kicks in.

Frustration Tolerance

In any creative project there is a high risk of failure. You do things you (or anybody) has never done before, sometimes you work with materials that are not ideally suited to the task and you experiment. And be it through a technical defect, lack of skills or knowledge, or just a non-working idea, *you will fail each time but the last time*. When things do not work and you have to discard the work of hours, days, weeks, months or even years, you need a high tolerance for frustration to continue working.

Determination and Persistence

The main and most important characteristics of successful creatives, especially in science, are determination and persistence. As mentioned, creativity takes time, hard work and is riddled with failures. Even with a strong reason or goal to keep you going, it is easy to give up. Determination and persistence keep you going. Be sure, however, that they do not let you bump again and again into the same wall. While you must be determined to reach your goal and show persistence in trying to reach it, you also need to be *flexible regarding the ways to achieve it*. A change of methods, style or perspective is often needed in creativity and your determination and persistence *must never prevent this flexibility*.

Focus

You must not only follow your domain with determination and persistence, but also keep your focus on it. Especially when the road gets bumpy it is easy to set it aside and start with something new. Many people want to learn everything at once and thus they never start learning anything at all. See page 207 for more information.

In 1583 Galileo Gallilei ... a youth of nineteen attending prayers in the baptistry of the Cathedral of Pisa, was, according to tradition, distracted by the swinging of the altar lamp. No matter how wide the swing of the lamp, it seemed that the time it took the lamp to move from one end to the other was the same. Of course Galileo had no watch, but he checked the intervals of the swing by his own pulse. This curious everyday puzzle, he said, enticed him away from the study of medicine to which his father had committed him to the study of mathematics and physics. He had discovered ... that the time of a pendulum's swing varies not with the width of the swing but with the length of the pendulum.

Daniel J. Boorstin

Nature composes some of her loveliest poems for the microscope and the telescope.

Theodore Roszak

Nothing in this world can take the place of persistence. Talent will not; nothing is more common than unsuccessful people with talent. Genius will not; unrewarded genius is almost a proverb. Education will not; the world is full of educated derelicts. Persistence and determination alone are omnipotent. The slogan ‘press on’ has solved and always will solve the problems of the human race.

Calvin Coolidge

What is needed to be creative?

EDUCATION AND TRAINING

Education and training are often underestimated for creativity. We often think of education as something that stifles creative thought, new ideas. Something that inhibits thinking for oneself while placing an insanely high emphasis on learning *facts that are already known*. But education is not only the formal education in schools (and not all schools or teachers are bad), but also the learning of knowledge and skills for oneself. And while training often sounds repetitive and boring, it is necessary to build up the knowledge (facts) and the skills needed to do creative work on a high technical level.

Knowledge

One of the most famous quotations by Albert Einstein deals with imagination and knowledge:

"I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world."

A nice quotation, is it not? It seems to suggest that you do not need knowledge if you just have imagination. Unfortunately this is not true. While there is a downside to knowledge, especially if it comes to expertise and the assumptions experts make (which save time but may lead them to overlook crucial details for innovation), knowledge is a necessary prerequisite to being creative. You can not have implementable ideas if you do not understand the subject. Consider the discovery of the "Benzene Ring" by Kekulé: He had a dream of a snake biting its tail which lead him to consider the form of a ring. Sudden insight after some time of incubation? Yes. Was knowledge unnecessary? No. He had a vast knowledge about chemistry, he thought about this problem long and hard with the relevant knowledge in mind. Yes, he gave his mind the time to relax and work out the idea, but he put a lot of effort in learning what there was to learn about it in the first place.

So there is no way but to hit the books and get a lot of experience, before you can expect to have good ideas in a given subject. C. D. Jackson probably said it better with "Great ideas need landing gear as well as wings.". Without knowledge and experience you might lack the assumptions that can keep experts on conservative trains of thought but the most you can do is reinvent the wheel if you are able to invent anything.

Most of the winners of the German "future prize" emphasized the importance of knowledge and education for creativity. Root knowledge, pure memorization of

Insanity is repeating the same actions and expecting different results.
"The Fifth Sacred Thing" by StarHawk

"I'm bored. I want to watch something else."
"I'm bored too, but I want to know what happens."
"That's why you have a PhD and I don't."
Jon and Tom

It's not that I'm so smart, it's just that I stay with problems longer.
Albert Einstein

As a pupil you've got a five days a week job: learning.
Henry J. Wilcoxon-Ash

Get over the idea that only children should spend their time in study. Be a student so long as you still have something to learn, and this will mean all your life.
Henry L. Doherty

FOCUS ON YOUR CREATIVE WORK

While it might be fun to copy the characteristics of creative artists and scientists find your own access to the domain and your own style. Take the methods that are useful for you but add your own perspective. Do not become a poser or a copy-cat.

"Why study when you can network?"
Daria in Daria 2x08: "Gifted"

What is needed to be creative?

knowledge, is considered of little worth — most wanted to understand the subject, to really see the borders of the knowledge, the frizzy ends, the conditions when something works and when it does not. Education should provide the basis, but it should be interdisciplinary — there is no worth in producing a fachtidiot (German word for “idiot of your own subject”). Another important factor is experience — education and pure book knowledge is not sufficient for great ideas.

But they also stress that while acquiring knowledge, one must not lose once imagination. So maybe Einstein had a point after all: Imagination is important, but only if you also have the relevant and vast knowledge that constructs your inner world in which you can imagine things.

Skills

My teacher in German once said that anybody could draw like Piet Mondrian: “Simply make a composition with yellow, blue, and red, hell. Hell, he even named that damn thing that way.” Maybe he was right and surely now people can copy his work, but even when the idea is there to be copied, you have to develop the skills first. Every artist spends thousands of hours of learning his tools, be it a musician with his guitar, a painter with his oil colors, or a photographer with his camera. The same is necessary for scientists who have to learn how to conduct experiments, the methodology and methods, the scientific thinking. It is not only book learning but a lot of practical experience until one becomes an expert in his domain. And this learning of skills often distinguishes between “a nice painting” and “a work of art”.

WORK STYLE

Creativity is hard work and a certain work style is very helpful:

Self-reflexion

Besides deciding what you want, you need self-reflexion while you are working on projects, especially longer projects. You need to supervise your work and critically evaluate its results. While questioning your skills might hinder you in your work, you need to question your results. Often we tend to see the results more favorably than they are, more in line with our hypothesis. While it is nice to have ones hypotheses supported, you might overlook an important detail this way and miss a discovery.

Working hard

In creativity hard work is necessary not only to get the knowledge and skills of a domain, but also to develop a vague idea into a working product or process (which often is the hard part). Do not try to be creative to have an easy life — it is not, it will not be, not for you, but perhaps for others. A strong work ethic is helpful to work reliably, regularly and consistently.

For more information see page 81 and page 285.

Autonomy

You cannot be creative in an environment that does not give you the freedom to do so — at least not openly. Even in large, bureaucratic and very conservative companies, creative projects are possible if

Always be a first-rate version of yourself, instead of a second-rate version of somebody else.
Judy Garland

What is needed to be creative?

you are willing to invest personal time and effort in it. If you do not work openly until you have something to show for. If you just conduct some “tests” or some “ideas” but “it is not an official project”. Even in repressive families, creative children can find ways to live their creativity, to express it privately. Even under totalitarian governments were people who worked on their own ideas, their own perspectives, even if they were behind bars or in some Gulag. If you are not in constant coma and you want to be creative, you can. Your first creative project is to find a way to do so.

Do not seek to follow in the footsteps of the wise.

Seek what they sought.

Matsuo Basho

Use what is useful, reject what is useless and add what is specifically your own.

Unknown

Discipline

Related to keeping the focus, you need discipline to continue working every day, even when things get tough, or boring, or fuzzy or you experience failure. It is easy to find other things to do that are more fun at the moment (start another creative project, perhaps?) but discipline will keep you on track, even when things are not fun.

Habits

The best way to achieve the necessary discipline is to develop strong habits. Many great writers worked *diligently every day*. What at first was probably very hard for them to do soon became a habit until it became normal for them, effortless. Not the creative work itself, but the sitting down (or standing, or moving) and spending time and effort on it. Habits also help you to capture, collect and realize the ideas you have. It will take a lot of effort at the beginning but soon become your nature until you cannot imagine not doing it.

The best predictor for future behavior is past behavior. If you want to change your future behavior, forget good intentions and aspirations, change your behavior to change your attitude.

Unknown

Interdisciplinary Work

With increasing knowledge in science there is a strong tendency for specialization. It might help you to focus on a specific aspect but you lack stimulation and perspective: other methods, other points of view, other priorities. And you will not be able to see the big picture, the work in different contexts.

Some of the best inventions in the last decades have come from people using methods of other domains or fields or tackling a difficult subject from multiple perspectives. Sometimes domains were combined that seem to have nothing in common, e.g. chaos theory (mathematics) and internal medicine (medicine) to diagnose heart problems.

Work in interdisciplinary (i.e. heterogeneous) teams is hard because you have to work with people that

WORK INTERDISCIPLINARY

If you get to know someone you like, someone whose work style is compatible with yours and you work in different domains, try to find a problem that you can tackle together. You may not find one but if you do, you will probably have a fresh angle and see it from a perspective that is was not seen before. You must be able to work together which means understanding each other well enough to grasp and tolerate the different approaches. Otherwise you won't produce anything but misunderstandings. This is why the order is: 1. find someone with whom you can work, 2. find a problem.

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think very different than you do. They might seem “stupid”, “slow”, “ignorant” or “clearly not doing scientific work correctly”, but in reality they are doing it according to the rules of their domain and their field. And when people argue in interdisciplinary teams, there is nothing wrong with it and it is even beneficial, as long as the fight deals with the work at hand, the work aspect and not with interpersonal aspects and the respect for the other person is retained.

Interdisciplinary is also important in individual work as you do not necessarily need different people for this. When you learn about the subject that interests you, make sure you look at it from different perspectives and with different eyes otherwise you will miss important aspects.

This also applies to art: Ask yourself how an artist working with different materials would see the subject you are trying to cover and you might get inspiration that benefits your work.

There is only one nature – the division into science and engineering is a human imposition, not a natural one. Indeed, the division is a human failure; it reflects our limited capacity to comprehend the whole.

Bill Wulf

“Yes, but what you do is hardly science, isn’t it?”

Dreaded words while working in an interdisciplinary team of scientists

ATTITUDE TO THE SUBJECT

Besides interest (see motivation) the following attitudes toward the subject you are working with are very helpful.

Naïvety

Preconceived views of the world might be satisfying and get you through the day, but for creativity you have to cultivate a naïve view of the world. You have to change how things are usually done and you have to question things that others take for granted. You have to adopt a playful attitude and face problems without preconceptions. We winch at the four-year olds that asks “Why?” all the time, but they actually have a point (without understanding it).

What is hidden in an empty box?

If a man will begin with certainties, he shall end in doubts, but if he will content to begin with doubts, he shall end in certainties.

Francis Bacon

To think creatively, we must be able to look afresh at what we normally take for granted.

George Kneller

See different worlds

To be creative you have to go beyond the things that are currently existing. You have to imagine the world differently, see different worlds that are possible. While we probably all did this when we were young, this gets lost when we get older. We tend to live in the real world. While this is beneficial to sanity and stability of living, it prevents us from being creative.

“... to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no one has gone before.”

Intro of Star Trek TNG

Flexibility

Creative work involves a lot of experimentation, often at odd hours in odd circumstances or with materials that were intended for something else. The ability to adapt, to depart from a well-beaten path

Creativity is also doing what you can do, with what you have, the way you can.

Unknown

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and find working solutions to the problems on the way is necessary. You need to see things in new contexts instead of the way there were originally placed and sometimes things simply must “work”, albeit not perfectly.

Ambiguity tolerance

You venture in unknown territory. It has not been charted, you do not know where the shoals are. So you will be faced with a lot of unclear situations which might lead to anxiety. Will it work? Why does it work in some cases and not in others? Will I be able to find a solution? You need the tolerance to accept that things are not black and white, that you do not know and that this is alright.

I do not like it but I can live with it, work with it, until I have solved it.

Unknown

Science commits suicide when it adopts a creed.

Thomas Henry Huxley

Open Mindedness

You have to be open for new ideas, do things that your socialization, your training, your experience wants to prevent you from doing. You need to imagine that the world can be different, and that you can make it different. To be open for new experiences, for new conditions, is necessary to do so.

Be open-minded, but not so open-minded that your brains fall out.

Stephen A. Kallis, Jr.

Though this be madness, yet there is method in it.

Polonius

(Controlled) madness

(Controlled) madness takes the naïvety a step further. Not only do you look at the world without preconceived views, but you are actually exploring other possibilities and see things in a way other would call mad. But it is not madness per se, it is controlled. You have to use your imagination free from the usual rules of society or science to generate ideas but then you evaluate them and control your madness to use the ones that are actually good for something (good). Otherwise anyone could just do something that was not done before (for a good reason) and call it art (see page 25 and page 46).

It is perfectly easy to be original by violating the laws of decency and the canons of good taste.

“Over the Teacups” by Oliver Wendell Holmes, 1891

Sometimes I think I get ideas by seeing into the future — and it scares me.

Unknown

Humor

When things fail, when a lot of effort and time and commitment has clearly been wasted, you need to cope with it. If you see the problems as too important, you risk nervous breakdowns. Humor is a very useful attribute. If you can laugh about it, if you do not take it too seriously (you still want to reach it but accept the bumps on the road), your chances are higher to actually get there. Humor is very hard to achieve once things fail or if you are working on a “serious problem”. Nevertheless strive to be able to keep your distance if necessary and humor is the best way of doing so.

I laugh because I dare not cry.

Sharpie in “The Number of the Beast” by Robert A. Heinlein

What is needed to be creative?

INTERACTION WITH OTHERS

Although the main focus in creativity is on the domain itself, there are some helpful abilities and skills in interacting with others. We like creativity, mostly in people in a secure distance. Interaction with others can be demanding and you should be prepared for it.

Eccentricity

This is actually nothing you need to develop as it will probably *be attributed to you*. If you follow your inner voice, if you see things differently, you move away from the main herd and you get noticed as different (as an actual herd animal in nature this would probably sign your death sentence). Depending on your success (which you will not have at the beginning) they will call you mad or eccentric (or both). But the key thing here is: follow your inner voice, even if you end up doing things that are eccentric to others. The herd is a safe place (unless you are herded into the meat grinder) but you cannot be creative if you play it safe.

Courage

Being creative often involves changing the status quo. New theories making old knowledge obsolete, new artworks that displace existing ones — you do not need to start a new religion to create a lot of anger, resistance or other negative consequences. Creativity with the right materials (e.g. radioactive ones or gravity) can even kill you. Even defending an idea in a meeting takes courage, so does tackling the huge mountain of problems that stands in the way of the realization of every idea. And last but not least, you invest a lot of yourself into a project that might not work but make you a laughing stock after burning out your resources of time, money and health. It is a risky business and to withstand these pressures of the environment and your own self-doubts, you need courage.

You can make it easier for yourself

While courage is something that you must show, you can make things easier for yourself. Besides getting strong allies, mentors and friends that stand by you, you can also try to find a place where your work is more appreciated. Unfortunately, many current societies are rather risk averse. Depending on your domain, you might even have legal boundaries (e.g. in biotechnology). However, there may be areas in this world where your work is

Don't try to be eccentric. Focus on your subject and follow your inner voice where ever it takes you, that is eccentric enough.
Unknown

If to live in this style is to be eccentric, it must be confessed that there is something good in eccentricity.
Unknown

Be neither a conformist or a rebel, for they are really the same thing. Find your own path, and stay on it.
Paul Vixie

The individual has always had to struggle to keep from being overwhelmed by the tribe. If you try it, you will be lonely often, and sometimes frightened. But no price is too high to pay for the privilege of owning yourself.
Friedrich Nietzsche

To be dragged in the wake of the passive flock and to pass a hundred and one times beneath the shears of the shepherd, or to die alone like a brave eagle on a rocky crag of a great mountain: that is the dilemma.
Praxedis Guerrero, Regeneración, 18 February 1911

"Playing safe seems to be all the rage."
Unknown

The reward for conformity was that everyone liked you except yourself.
Rita Mae Brown, Venus Envy

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more appreciated and/or where you can focus solely on your work. It does not have to be a lonely castle in eastern europe or the basement of the opera, sometimes a different university or city will suffice.

Squelchers

If you have to convince others, you will probably hear a lot of squelchers ("That will never work.", "We've always done it that way.", "Don't rock the boat!", "That's not my job!" or "Too risky!"). Phrases that are often used when something new is proposed. Most of the time they have nothing to do with your proposal but are simply signs that your conversation partner does not want to change something. This mean, if you hear any of these phrases, your idea can still be good (or brilliant even), but you will have to fight hard, very, very hard to get it accepted.

To Ask Questions And To Be Willing To Make Mistakes

There are two important things that need a lot of courage: to ask questions and to be willing to make mistakes.

Ask Questions

There should be nothing more simple than to ask a question if something is unclear, e.g. in a presentation by your boss or by your professor. Unfortunately, few people are willing to ask questions. They fear to become visible from the herd because they might appear stupid or ignorant, because they (often falsely) assume that everybody else understood it perfectly. In fact, most of the time, if you did not understand something, then it is very likely that someone else did not understand it either. But since everyone assumes that they are the only one, no one asks. So if you do not understand something, this does not mean that you are not smart enough. Some people think that learning comes either naturally in an instant or not at all. This is not true. There are a lot of subjects that need a lot of work before you make progress. Where you need to work hard. Asking questions mean that you are interested and want to know. So ask them.

Be Willing To Make Mistakes

One of the major things that prevents people from making discoveries or creating something new is that they are not willing to make mistakes. Nobody wants to make a mistake, because you appear foolish, incompetent, even dangerous. But on the other hand, if you are working creatively, you often work in conditions where there is no clearly chartered

Everyone has a natural born right to be whoever they wish, to love whoever they wish, if they can just survive the pressure from the ignorant.

Unknown

"I don't know."

Albert Einstein

"He who asks is a fool for five minutes, but he who does not ask remains a fool forever."

Chinese proverb

Our wretched species is so made that those who walk on the well-trodden path always throw stones at those who are showing a new road.

Voltaire

All progress has resulted from people who took unpopular positions.

Adlai Stevenson, speech, Princeton, 1954

Creativity is allowing yourself to make mistakes. Art is knowing which ones to keep.

Scott Adams

If you hear a voice within you say "you cannot paint," then by all means paint, and that voice will be silenced.

Vincent Van Gogh

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land, where some things aren't known, when you have to try something even if it blows up in your face (hopefully not literally). There is no other way to discovery than to try it and some (even most) trials will be without success. This does not mean to throw caution away and just blindly start mixing things together to see what happens. You need the knowledge about the domain first. You need to know what is already known. But while learning, you will see the gaps, the fringes, the things that are not known. And researching them will be difficult (they are gaps for a reason). It is then when you will be making mistakes, but they will be defensible mistakes: Based on what you knew and expected you did right, even if it turned out wrong. Afterwards you know a little more and can try again, and again, and again. Until you (or others) finally succeed.

Friends and Enemies

While working creatively, you need people that support you, that urge you on and build you up when you experience the inevitable failures. On the other hand, enemies can be useful too. They give publicity, they can compress you like a spring, force you to fight back. Knowing that enemies are in the crowd, you prepare your arguments better and learn how to defend your ideas.

Don't make enemies by accident.
Unknown

Feedback/Critics

One of the most difficult things while working creatively is getting good, constructive feedback. It is not about support. That is what friends are for. It is not about tearing a hole in your work. That is what enemies are for. It is about having a close look at your work, understanding it, see the limitations, the weak points, the fuzzy bits and fringes, and help you to improve it. A good critic is able to see this and not intimidated by your work (e.g. because you are a competitor or could gain more fame). Unfortunately, the people who would be able to understand and improve your idea are people also working on the subject and thus the ones who have much to loose if your project becomes successful. For this reason, sometimes the best critic is a person who works in the same domain, but on a different subject (e.g. also in Social Psychology, but on a different aspect), given that this person has the necessary knowledge or understands your work quickly. The next problem is to find someone who is actually willing to get to know your work, what is currently important in the domain and how the field will react to it. A good friend might do this, but a good friend might not want to offer direct critic but only support. But if you have a colleague with whom you can work but have little personal involvement, one way to overcome this problem is to strike a deal, quid pro quo. You give him feedback on his works and he does the same to yours.

Many great ideas have been lost because the people who had them could not stand being laughed at.
Unknown

Of course, first you have to produce something that is actually worth criticizing.

See page 305 for more information about feedback.

Discretion

Discretion is not only necessary to prevent others from stealing your ideas, but also to keep criticism out until you are ready. Ideas in early stages are

If A equals success, then the formula is: $A = X + Y + Z$, where X is work, Y is play, and Z is keep your mouth shut.
Albert Einstein

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weak and can be killed with the wrong word from the right person (sometimes any person), and ideas that are not worked out are likely to be misunderstood. Get your work as far as possible without involving other people who might kill your project (if you can do so without the feedback). It will cause you to invest the necessary effort to get so attached to it that you are willing to defend it. Even if you think you like your idea, even if you are sure that you can defend it, once you actually present it you will have to take a lot of attacks, some even below the belt. Unless you are really convinced by your idea, it might not survive it.

STRUCTURAL REQUIREMENTS

Creativity is not in a vacuum, nor only inside the individual. Time, money and other resources are necessary to be creative ... to a certain degree.

Time

Time is an important requirement for creativity. On the one hand you need huge amounts of time to learn the domain and train your skills before you can even have a good idea (see page 91). After the idea you also need huge amounts of time to realize the idea (see page 288). In between you need odds bits of time for the incubation phase (see page 95).

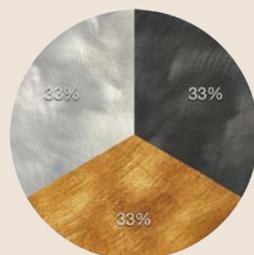
Time at any given Day

You do not need to see Death's hourglass to see that time is limited. Unless you are working full-time on a payed creative project that you like, your current creative project will be in conflict with other important activities (even other creative projects you could do in the same time). And it will conflict with time for regular work, family, friends, etc. You need time to be creative, more time than you might think for getting to know the domain (page 91), incubation (page 95) and realizing the ideas (page 288). People always talk about what they will do when they have time, but that is *bullshit* (sorry for the harsh language, but it is true).

You never will have time unless you make and defend it for yourself.

Nobody will give it to you. On the contrary, other people (sometimes rightfully) think they have a right on you time and (try to) take it away from you. Given that a work day takes about eight hours and you will need roughly the same time to sleep, take care what you do with the remaining third of the day. Sadly, a lot of people like to waste it in front of the TV, consuming while being "entertained" like some

USAGE OF TIME YOU HAVE ANY GIVEN DAY



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

DON'T CONSUME, PRODUCE

A lot of people spend their time watching TV or surfing the web. There is nothing wrong with it if you had a hard day and want to switch off your mind. But it is (mostly) wasted time. Enjoyable, yes, effortless, also, but at the end of the day you have entertained yourself (or rather: allowed yourself to be entertained) but contributed nothing. Created nothing. While stimuli (i.e. building material to create something) are important, do not waste your time in front of the TV, even if it is highly enjoyable ... or rather pleasant. If you want to watch movies, go to the cinema. But avoid the TV and browsing the web for entertainment if this does not directly contribute to your own creative work. You will be amazed how much time this gives you for doing something for your creative projects. This habit is very hard to break since we are conditioned to watch TV, but try if you can escape this trap.

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roman emperor instead of producing something themselves. Ditch the TV and stop consuming material unless you use it as building material for your own projects. If you read in forums, fine, if you use the content for your work, or for your blog articles, or for any other purpose beyond being entertained at the moment. Regarding the people who have a rightful claim on your time, you can usually balance it with your rightful claim on time for your own projects. Just make sure that you have at least two hours for yourself and fight as long as you need until others respect this. There are enough minutes in the day to be creative and lead a healthy social life.

Time for Projects to Finish

Even if you invest most of your time every day for your creative projects, they still will take a lot of time to finish. Given the unpredictable setbacks during the realization phase it is hard to say when a project will be finished, if it works at all. Creativity is not a quick solution to make the big buck, neither a way to become famous with 25. There are people who get there quickly, but do not bet on it. Even with talent it takes a lot of time to become really, really good.

Money

Compared to time, money is less important. Few creative projects require materials that are expensive. Of course, it would be nice to do a creative project with better materials or on a larger scale, but if you are willing to adapt you can realize most projects with little money (although perhaps not in the one, perfect way that lingers only in the imagination). Money is often used as an excuse not to do a creative project à la “if I cannot do it right, I wont do it at all (but I am still an artist/scientist)”. But what is “right”? Letting a good idea pass just because you could not do it in style or with the best equipment? Or is it “right” to be flexible enough to do it the best you can, perhaps in the hope that it gets accepted by the field and you might get the chance to do it better? Almost everyone could realize almost anything with the right amount of money (which, after all, can easily buy expertise in the form of skilled labor). But the real skill is to do a good, creative work with the means one has, and do it successfully. Even in science to get big funding you first have to show (over and over) that you can successfully do projects with little funding.

Other Resources

If you feel that you are lacking the necessary resources, take a good look what the problem really is. Like

SOLITUDE CAN HELP

A lot of great thinkers and creatives had no own family and few personal ties. While this is certainly not recommended for all, solitude actually has its advantages: you do not have to share your time with anyone else and the pain of not having close relationships can give you ... a special focus. Of course, this requires that you find a domain that actually fulfills you.

If you want to have a million dollars and be an artist, start with two.
James Bauerle

An artist creative enough to produce good art, should be creative enough to find money to support it. A scientist creative enough to develop good experiments, should be creative enough to find money to support it.
Daniel Wessel

“It’s not a stone, it’s a spaceship.”
Child at play

“In the discussion of your work, don’t write that your sample is too small. It always is and we all could do better if we had more participants.”
Psychology Professor about the discussion section in a diploma theses

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money, we all could do better if we had a larger (and more competent) staff, a more understanding boss, better equipment, and so on. Hell, I wish I had a Nikon D3 to make photographs with, instead I work with a Pentax K10D. Does that mean that I cannot make good pictures? No. There are limits of what I can do, but it does not mean that I cannot photograph (due to technical equipment). Even if I had only a small digital camera, I would be able to be creative. Of course there are other photographers out there who have it easier, who have not only a professional camera but also a studio and models to work with. Given that I do not have these advantages, I have to work a little bit harder, to be a little bit more creative. But the nice thing is, if I get really good, the rest will come. Nobody starts big (except people born with a golden spoon). Nobody starts with a whole laboratory staff on his own (except the professors golden boy). You have to show what you can do with what you have, before you get more resources. Do not use “the lack of the right equipment” as an excuse to not being creative.

SPECIAL TALENTS

Yes, some people are gifted. No matter how equal we are regarding our worth as human beings, some people have special talents. And yes, sometimes they are necessary to become really good. You cannot play the violin unless your hearing is good enough to hear misplayed notes, you cannot paint realistic pictures unless you have good color perception. There are some minimal skills you must have. On the other hand, they vary even within the same domain. If you want to make music but your hearing is not good enough for the violin, try drums. If your color perception is not good enough to paint, then draw. It is insane to try to break a barrier that you are unable physically to pass or circumvent. Find a goal that you can achieve physically and mentally.

There is one dangerous misconception regarding talents. Some people that talent is absolutely necessary and the only people who are talented (or gifted) are those who need no effort to learn something in that domain. They think that learning either comes in an instant or not at all. This is wrong. While talent can make it easier, you still need the effort (see page 28). And talent alone is pretty worthless. You can be intellectually gifted but still fail in life. You can have an excellent hearing and skillful hands, but unless you train every day for years and years, you will not become a skillful violin player. You can have a talent for mathematics, but you can still fail to solve non-Euclidean geometry if you have never learned it. Do not look for things that are effortless for you to find “your talent”, but look for the those things that you *really, really love*. Things that also need no effort, not not to master them, but to occupy yourself with them. You will need to spend a lot of time learning, and no matter how talented you are, it should be something you love.

JUST BE CREATIVE

Do not check the list if you meet any of the requirements but simply be creative. You have to find your own way and until you have tried to create something, no-one (not even you) can tell you if you are creative or not.

Runners just do it — they run for the finish line even if someone else has reached it first.

Unknown

What is not needed for creativity?

Some misconceptions exist of abilities or conditions that are needed for creativity. Besides the issues mentioned on page 25 onward (madness, tools, destruction, talent, etc.) people sometimes think that they need a certain age, level of intelligence, or sponsorship to be creative. This is not true.

AGE ALONE IS NO CRITERIA

If you ever thought you are too old to be creative, listen to the jazz. This is creativity, and some of these guys *are old*. And it is not only jazz. For some creative professions you need experience, which usually does not come early in life. There might be an “optimal” average age for creativity which is different for different areas, but with all statistics: this is applicable only to the general (population average) but not the specific case (in this case: you). If you take a hundred people in a field you will come to the conclusion that there is an age when (on average) these 100 people are at the peak of their creativity. If the sample of these 100 people is representative for the general population you can say that in general people in this area are most creative around that average age. But in nearly all cases you will have large differences both within the sample and the general population. There will be people who reached their peak much earlier than the average age, people who reached their peak much later and even people who reach a plateau and are creative for a very long time.

So, if you hear that the best age of an creative artist is age x and you are way beyond it (or before and you want to be creative now) consider that they are talking about the average case. Of course, there are still self-fulfilling prophecies, so if you think you are too old or too young, you are probably right on target that you *will not be creative*, but only because you do not *allow yourself to be*. Many artists for example remained productive until their death in old age: Katsushika Hokusai (1760 - 1849) for example produced his 30.000 works over his life-span (about 89 years). In science, many scientists still work after their retirement, when they have time (again) to focus on projects that interest them.

Age and the downside of expertise

There is a way in which advanced age can interfere with creativity. If you worked in a domain for a long time and you have become an expert, this can interfere with the generation of new ideas (see page 102). But you do not have to stay anywhere forever. It is possible to change fields or methods. This usually gives a boost in creativity after one has spend some years working in one domain.

Age and available time

An other aspect of age is the available time. As you continue to work in a domain and become known as an expert, there will be more people who want some of

“Don't play the saxophone.
Let it play you.”
Charlie Parker

REACHING OLD AGE

Continue to work

Some artists have continued to work their death at ages over 80. If your body allows it, do so. It will keep you active, force you to learn and not to dumb down from routine.

Switch the materials or the domains

Old age can be a time to do something in different domains. Your knowledge of the old domain combined with learning the new one might lead to creative combinations and the new domain might stimulate you when the old domain gets cold before you do.

What is not needed for creativity?

your time. Your job might change, more responsibility, longer work days, kids in the family or even a family at all. From working alone in a studio or a laboratory in relative anonymity you might spend much time meeting people, showing them your work. You might even be required to actively do administrative work becoming much more a manager than an artist or scientist. This leaves you with too little time for your work and thus your creativity is bound to be reduced. With age and fame, you might have to defend your time and become unreachable to actually do some new work.

GENIUS LEVEL INTELLIGENCE IS NOT IMPORTANT

When we look at very creative individuals, we often are tempted to think of them as geniuses. Researchers must have a brain the size of a planet to come up with their ideas. While high intelligence is certainly helpful, more is not always better. Studies have shown that up to an IQ of 120 the creativity rises, but after that it does not. People with a extremely high IQ (about 180) aren't necessarily more creative. Their intelligence actually impedes them.

Being reasonably intelligent might help you to understand the domain faster and to find the solution to novel problems, but you still have to sit down day after day to learn it in the first place. Interest and determination are much, much more valuable compared to pure intelligence. A person can be extremely intelligent, but if he does not have the necessary knowledge, what can he do with his intelligence? He would have to start from the beginning in a domain and reproduce everything that was done to the current day and then go beyond that. Impossible. And intelligence is not infallible. The worst predictions come from people who have a high intelligence but without all the facts (or some wrong ones). Pure intelligence will only help you to make mistakes faster. Sure, if someone is very intelligent he can probably follow your explanations very easily, and he can easily sink you with a broadside of facts and conclusions on a topic he is familiar with. But bring the conversation to a topic where you know a lot of facts and he wont have anything to shoot with.

Intelligence is a very handy, very useful quality, but it is like a cannon: it needs ammunition (knowledge) and gunpowder (motivation) to work.

SPONSORSHIP OR SUBVENTIONS ARE RARELY NEEDED

I once tried to view a play in a small theater. It was impossible to get tickets beforehand. The tourist office knew that the theater existed and that a play was scheduled, but did not have any information about tickets. The theater itself was in the cellar of a small restaurant, but you would not have guessed it from actually standing in the restaurant. A talk with the waitress was needed to confirm it. A subsequent

Perhaps imagination is only intelligence having fun.

George Scialabba

"When I was 12, I used to think I was a genius and nobody had noticed. If there such a thing as a genius, I am one, and if there isn't, then I don't care."

John Lennon

"Intelligence is great, I have it too, but to be creative you need more than that ..."

Comment on a Mensa Meeting

KEEP YOUR DAY JOB

Given todays price of most materials and equipment, a normal day job can provide you with enough money to be creative during the evening and on weekends.

What is not needed for creativity?

phone call to the manager was needed to get the information that a flyer about the play was lying “somewhere at the bar” (which the waitress did not know about). When we finally went there based on the schedule on the flyer, we were the only spectators. Or we would have been, if the play actually would have been performed. The so called “intendant” told us (three) that he needed at least five spectators, three of which had to be women, before his play could be performed. So, we were two women short of a play (that then would not have any non-playing spectators). When — quietly and in a very friendly tone — I asked him why he did not advertise his play better (or at all) so he might have the necessary spectators, he told me in an condescending tone: “I do not get subventions by the government so I can’t do that.” This culture evening, which originally was a gift for a friend, ended at McDonalds.

To this day I have not understood this “artist”. Even children with nothing more than their creativity, can perform a play. Adults might want to rent a public place and invest in costumes and decor (if they are not playing Brecht), but even with normal paying jobs they could afford this as a hobby. And even with little money, advertising is not that hard. If you make a small play, you do not need a full page ad in international newspapers, you need some publicity in local ones. Perhaps a reporter who writes something (good) about it when you have started to play. Some posters in the street. Word of mouth advertising. Things that cost effort, not money. Slackers, of course, cannot do it.

About the only people who really need subventions are scientists working with costly equipment (which they sometimes have to build themselves) or taking a lot of time (e.g. longitudinal studies). These people, working at the forefront of knowledge, most of it without direct application in the near future, need sponsorship. Most art however can be financed either by a growing (satisfied) customer base or by the artists’ regular job. You might not have as much time for your art as you would like to or to do all the things you like, but who can do this? Even Leonardo da Vinci had to find sponsors to finance his work. And I doubt that most painters would have chosen their sponsor or his family members (or mistresses) as models if they had the choice. Sometimes art has to make compromises. Sometimes you have to squeeze your art between the dull work you are paid to do. It might even give you additional motivation,

“I just bought a Mac to help me design the next Cray.”

Seymour Cray (1925-1996), when was informed that Apple Inc. had recently bought a Cray supercomputer to help them design the next Mac.

“No, I’m not unemployed. Actually, I’m a writer.”

Some guy in a cafe

“I want the praise of the cash customer, given in cash because I’ve reached him — or I don’t want anything. Support for the arts — merde! A government-supported artist is an incompetent whore!”
Jubal Harshaw in “Stranger in a Strange Land” by Robert A. Heinlein

“An honest-to-God artist who can paint — and works at it. One who doesn’t spend his time sopping up sauce or blowing weed, and talking about the painting he’s going to do. Joe paints. He’s a craftsman as well as an artist. Well, maybe I don’t know what an artist is but I know what a craftsman is and I respect craftsmen. Too few of them in this decadent world.”

“I Will Fear No Evil” by Robert A. Heinlein

“I was sorry to hear about Mr. Edgars passing away like that. He was a good man. A visionary.”

“He was a nut, and he was a control freak.”

“Well, these days, only a nut and a control freak would completely fund research into pure science.”
Dr. Bryson and Garibaldi in Babylon 5: “The River of Souls”

What is not needed for creativity?

a drive, a need to fight for your art. And doing your creative work this way is something you can do, and for which you will become respected. If you are good, if you have to tell something and do it in a way that it reaches the audience, you might get paid for it (sometimes fairly well). Otherwise keep a paying job and your art as a hobby. But expecting public subventions, money from taxpayers who do not want to see your work, is robbery.

Helpful Skills

The following skills are very helpful when trying to be creative.

SKETCHING

One of the most helpful skills in creativity is to make quick sketches to bring your idea to the point and get it across to another person. Powerpoint, Omni Graffle, Keynote, they all look (more or less) fine, but nothing is more flexible, faster and instantly available than a quick sketch on a sheet of paper (or a napkin, or a foggy glass window).

If you need a clear-cut graphic, delegate it to others by making a quick sketch how it should look like. Use a pencil, not the computer because computers strive for perfection, and this is not the goal with a rough sketch. There is something called a “scrap sheet calculation” in physics, when you make a rough calculation if an idea is feasible or not, which goes in the same direction as sketching.

LEARN SKETCHING

If you work with anything visual, learn to sketch. It helps you to capture your ideas. A quick sketch can often save that 1000 words.

DITCH POWERPOINT

If you are talking to one or two persons and the idea is still in development, use a notepad and a pencil. You can develop the idea allowing them to grasp it and modify it on the fly.

SCRAP SHEET CALCULATION

Carl Sagan mentioned a useful skill in physics and math as a first educated guess whether an idea has any merit: the “scrap sheet calculation”. Calculate with rounded numbers (even with $\pi = 3$) to get an idea if the results point in the right direction. If the do, calculate the true result with the calculator or your computer.

OUTLINING

If you are dealing with a complex issue, it is helpful to make an outline as soon as you get an overview. What are the relevant topics of the domain? What are the areas you want to focus on? What do you need to know? What do you already know? An outline in this case is a hierarchical order of topics that you want to tackle that helps you to plan your studies. Sometimes you will be so lost in the details that you will lose sight of the big picture and an outline will help you to find it again.

An outline has the advantage that you can easily change it. Imagine you want to write a long text. If you start with an outline you can rearrange the points as often as you like until you feel the structure is right. If you start writing, the sentences will “stick” to each other, making it hard to rearrange them and to change the structure, even when a different structure would be better. Change an outline until you are satisfied before you invest any work that you would have to discard if a change is necessary. Writers are often categorized as either a *turtle* (proceeds very slowly because each sentence must be perfect before the next one is written) or *rabbit* (writes down the text quickly and spends ages in revision). I would propose outlining (using an *ant hive* as metaphor because it grows on all bits and ends and changes form very quickly) as the best way to write any large text and I wouldn't start until the outline has all the necessary information and the structure makes sense. They are also invaluable to keep track of what you have to do. If you are interrupted frequently, keeping an outline can help you quickly find where you were and what you have to do next. You see what you have done and what needs to be done.

Helpful Skills

Making an outline

1. Think about your intention: What do you want to say? What do you want to achieve?
2. Write down the aspects which belong to these goals.
3. Expand the aspects into their sub-aspects or goals.
4. Rearrange the aspects in an order that makes sense (e.g. chronological, spatial).
5. If important aspects are mentioned late that are necessary for the recipient to know or to keep his motivation, introduce them earlier and refer to them later.
6. Did you miss any aspects?
7. Play it through. Does it make sense as a text (or video, or song)? Does someone understand it who does not know it as intimate as you do?
8. Using the outline as guiding line, begin to write the text.

STATISTICS

Statistics is a great tool to think. While 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.

GOOD WORK ETHIC

While creatives often look a little scatterbrained, a good work ethic is actually very important. Yes, some people just scribble the solution to complex problems on wrapping paper and be done with it, and to capture it, there is nothing wrong with it. But if you want to organize your creativity you need to develop a good work ethic. This means writing clearly. Taking time to organize things. Make an idea collection for your ideas and stick to it.

This was a short overview of creativity. In the next chapter we are going to have a look at the things you can do to organize your creativity.

WRITE CLEARLY

One of the most useful pieces of advice my former math teacher ever gave me (besides not studying mathematics) was to write clearly. If you read something wrong (very likely when you write badly) it usually means that you get the wrong result.

Creativity and Organization

In this chapter I will try to make my point that organization of creativity is necessary and extremely beneficial to creative work. We will have a look why one should organize creativity (page 61) and at cases where creativity seems to be possible without organization (page 66). Finally we will see how one can organize ones creativity (page 68), how to start this organization process (page 71), and how to organize oneself (page 73).

Why Organize Creativity?

Organization and Creativity seem to have nothing in common, they may even appear to be antonyms. But the grey stifling organization and the colorful creativity fit beautifully together — and they need each other.

CREATIVITY IS MORE THAN JUST ONE IDEA

Given the scope of creative projects, creativity usually is the realization of projects that consist of more than just one idea. You see it theoretically in the cyclical nature of the creative process (one page 79) and practically if you consider the amount of good ideas in most well-known creative works.

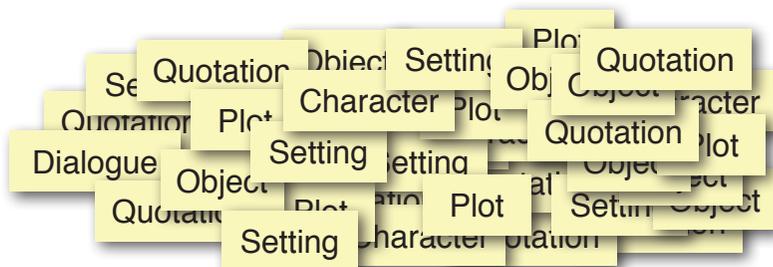
Look at a good book, for example. Even if it starts with one good plot idea, to really turn it into a good book, you need a lot of additional ideas about the characters, the setting, side-plots, objects, dialogues, etc. Harry Potter is not just the idea of a boy who grows up to be a famous wizard but it is a creative project that consists of countless ideas: Diagon Ally, Quidditch, Hogwarts, 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



A lot of different ideas that are hard if not impossible to remember. If the creative project gets larger, if it goes beyond a single idea, if you start to flesh an idea out, it becomes harder and harder to memorize all the information. Organization will help you remember what you did, what you still have to do, help you to take up the work where you left it, even if this was years ago. In extreme cases it also allows your work to be finished postmortem (if, of course, your work is that good).

This leads to two important consequences: ideas must be **captured** and they must be **collected**.

"You've spent so much mind juice just trying to get to the next step, you forgot little pieces of your idea (or even the whole thing) in the process."

<http://lifedev.net/tools/paper-for-creativity/>

Creativity usually consists of the realization of multiple ideas.

Creativity

Why Organize Creativity?

Ideas must be captured

Given the fleeting nature of ideas, especially if one idea follows after the other or a project consists of a lot of ideas (and which one does not?), ideas must be captured as soon as possible. This means, bringing them into an enduring form, whether it is bits and bytes or ink on paper.

Ideas must be collected

Given that ideas often come spontaneously to different projects that are not currently in the realization phase, ideas are sometimes unused for a very long time until they are finally needed. This means that ideas must be collected somewhere. Collection means order and structure, and we return to this in chapter 5.

PROJECT IDEAS VS. ASSIGNED IDEAS

As mentioned a creative project is often more than one idea. For all practical purposes, this distinction does not matter very much. Whether you want to realize your idea (consisting of countless other ideas) or your project (which it is, too), is irrelevant. However, it pays to see ideas independent from the project they belong to. Individual ideas that are needed for a superior idea, e.g. to realize a certain project, are often useful for other projects too. For example, if you want to write a book with a certain plot (superior idea or project) and you have great idea for a setting. Then you can either assign this setting idea only to the project (e.g. you write it in a journal of notes for this project). Or you store it more generally and simply assign a keyword with the project name to this idea, stating that you want to use it for this project. The later solution (if supported by your idea collection) has the advantage that you can use your ideas in multiple projects. This might sound like recycling (one opposite of creativity) but think what happens if you discard the project because you do not find it interesting anymore. If you discard it in frustration (e.g. throw the journal away) you lose a lot of good ideas that could be used for other projects where they might actually work better. If you are more cold-blooded you could transcribe the ideas to journals of other projects, but this takes time and effort. If you just assigned the idea to the project you can simply delete that keyword. You retain your idea and the assignments of this idea to other projects.

ADVANTAGES OF ORGANIZATION FOR CREATIVITY

Stimulate new ideas

Organization helps you to stimulate new ideas. Capturing your ideas in a physical form will help you see the big picture and the little details without having to keep them all in your mind. It will give you links where you can develop the idea further. It will stimulate more ideas.

Makes things easier or enables them

You do not need to remember everything if you capture and store your ideas. A good structure will help you to deal with unwieldy projects, to realize projects that you otherwise could not. Almost nobody makes a large creative work like writing a book, be it fiction or a scientific work, simply by sitting down at the computer and typing it. You need organization to plan it, structure it, make notes, until you can realize it.

Why Organize Creativity?

Clearer structure

A clear organization will help you see the structure of the project, helps you plan what you need to realize it, where the gaps are because some things are missing.

Fewer Mistakes

Keeping your facts together is hard work. Unless you have a very good reference system, you will make mistakes. A good organization helps you to achieve a high consistency in your work and avoid mistakes. You got a favorite color? Write down the exact mixture. You have the results from a study you did? Write them all down and use it as a reference for different publication.

You are doing it anyway, you might as well do it well

Everyone organizes his creativity. Even the most confused scientist or maddest artist has to generate, capture, store, realize and promote ideas, even if most is done in his mind. And if you are doing it anyway and if doing it better will improve your work, there is no reason not to do it as best as you can.

Developing Ideas

Often when people have ideas, they stop for an instant, evaluate the idea and often discard them. Sure, many ideas are not good, but who knows what could have happened if the person would have written it down anyway and explored the idea a little. Just because the idea has a specific content, does not mean that it has to stay this way. Even a bad idea can be a good starting point for better ideas (often, there is no other direction a bad idea can go if it goes anywhere at all). Instead of discarding bad ideas, with a little organization you can use them to develop better ideas.

Creativity on a continuous basis

Everyone can have a good day, can see some connection between variables or have a go and finish an artwork in a few hours. But to tackle creativity and innovation on a continuous basis, structure is needed, organization, that helps you to develop the creativity from the first, tentative generation to the finished product, be it an artwork, a scientific theory or a process like a dance.

Protection against plagiarism

The last thing you want in creativity is to be accused of plagiarism. It is the anti-theme of creativity. It is like visiting a craftsman fair with stolen goods and claiming they were your own work, earning the praise (and the money) for it. And often, especially if you become victim to success, it will blow up in your face, taking your

How do you remember everything from different books when you are still writing the HP series? As obsessive fans will tell you, I do slip up! Several classrooms move floors mysteriously between books and these are the least serious continuity errors! Most of the fansites will point you in the direction of my mistakes. But the essentials remain consistent from book to book because the story has been plotted for a long time and it is clear in my mind.

J.K. Rowling in an FAQ

I've been reading Barbara Sher's *Refuse to Choose*. She talks about having a dedicated "idea journal" and using it to flesh out ideas whether or not they immediately seem viable. She makes the point that the idea should be explored even if it doesn't immediately seem like something you would ever really do, because exploring ideas is actually the way people like us have fun. Wow - it's true! *geminica, August 25th, 2006 at 1:19 pm, in a web forum*

Why Organize Creativity?

career and your future (in that domain and field) with you.

Victim to Success

Plagiarism might not be seen if you show it to few people, especially people who are not proponents of the field. But if the idea is any good (and why else would you steal it otherwise?) it gets spread around, and the more people know of the idea, the higher the chance that someone knows where the idea originated. Stealing an idea is without merit: even if you win, you lose.

But I can win ...

Can you? Even if no one else would know, you would. And you would likely have to do it again, and again, because people will expect new creative projects from you. And eventually you will get caught. And if one case of plagiarism is found in your career, there will be people who are looking back in your history for other cases of plagiarism. And with this kind of scrutiny, most of the other cases will be found out. And then even *your own creative works will be put into question*, because if you lied on other projects, why not on these too? And at this point you are pretty much finished.

Organizing Creativity can help to prevent "accidental" plagiarism

Not all cases of "plagiarism" are intentional. There were highly debated cases in science and art about creatives who were "bad note-takers" and simply could not differentiate anymore between the things they saw somewhere and their own ideas. Yes, it can happen even to the best of us, because we are constantly digesting information, sometimes without knowing that we do (e.g. we incidentally pick something up without knowing it). But it is embarrassing nonetheless. Good organization can help you to keep your sources apart from your ideas and help you to prevent this kind of situation.

ALWAYS STATE YOUR SOURCES

Your integrity is precious and its loss will destroy your career in science and art. So always state your sources. Given time and numbers of eyeballs seeing your work, if you steal something, someone will find out. And it will get more likely the more well known you are. If you keep something as a reference (see page 194), always note the source. Keep it in the way you need for later citation (e.g. APA 5th ed. style). Otherwise you will miss an important detail when you need it later which is hard (if not impossible) to come by.

Copy from one, it's plagiarism; copy from two, it's research.

Wilson Mizner (1876-1933)

Nichols: "It's about that rip in space-time that you saw."

Hawking: "I call it a 'Hawking Hole'."

Fry: "No fair! I saw it first!"

Hawking: "Who is The Journal of Quantum Physics going to believe?"

Futurama: "Anthology of Interest I"

"The secret to creativity is knowing how to hide your sources."

Albert Einstein

ORGANIZATION OUTSIDE OF ORGANIZATIONS

Strangely enough most research in creativity focusses on the generation of ideas, few considers the whole process from generation to actual implementation. If you search for "organizing" and "creativity", you get a lot of hits regarding creativity (or the lack of it) in organizations. But the organization of creativity in individuals seems to play a minor role in research. Many techniques for creativity consequently deal with problem solving in organizations, only a few seem to address every day creativity or try to address different areas.

Why Organize Creativity?

ORGANIZE YOUR CREATIVITY

In short, the ideas are there or you can generate them (more on that in chapter 3), so let's slap the infrastructure beneath it. We will now look at some cases where creativity was apparently possible without organization.

ORCHARD METAPHOR

The image on the cover illustrates the idea followed in this book. Organizing creativity is similar to keeping an orchard: you prepare the ground (acquire knowledge and skills), you plant (put captured ideas in the idea collection) and raise (add to, enlarge and restructure the ideas) your culture (projects). Finally when a project is ripe (has sufficient ideas) you can harvest it (realize the project) and enjoy the fruits of success.



Creativity without Organization?

The first associations of creativity often include words like free, spontaneous, unpredictable, fun, absentminded, chaos which seem the very antithesis of organization (determined, fixed, clearly defined, boring, without phantasy, pedantic order).

ORGANIZATION IS NECESSARY FOR CREATIVE PROJECTS

For all but the shortest creative projects organization is necessary and everyone does it. You have to remind your ideas, organize them, bring them in context. You will not need much organization to see the solution for the 9-point problem (connect the nine dots with four (or less) straight lines without removing the pen), but for every project that is more than just one idea you need organization.

“Accidental” discoveries

There are many (often anecdotal or apocryphal) stories about accidental discoveries. People stumbling about important discoveries or inventions like Columbus (America) or Röntgen (x-rays). But was it really an accident? Columbus was on his way with three ships in a large expedition, he hardly walked around the corner and ran into it. Röntgen was conducting experiments with extraordinary care which led him to notice the effect and clearly determine what it was. Creatives often do not simply stumble over their discoveries, they advanced well prepared and were correspondingly *well prepared to deal with the discoveries when they occurred*.

Two cases: Leonardo da Vinci and Thomas Alva Edison

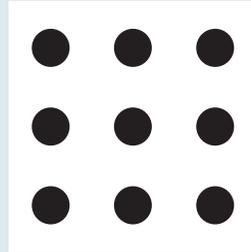
Leonardo da Vinci (1452 - 1519)

One reason why we know so much about Leonardo da Vinci is that he did make a lot of notes. His notebooks consist of about 15.000 pages of notes and drawings. Did he consciously organize his creativity? At least he wrote it down and captured it. These notes even allowed one of his project, a huge bronze horse called “Gran Cavallo” to be realized long after his death when the materials and techniques were available to actually cast it.

Thomas Alva Edison (1847 - 1931)

Thomas Alva Edison’s most important invention was not the light bulb which is the universal symbol for ideas but the first industrial research lab. “It was the first institution set up with the specific purpose of producing constant technological innovation and improvement. Edison was legally attributed with most of the inventions produced there, though many employees carried out research and development work under his direction.” (Wikipedia). While most people think of Edison and other inventors as the lonely nut working in a chaotic laboratory, nothing could be further from the truth. Discovery, invention, scientific advances — they all need organization!

THE NINE DOTS PROBLEM



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

I never did anything worth doing by accident; nor did any of my inventions come by accident; they came by work.

Thomas Alva Edison

Creativity without Organization?

SCIENTIFIC CREATIVITY

Why should you write down your ideas? Won't you remember them once you return to the lab? Perhaps, more likely not. You might think "This is my job, I know it." but do you still know what you did in your first studies? Or the results? Can you write down the results now? Of course, that was a long time ago. And it will be a long time until you can realize the ideas you have.

"He was the kind of inventor who drew the plans after he build the whole damn thing."
Unknown

Precision, replication, patents, materials ... while we might think of the creative scientists as a mad professor, creative work in science needs precision because experiments must be able to be replicated by other scientists. Patents need careful descriptions about how something is done. Material sometimes take their revenge if treated without care. Writing an article or a report is nearly impossible without careful notes about what was done.

ARTISTS

How often do you notice a scene that evokes an echo. A grandfather with his grandchild, walking happily through the streets, the child, dressed up with fairy wings and a wand, jumping up and down while a serious looking business woman passes their way. You can think about it for a second, but unless you write it down it fades out of your mind quickly. If you see a picture like this clearly in your mind, you might be able to capture it directly on canvass. But what if you have two, or three? How can you remember them? What if you cannot realize them at the moment? What if you want to write a book? It rarely pays to open the word processor and start writing. You need ideas for the plot, the characters, some dialogues. You might have the ideas but are they available when you write it?

While artists often seem like directly connected to some divine inspiration like a lightening rod and produce works of art without thinking or planning (i.e. without organization), a lot of artists make notes, sketches, collect interesting bits of information, make outlines or first drafts. People who want to follow their favorite artists often make the mistake of omitting the organization necessary to do so. Simply starting with a blank canvass or page is the surest way to get stuck.

PRIVATE PROJECTS

Especially if you are not working full-time on creative projects, organization can help you to keep track of your ideas and the projects. You have ideas available and you know what you do when you have the time. No more "I had an idea what I could give here, but I cannot find it ..." and no more "I don't know what to do."

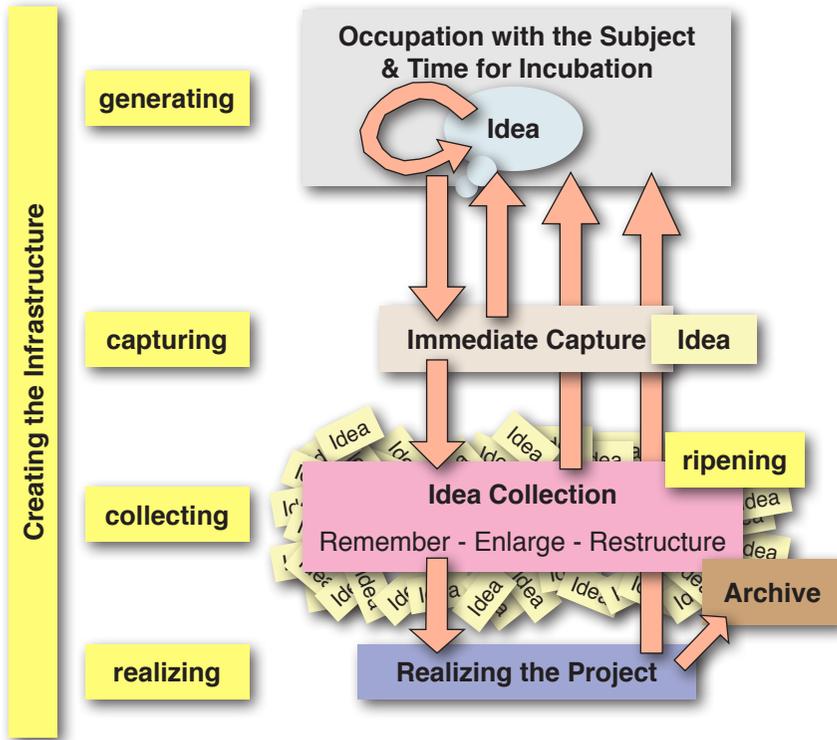
"No more amateur level crap."
Unknown

Organizing creativity also takes the quality level one step higher. It is not blindly fiddling around but consciously planning a creative project. Getting the knowledge, the skills, generating ideas, capturing and collecting them for a long time until there actually are enough ideas to realize a creative project. And then investing the necessary work and time to realize the project, and do it right.

How to Organize Creativity

ORGANIZATION OF CREATIVITY

If we look at the way a creative project is realized, the following graphic might illustrate this process:



After an **occupation with the subject** and **time for incubation** ideas are **generated**: they “simply come” or can be stimulated with techniques (see chapter 3). An idea must be **captured immediately** (chapter 4), otherwise it is likely to get lost or not remembered later. The captured ideas should be transferred to an **idea collection** (chapter 5) 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 **realized** (chapter 6) which will take a lot of refinement (and work and time) and generates new ideas. Finally projects can (and should be) **archived** (chapter 7).

Often done without planning for it

This model does not mean that creativity does not work without conscious planning: Often this process is done in the mind of the creative individual or with ill-structured notes. However, organization can help to make this process more efficient, to prevent loss of ideas, to make the collected ideas more accessible and the whole creative work more fun (or at least prevent the agony of trying to find something that you know exists ... somewhere).

How to Organize Creativity

Non-Linear model

The arrows leading back to the generating level show that this model is not linear. Generating (having time to be creative, letting ones mind flow), capturing (seeing it written/sketched), collecting (making links to other, existing ideas by putting it in a certain place) and realizing (seeing what is missing, working en detail with the ideas, seeing the big picture) ideas all stimulate the generation of new ideas. Sometimes unfortunately, because a new idea can force you to change what you have done so far (e.g. changing the setting from wild-west to sci-fi or changing a theory while already collecting data). However, it is rare that people finish a project and afterwards would not do the same project differently if they would (have to) do it again.

Overview about the process

The book will follow the steps of a creative project from generating ideas, to capturing, collecting and finally realizing and archiving them.

IT STARTS WITH A PROJECT

This book treats creativity as *realizing creative projects*. It is not enough to have an idea, e.g. about a nice plot or an nice experiment. It must be embedded in a book or research project. It must be rooted on firm ground on the one hand (e.g. be original and useful) and realized on the other hand (e.g. not just be something “that you will do one day”). If you have an idea you really like, make a project out of it. Try to realize it. Collect other ideas for this project (e.g. other ideas for your book or measures for your experiment), invest time and effort to realize it. This century celebrates the cult of the amateur. The technology is there, you can now produce books on demand for reasonable prices. You can raise and answer a lot of research question — the scientific knowledge and equipment is available for nearly everyone (unless you are a high energy physicists). It is a golden time to follow your interests — make a creative project.

DO NOT OVER-ORGANIZE

With all organization there is the inherent risk that the organization becomes a goal in itself. It is often easier to plan reading than to actually read, or to plan the realization than to actually work on it. While having ideas is fun and exiting, you need time to actually do something with them. If you run from conference to conference to discuss and develop exciting research projects you end up with nothing but hot air, if you do not take your time and miss some conferences to actually do the research. While contact with other artist is very stimulating you also need time to develop your style and hone your skills to actually develop your own art. While

RECOMMENDATIONS

Personal Requirements

Realize the personal requirements, e.g. learn a lot about the subject and make time for thought.

Structural Requirements

Make sure you always capture your ideas. You might never know what turns out to be a worthy idea for a good project.

Make sure that you have good, flexible system to collect your ideas. Sometimes you need more than just one idea to make a project, and when the second or third or three-hundredth idea comes make sure you put it to the rest, so that the project can grow.

“Is there something?”

“There’s a whole list, but let’s start with how you knew about the Lazarus project.”

“Some people ... collect coins or art. I collect secrets: black projects, conspiracies, secret organizations. They fascinate me.”

Garibaldi and Sheridan in Babylon 5: “Spider in the Web”

How to Organize Creativity

jotting down ideas, you should also find the time to implement them.

Make sure that organization is always a means to an end. It should bring you closer to your goal, i.e. realizing your creative projects.

Advice on using this book

Read it, skim it, get a feeling for it. But do not go for the overkill and try everything that is mentioned here. In working creatively, it is important that you find your way of organizing your creativity. There is no single best way, no single best method. It all depends on you, in which area you are creative, who the audience is and the current situation you are in.

Do what you have to do to provide the infrastructure you need, than *stop working on it* and *actually use it to work* (you can always do little improvements later).

How to not use this book

Do not try to use everything

Everything you read will be useful for someone but not for everyone. Organizing Creativity is a matter of finding the things that fit you, not trying to fit everything to your purposes. You should think “what do I need and what will help me to do it” and not “that’s interesting, can I use it”. It should be pull, not push.

Use it to achieve your goals, not as a movement

Some books or systems like GTD or 43 folders are received so favorably, they have initiated a movement. I do not hope that this book will do equally ‘well’, but if it does, do not participate in this movement for the movements sake. Movements often become so powerful that people focus solely on the process instead of what the process can do for you, the results it should bring for you. The continuous improvement of the work organization become the focus of attention, because this is easier to do than doing the actual work well.

“It’s like a finger, pointing at the moon. If you stare at the finger, you miss all the heavenly glory.”
Bruce Lee in “Enter The Dragon”

Starting to Organize Creativity

If you want to start organizing your creativity, take this book as an inspiration to find out what might work for you. It can give you options, but you have to decide for yourself what is for you. Any way to organize your creativity should include ways to generate ideas (chapter 3), capture (chapter 4) and collect (chapter 5) them. If you want to start working in a new domain, make sure you select it with care and learn enough about it (page 18). If you are already knowledgeable in one domain, you can start to generate ideas (chapter 3) or capture them if you already have some (chapter 4). Begin capturing your ideas by creating the necessary infrastructure (e.g. getting pen and paper and keeping it nearby at all times) and capture your ideas regularly. Try out different ways to collect ideas (and use digital if you can) until you find what works for you. Collect ideas for a while until you find out which projects interest you the most, remember them to keep thinking about and collect information for them. You will probably have to study or train until your ideas get firmly rooted in reality. Finally you can begin to realize them, which will show you where you need more ideas or have to improve the existing ones.

GOOD INFRASTRUCTURE

This book places a high value on good infrastructure. You can make your creative life easier if you spend a conscious effort in providing yourself with the right infrastructure. Not only with a work place but also with the right tools and the inner security that you know what to do when you have ideas and how you can realize them. It will help you to generate ideas, capture them when they occur and collect them over longer time frames. Its a trite saying that “a place for everything and everything in its place” but it actually supports or even enables the creative process. Working by accident and serendipity alone will not work for larger projects nor does a good infrastructure exclude them.

A good infrastructure will help you to see ideas not as a distraction in your normal (work or private) life but capture them until you have the time to devote your full attention to them.

Besides the organizational structures to generate, capture, collect and realize ideas a good infrastructure also includes the *work space* (see page 73) and *time management* (see page 75, compare also page 91, and page 288).

Keep It Up

The danger with a one time change of behavior like this book might provide, is, that it is not stable. Something can easily engage and motivate, but unless it becomes a habit, it will disappear very quickly if situational demands (“I simply did not have the time ...”) or other engaging ideas become more important.

Keeping an infrastructure to capture ideas for example, is fairly easy for a day, even for a week. But what about after a month or even after a year? You can set reminders (e.g. writing it in your calendar to check if you are still doing it after a week, month or year or so), but especially in the first weeks it will take considerable effort to keep using the structure that is helpful for your ideas and their realization in the long term, but perhaps not that advantageous for yourself in the short term.

Keep It With You

Make sure you have your infrastructure (or a working emergency version) available wherever you are, at least for the capturing of ideas if you are on the road for

Starting to Organize Creativity

not more than a month, and your collection if you travel longer than that. If you have favorite ways of capturing ideas make sure that you have a large supply of whatever you need, e.g. your favorite pens or notepads. I am a strong adherent of self-cut A6 notepads made from A5 Clairefontaine notebooks, but they are not available everywhere. It is very upsetting to be in a new city, have a lot of ideas and not your favorite way of capturing them.

Changing your behavior is easy, it's keeping it up that's hard. Everyone can do it for a day. Most can do it for a week. After a month you can start to clap but it will take a year until I would believe you that you have achieved a change of behavior.

Unknown

Organize Yourself

WORK SPACE

A good work space is necessary in nearly all aspects of creativity. When you learn the knowledge and techniques of the domain to the point when you realize a project. While there are some aspects that are specific for the kind of creativity in question (e.g. good light for a painter, a good workbench for an engineer) to following aspects are more general and wider applicable:

Keep interruptions to a minimum

A major hazard to learning and creative work in general are interruptions. Interruptions are not breaks when you need some time off, but they are unintentional stops in your work. They can come from the outside, e.g. someone calling you on your cellphone or entering your workplace, they can be caused by the tools, either because you do not know how to achieve a certain effect or because the tools themselves require your attention (the yellow bubbles of the Windows XP taskbar are notorious for interrupting the work flow with irrelevant “information” and are one major reason why I am using a Mac), they can be distractions because something enters your consciousness that is just a tiny bit more interesting than what you are currently doing, or by not knowing what to do next. There are multiple causes of interruptions and they can occur in the physical, the virtual and the mental space. You can prevent most interruptions if you plan ahead and protect these spaces. Since it takes *continuous effort to do this each time you want to work*, spend some time to get the infrastructure right: to change the work setting that you do not have to actively prevent these interruptions every time you sit down and want to work.

Physical space

Most work cannot be started (or stopped) at wish, so make sure you prevent physical interruptions. A lot of people like to work at night, not only because their biorhythm is screwed up but because there are less interruptions. It is quieter, few people are willing to interrupt and no phones ring. Others make agreements with their family and lock the door (and mute their ears). Defending your work space (and time) is a hard thing to do and often you will have to fight for months until your environment accepts that this is a place where you work in solitude. Test different places until you found the one where you can work. While working on my dissertation, I spend ages in the public workroom of the university library, because it was impossible for me to work in the open plan office at the insti-

The Person from Porlock was an unwelcome visitor to Samuel Taylor Coleridge who called by during his composition of the oriental poem Kubla Khan. Coleridge claimed to have perceived the entire course of the poem in a dream (possibly an opium-induced haze):

“On awakening he appeared to himself to have a distinct recollection of the whole, and taking his pen, ink, and paper, instantly and eagerly wrote down the lines that are here preserved. At this moment he was unfortunately called out by a person on business from Porlock, and detained by him above an hour, and on his return to his room, found, to his no small surprise and mortification, that though he still retained some vague and dim recollection of the general purport of the vision, yet, with the exception of some eight or ten scattered lines and images, all the rest had passed away like the images on the surface of a stream into which a stone has been cast, but, alas! without the after restoration of the latter!”

Kubla Khan, only 54 lines long, was never completed..

However, this story is by no means universally accepted by scholars. The poet Roger McGough suggested in one of his own poems: “I think he got stuck”. This may have just been a joke, or maybe, as a poet himself, he knew the feeling.

Wikipedia (slightly rewritten)

Organize Yourself

tute where I was employed. It was an effort to leave the office every day at 2 p.m. to walk half an hour to the library and return at 11:30 p.m., but the time I spend there was perfect to work — I had virtually no distractions and I could work at peace.

Virtual space

If you use a computer, this virtual space can be treated as an extension of the physical space, albeit with magic capabilities. However, it can also be a source for interruptions and distractions: eMails, Instant ~~Interruptions~~ Messenger notices, icons that invite you to start another program or game, the virtual space is often cluttered with things that draw attention or time. You can turn off notifications via the system settings or additional programs (e.g. “Tweak Ui Powertoy” for Windows XP). Some programs have the function to blot out the whole screen (e.g. Scrivener or WriteRoom), but even those programs will probably not mute the “New eMail” sound or whatever happens in the background. Since the virtual space is more international (e.g. messages coming from people working late or in another time zone) and there are laxer conventions for disturbing others (e.g. sending an instant message during the night), consider quitting applications like eMail Reader and Instant Messengers, or even — if not needed — the whole internet connection altogether. It might sound like betrayal in this digital age, but it pays not to have internet access at creative times and even to switch off the cellphone just to have the distraction free time to focus on things that are more important than the whims of the virtual or physical community. Some people make a unique account which does not have internet access they use when they want to focus on their work, but if you are not strong enough to simply quit Mail and Browser or unplug the cable/turn-off the wireless, I doubt that you would be strong enough to use the web-free account (and it is often more effortful to do so).

Mental space

Find a place where you can mentally focus on your work. A place might have the necessary equipment but if you do not feel at easy working there, you probably will not be very creative or get a lot done. You should like working there. To help you focus on your work, consider creating an outline of the things you want to do. This will allow you to work continuously since you know what to do next and to quickly take up the work again if you get torn out of the creative process, e.g. by an interruption.

“I am not Superman, so respect my fortress of solitude.”
Unknown

BOOKS

The Sciences Good Study Guide

“How to Write a Lot” by Paul J. Silvia.

“Simplify Your Life”

“Getting Things Done”

“That’s it? Man. You don’t own much stuff, do you?”
“Too many material possessions, and they start to own you — I like to live light.”
Chastity Comic

GREAT WORK PLACES

the public workroom of an (university) library

a room in the cellar or on the attic

a hotel room

any place you feel safe and stimulated to work and where you are undisturbed

Night time is really the best time to work. All the ideas are there to be yours because everyone else is asleep.
Catherine O’Hara

Organize Yourself

It is not that hard

While it might seem that you have to invest a lot in a good workspace, it is not that hard. You just need the consequence to find a place where you can (and will!) work and where you can prevent disturbances. You do not need a designer lamp or a mahogany desk the size of a garage door to work. Just make sure everyone understands that you want to work, lock the door, unplug the telephone, shut off your cellphone and disable the internet connection and focus on your work. While it is hard to make it a habit, the actual actions are fairly simple.

TIME MANAGEMENT

Keep and defend your time

Time management is not that hard either. Decide how much time you will spend for your project and during which time of the day you can work on it, make sure to work on it most of the days of the week, and *keep and defend the time you have allocated for it*. The last part is the hard part. Others will not understand that you (suddenly) do not want to spend time with them or that you are not available at certain times. You have to defend your time against people who think they have a right to your time, who think (sometimes rightly so) that they are more important than your project. It is easy to get sidetracked by new and exciting things, especially if you have to work hard on your project. Don't. Focus on your project and defend the time slot you have allocated for it. Every day. "How to write a lot" by Paul J. Silvia is an excellent book on keeping to your schedule.

"I do my best thinking — without fail — on the elliptical at 6:30am, also known as perhaps the least conducive situation during which to record ideas."
Unknown

Compare also "A Case for Time" on page 91 and "A Case for Time (Part II)" on page 288.

Working continuously for a long time

There is nothing wrong with working for a long time, even at the time you would normally sleep, if you are inspired to do so. When the ideas are pouring, let them pour. However, if you plan to work for a long time and cut into your sleep budget, make sure to organize it beforehand (when you are still wide awake):

Make a task list

It is easy to lose track of your goals when you become tired. Make a list of things you want to achieve and stick to it.

Plan which tasks you do

Choose the order in which you want to tackle the tasks. Choose tasks that you can do even when you are tired last (e.g. light physical tasks, tasks that are very motivating for you). This sometimes works if you do not solely look at your office tasks but include tasks at home (e.g. cleaning the house). There is nothing wrong (safe waking the partner or the neighbors) with cleaning the house at 4 a.m.

Be careful with caffeine

Caffeine might set the mind in motion, but too much of it will turn it into concrete. You lose your fluidity in thinking. You are awake, but only awake (think *Zombie*). Use it only in small amounts. Guarana can be an effective alternative to caffeine,

Organize Yourself

but be careful: try the tip of a knife first, because you might underestimate it.

Get stimulation

Music is your friend if you can work with it. Loud (careful with your eardrums), energetic music can keep you working for a long time.

Drink enough

Water, juices, milk — whatever you like (watch the caffeine!) but in sufficient amounts. When we are in the flow, we often forget to drink enough, which leaves us with a headache or without energy after a few hours. Always keep something to drink nearby to avoid the decision to continue working or to stop and get it.

Use breaks to get a change of perspective

If you want to take breaks, get up, walk around, look at your work from a distance. Do something different but still related, e.g. watching how far you have progressed during the past hours. Get something to eat, but keep the breaks short. Avoid starting a game or anything that will get your full attention and is extremely enjoyable, *unless you have repeatedly made the experience that you can quit it after a few minutes* (no, just saying: “I can quit anytime.” is not enough, behavior counts, not intentions).

Moderate amount of snacks

Use snacks that you can eat while working. Raisins work fine (they are not sticky and you can eat them with one hand), so are pieces of bread. Avoid full meals as they will drain additional energy.

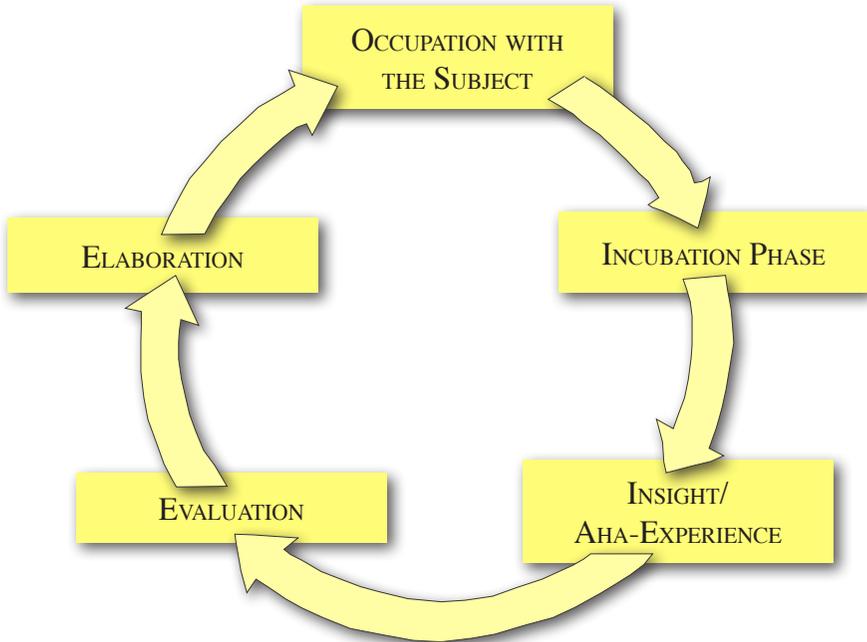
Generating Ideas

The following chapter is about the generation of ideas. We will first have a look at the creative process (page 79). Unfortunately, establishing the basis for good ideas takes a lot of hard work (page 81) and time (page 91), and there is no way past that. Afterwards we will look at blocks to creativity (page 97), before we will have a look at a lot of different techniques and tactics to stimulate ideas (page 98). Finally we deal with finding problems (page 127).

The Creative Process

THE PROCESS MODEL BY MIHALY CSIKSZENTMIHALYI

If we look at the scientific literature of creativity, the following process model by Mihaly Csikszentmihalyi is widely known. According to Csikszentmihalyi the creative process can be divided in five phases:



It starts with the **occupation with the subject**. Creativity does not work in a vacuum, you need information about the domain before you can have creative ideas. After this comes the **incubation phase**, a time where the work on the problem seemingly stops. The person does something different. He occupies himself with other, seemingly unrelated matters. This phase suddenly ends with the **insight or aha-experience**. Suddenly the solution to the problem comes into the mind of the creative. After this experience, the idea must be **evaluated**. Often ideas seem brilliant at first but they do not work when they are thoroughly tested. If the idea holds, it must be **elaborated**: it must be refined, the details must be worked out. After this the creative is one step further to his overall goal and the cycle begins anew.

Important Restriction: Simplified Model

The five phase of the creative process rarely occur in that simple, clearly defined way. Also note that the process is cyclical, i.e. except in the case of a small, well defined problem working creatively not only generates but set 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.

What does this mean?

First of all, don't let it fool you. The creative process is *messy*: There can be an overlap of different stages in a process that jumps wildly from stage to stage, even

The Creative Process

different processes running simultaneously and in parallel.

Second of all, take a close look at the first two phases of the creative process. You need to occupy yourself with the subject and you need time.

“But that’s trivial!”

You will probably think something like this, but is it? If it is trivial, then why isn’t everybody doing it? Why do we treat creativity like it happens without effort? Like you don’t need knowledge to solve a difficult problem, all you need is the creativity to see the simple, elegant solution?

For every problem, there exists a simple and elegant solution which is absolutely wrong.

J. Wagoner, U.C.B. Mathematics

A Case for Hard Work

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 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.

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), so unless you have a solid knowledge about the subject matter it is unlikely that you will be creative. One might think that some fuzzy knowledge is better than a solid knowledge, after all, you want to have new ideas and sometimes you get them when you thoroughly misunderstand a subject and do something that turns out to work. *Don’t*. Not only can it be dangerous (depending on the domain), it reduces creativity to random process and later selection. This works for evolution, but it has time on its side (millions of years). It is the knowledge of the domain, that enables people to be creative. To not only change things, but do so in a purposeful manner, that leads to works that are actually good for something. This does not mean that you always have to know what you are doing, but blind manipulation of colors or symbols is not creativity.

If Newton did not have all the knowledge he had to work so hard to acquire he would have thought: “Hey, free apple.”
Daniel Wessel

“The only way something comes out of nothing is via a big bang.”
Unknown

Hard work spotlights the character of people: some turn up their sleeves, some turn up their noses, and some don’t turn up at all.
Sam Ewing

This is only the first part where hard work is needed

There is another aspect of creativity where hard work is needed: during the realization of an idea. Having an idea is actually fairly easy. Realizing it is not. Even if you have an idea for a great picture and someone else makes it, he did something you did not: realize it. He actually had the skills, the energy and the knowledge to do it. Same with science. It is easy to have an idea, a hypothesis or even a theory, but to prove it or support it, that is a different story. Ideas are only the beginning, not the end of creativity. We will focus on this in chapter 6, but first we look at the hard work you need to do to get familiar with a domain and get the skills needed to be creative.

“No prizes for predicting rain. Prizes only awarded for building arks.”
Unknown

LEARN, EXPERIENCE, PRACTICE, PERSIST

We like to attribute the knowledge a person has on his genius level intelligence and the perfection with which he uses his tools on his innate giftedness. While intelligence helps understanding information and talents do make things easier, it is mostly an excuse for not investing the same hard work the creative person has invested in his. Even a genius needs knowledge to work with (raw intelligence alone is useless, see page 54) and even the best talent needs to know his tools. Hard work

A Case for Hard Work

is necessary for creativity. This sounds like betrayal or undermine the whole point of being creative and find easy solutions, but it is — unfortunately — the truth.

Learn

First you have to learn about the domain, starting with the very basics. This does not mean that you cannot be creative while you learn, but make sure that you focus on getting to know the groundwork of the domain. Much will be rote learning. Much will be getting to know the relationship between the variables right or the structure of different processes. If you have ideas while learning, write it down, but continue learning. These ideas might be interesting starting points later, when you are informed enough to deal with these ideas and when you have the knowledge to discard ideas that were already tested or will not work.

How to learn

Choose a domain you love

It is trivial but sometimes students choose domains which do not fit. Be it parents with high expectation who favor a certain job choice, the lure of “easy money”, or the wrong impression of the daily work, there are a lot of reasons why someone would choose a domain not out of the love and interest for it but out of other, inferior motives. Since learning the domain is hard work and you have to love it to spend your time thinking about it and getting ideas, this is often self-defeating. You end up doing your job (even fairly well), but you won't be creative if you do not love it. So choose a domain you love. See page 18 about different domains.

Learn/Practice Regularly

Follow Silvia's advice (“How to Write a Lot”) and schedule a certain amount of time every day for learning, at least two hours. Study during this time. If for whatever reason this time is booked by something else, make sure that you get your two hours learning a day. 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 regularly practice that will — over time — help you to reach expertise.

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

Learning is like rowing upstream: not to advance is to drop back.

Chinese Proverb

It's so hard when I have to, and so easy when I want to.

Annie Gottlier

The supreme accomplishment is to blur the line between work and play.

Arnold Toynbee

“It takes long practice, yes. You have to work. Did you think you could snap your fingers, and have it as a gift? What is worth having is worth working for.”

“His Dark Materials” by Philip Pullman

He who waits to do a great deal all at once will never do anything.

Unknown

A Case for Hard Work

Learn from the best

Find out who the best teachers in your field are and try to learn from them. They might have high standards you have to reach first (under less favorable circumstances) and the opportunities might be rare, but nevertheless make a conscious decision where

“Get the best education, early on.”
Unknown

and from whom you learn. Learning a technique wrong is very hard to correct. In science there is unfortunately the tendency to rate scientists by the teachers they had (e.g. the is one of Prof. X’s students), often because the professor has a specific perspective or uses specific methods that students learn (even if they do not like it themselves and want to conduct experiments differently). Studying at a specific institute under a specific professor will taint your reputation, either positive or negative, so make sure you choose a good teacher. High class institutes 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 (see page 113). However, depending on the domain and the institute, competition might be high.

Mentors

It can help to find a mentor, someone who keeps an eye on your progress, shows you the ropes, makes connections to other people who can advance you and who can give you counsel if you need it. Some people have mentors in their families, other family members who are in the same profession. Some universities have mentorship programs, find out if they have it and if it works for you. You might even try to find a retired professor or artist and ask him to help you become better in your work. However, make sure that you choose carefully what you take from this mentor. Find your own perspective, your own style and your own methods that work for you. A good mentor will not try to clone himself in you, but to help you advance to the best of your abilities and help you develop *your own style*.

The eagle never lost so much time as when he submitted to learn of the crow.
Unknown

Focus on methods and techniques

You need to know the tools of the trade to be creative. It would be ridiculous to try to draw a blueprint without a ruler or CAD-tools or to try to write a book by longhand. There are some incredible tools out there, and techniques which make your work much, much better but are easy or manageable to learn. Get to know them in detail. In science the most important aspect is the methodology and methods. They are the basis of all research. A solid knowledge about the domain is necessary, but only the methodology and methods can be transferred from topic to topic and will be necessary *every time* you do research.

Don’t waste time learning the ‘tricks of the trade.’ Instead, learn the trade.
Attributed to James Charlton and H. Jackson Brown, Jr.

Strategize and Prioritize

If you start with a domain there are probably countless things you want to learn — likely at the same time. Like learning for an exam it is necessary to prioritize. Not everything has the same importance and some things are the groundwork for later knowl-

There is nothing so useless as doing efficiently that which should not be done at all.
Peter Drucker

A Case for Hard Work

edge. Make a list of topics you want to learn about in the domain (a hierarchical list with an outliner works best, see page 57 and page 240) and enlarge it whenever you find a new topic. Then select a subtopic and learn about it until you understand it. Work from one entry of the list to the next one. Nothing is more wasteful than to try to learn everything at the same time, skimming books, hopping from topic to topic, retaining nothing, just the vague feeling of having done a lot.

Every Object carries a lesson

Do not only learn about the domain when you are in your study or atelier. You find exercises, stimulation and problems in the everyday life, when you look for it (in some domains, you have to look very hard). Take photography for example: Even if do not carry your camera you will find pictures everywhere that you can analyze. You find motives that get you thinking how you would capture them to produce specific effects. Look at the world around you with interest and try to find everyday connections and examples to the things you are learning.

Interdisciplinary

If you learn a domain, try to achieve a broad knowledge, not a specialist who is so focussed on his own small domain that he is an idiot in any other area. Be open to connections from other areas. If you see something that might work in yours, try it out. Some of the best ideas in science came from transferring one idea from one domain to the other.

Start a project

You learn much by doing. No matter whether science or art, if you start to realize a small project, e.g. a study, you will be forced to apply what you have learnt and trained. If the project is small enough and realizable and if you invest serious effort and get help, it will be a highly motivating goal. This is especially recommended if you are trying to learn a programming language or how to use a computer program. Do not learn the functions from a book — find a program or something you want to create and implement it by learning the functions you need for it. If you want to find out how to mix colors, try to paint a specific image where you need carefully mixed colors.

Learn to be critical

It is easy to take a book or course as holy work where everything is right. It is not. It cannot be. Science changes, develops itself, results are often simplified in text books, theories are later revealed to be wrong or insufficient. While this is no excuse for not learning (see page 30), be careful that you read critically. Ask questions. Won-

Many have marked the speed with which Muad'Dib learned the necessities of Arrakis. The Bene Gesserit, of course, know the basis of this speed. For the others, we can say that Muad'Dib learned rapidly because his first training was in how to learn. And the first lesson of all was the basic trust that he could learn. It is shocking to find how many people do not believe they can learn, and how many more believe learning to be difficult. Muad'Dib knew that every experience carries its lesson.

From "The Humanity of Muad'Dib" by the Princess Irulan in "Dune" by Frank Herbert

LEARN BY DOING

Start a creative project, do something where you lack the knowledge and skill to do so. You will learn a lot and some works turn out to be quite ... astonishing. Just be careful that just realizing it in a shoddy way is not the end of your creative work but a stimulation to learn how to improve your work.

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der why and how the results came into being. What other possible explanations are and how they could be examined. Why the current theory is widely accepted. Do not blindly follow others but have a look for yourself where you are going.

Learn to take criticism

Creativity invites a lot of criticism and negative feedback (see page 305). Learn to ask questions and state your opinion to train yourself to get your ideas across. And while you do, learn to deal with criticism. Have a close look at it if they have a point (yes, often they have). Find out the reasons for their criticism. Good Criticism helps you to improve yourself. Learn to use it. See page 305 for some tips regarding criticism.

Test your understanding of the domain

Since learning is not understanding (see page 89), make sure that you test what you have learned. In formal education you are automatically “forced” to do this (e.g. exams, graded projects). If you are learning on your own you have to set your own exams.

There are a few things you can do to test your knowledge or skills:

Application

Make a small project, an experiment or an artwork and try to use the knowledge you have learned. In statistics, do the sample calculations. In learning a programming language, write a small program. In learning languages, talk to native speakers (the internet helps here). If you are learning to write well, then write a text and get feedback from experts.

Transfer to a different context

Knowledge is often entrenched in the context you have learned it. If you try to learn about critical thinking regarding alternative medicine, try to transfer it to another context, e.g. politics. Make sure that your knowledge is flexible enough to use it in different contexts.

Formal Exams

Few people like exams, but they are your best friend. Not only do they provide you with a deadline and a strong motivation, they give you the chance to show what you have learned. There is no better way to test you knowledge then letting it be scrutinized by a teacher or tutor. If you missed something or messed up your facts, they will (hopefully) correct you.

Talk to other experts

Talking with other experts will not only test if you can understand them and hold

DO NOT BE DISAPPOINTED BY YOUR EARLY WORKS

People are often disappointed that their works look so bad or are full of mistakes. What do they expect? Creating something creative is hard work and you must invest a lot of time until you create beautiful or high quality products. If you are not satisfied by your early works, remember that the masters of the domain did not do better when they started and invest more time and work.

“We delude ourselves if we believe that skilled behavior is easy, that it can come about without effort. We forget the years of tuning, of learning and practice it takes to be skilled at even the most fundamental of human activities: eating, walking, talking, reading, and writing. It is tempting to want instant gratification — immediate expert performance and experiential pleasure — but the truth is that this primarily occurs only after considerable amounts of accretion and tuning.”

*“Things that make us smart” by
Donald A. Norman*

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your ground on a difficult subject, but also provide you with more information and ideas what you can also learn. No knowledge of experts is alike and they will know things you do not and vice versa.

Explain it to others

The best way to thoroughly understand something is to explain it to someone else. If the person is interested in the subject, he will ask you questions that tax your knowledge. They will point you to things you took for granted and did not think about and they will find questions you cannot answer. Unfortunately some “experts” try to hide their ignorance behind arrogance. *Don't*. There is nothing wrong with saying that you do not know something (except in exams, where it is GPA suicide).

Experience

You can know a lot about a subject, but you still can fail to produce anything. Learning, especially from books, is not enough. It might give you interactional competence, meaning you can talk about the subject and appear like an expert in the topic, but once you try to apply it, you will inevitably fail. During learning you need real world experience, something that often comes short in scientific courses. Make sure not only to read a lot about the subject, but also to lay the books aside and work in the domain. Sometimes this is hard because reading is so much tidier and easier than actually working with colors or taking the camera and make photos. You will be faced with failures, disappointments. Even if you have understood something in theory, without sufficient practice you will not be able to realize your own ideas or even reproduce existing ones. Reality is often more messy than the black and white world of books.

There is no substitute for experience, for getting your hands dirty, from seeing it work out in the real world. Make sure you do not neglect his part of learning.

Practice

When Giotto di Bondone was asked to prove his worth as an artist, he drew a perfect circle free hand. Some people will probably say: “Oh, but he was an master artist.” Yes, but he did not start this way!

Especially in art there is no better teacher than practice. You have to learn how to draw a straight line (or a circle), how to take good pictures, how much pressure you can apply to which kind of stone. You need the experience and the skills that come through long practice. In the best cases this is a lot of fun, but there are also exercises that look boring (like drawing that tricky perfect circle over and over until you get it right *every time*). But unless you get the basics right, unless you have practiced long and hard enough so that the technique comes on demand without thinking, you will not have the resources necessary to concentrate on the important aspect: What do you want to say? How do you want to say it? It is fun to simply start doing, but without the basics, your work is build on sand, if you can erect it at all.

You cannot make it far unless your work is also extremely good from a technical point of

An amateur practices until he gets it right.

A professional practices until he never gets it wrong.

Unknown

“I am careful not to confuse excellence with perfection. Excellence I can reach for; perfection is God's business.”

Michael J. Fox

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view.

This also applies to science and engineering: Unless you master the tools you will have a hard time doing any kind of creative work. And the knowledge about the powers and limitations of tools can be a powerful source of ideas.

Persists

Learning a domain is hard work, which is the reason that motivation is so important for creativity: in learning the domain and in realizing the ideas, you need a solid determination. Everyone can dabble around with something and even produce a nice picture, but to be creative you need to work hard and the dogged persistence to get you through this.

COMMON PITFALLS

While dealing with learning, knowledge and practice there are some common pitfalls that should be avoided at all costs:

Pitfall: Imagination is more important than knowledge

As written on page 42, Einstein said: "I am enough of an artist to draw freely upon my imagination. Imagination is more important than knowledge. Knowledge is limited. Imagination encircles the world." Some people use this as an argument that creativity is possible without learning. Is it not. Yes, you need to have imagination, but without a solid foundation imagination is useless because it has no connection to reality. You need to draw on imagination but this imagination must work with a vast knowledge base.

He who has imagination without learning has wings but no feet.

Unknown

The only place where success comes before work is in the dictionary.

Attributed to both Vidal Sassoon and Donald Kendall

Pitfall: Knowing Everything

One of the dangers of learning and becoming an expert is to lose the imagination. You think you know and you do not imagine it differently or want to check your knowledge or imagination by actual experiments. Sometime out of fear of making mistakes or doing something "that everyone knows the answer to". Keep in mind that your knowledge is limited (and also the knowledge of everyone in the field). Trust your abilities to deal with difficult problems, but keep your doubts that the world is how you imagine it. Do not imagine it but try it out.

We are fast with out answers because we were in the same situation before, heard the same question before. But we should make sure that it is still the same answer.

Unknown

Pitfall: Loosing Focus

While flexibility, openness and diverse interest are all very good, you must be able to focus on the particular part of the domain you want to be creative in, long enough to become proficient in it. A lot of people have too many interests at the same time. They do not only want to learn

I was still reading about the evolution of stars when Professor Perry suggested that we go to lunch. We did but I made some notes first about types of mathematics I wanted to study. Astrophysics is fascinating – but you have to talk the language.

"Friday" by Robert A. Heinlein

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about optics in physics, but also about biology, chemistry, history, maybe some Shakespeare and one or two languages. While it is regarded as very favorable to be open and wide in ones interests, it is absolutely suicidal to try to learn about to many things at once. The more topics you want to learn about, the slower you will learn them, if you can coordinate them at all. Sure, you do something like that during school, but (be honest) the knowledge is basic, the steps minimal and the learning is highly structured and supervised by others (your school boards and your teachers).

If you have a lot of interests (and how has not?), set priorities. This might sound hard and some people fight against it with teeth and claws, but it is the only way to become proficient in something. Find one to three things you want to learn about, spend a few hours every days for each of these topics (you will not be able to do this for three if you work, so reduce the number accordingly), and do this until you become really proficient in it. When you are very good already and continue to learn automatically by doing it (and doing it regularly), when you do it only to improve (or keep) your performance (and not to learn it), you may pick up another subject. This way you add up skills one after another and might end up (at the end of your life) with fifty things you do very good, instead of running around in circles trying to learn fifty skills at the same time, which you never will.

Get the new skills of the ground first before adding another one.

Pitfall: Learning the Wrong Thing

If you start out in a domain it is easy to bet on the wrong horse. Science is a vast domain and constantly under attack by interest groups that want the “scientific” attribute but do not share the scientific method. Even courses at universities or formal institutions can be sources of quackery and misinformation. Outside of the scientific field, psychology is often solely displayed as therapy with methods that appear very plausible, but have no therapeutic merit. Some methods that are taught by some institutes are downright criminal and dangerous for the mental health of the patients. Pseudo-archeologists that bash on established research can be very persuasive (even demagogic), but if you follow them and learn about aliens bringing civilization to mankind you waste your time because there is no proof in it, only speculation. Some people will tell you proudly that they “have studied the stars” and begin to talk about astrology. If you want to know about stars — and there is incredible beauty in the universe — learn about astronomy. Sounds similar, but while astrology is humbug astronomy is an actual science. And a science that is open to amateurs. Our sky is so large (especially if you look at a large distance) that many discoveries were made by amateurs (with comets being named after them). The large organizations simply cannot cover all the sky.

If it can't be expressed in figures, it is not science; it is opinion.

Excerpt from the Notebooks of Lazarus Long in "Time Enough For Love" by Robert A. Heinlein

There are a lot of subjects out there that are well founded, that have a well-researched body of knowledge that is freely available. And there is a lot of rubbish floating around. The problem is not only that some people are unethical bastards who want to make money from the gullible public. Some people actually and fervently believe that what they do and teach is right, even when there is no merit in it at all. They are so convincing because they actually believe in it. They also have the advantage that pseudo-knowledge is often easier to learn. It is (seemingly) more

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exciting. The stories sound better, there is more mystery. But in the end, it is a waste of time (unless you want to write fiction). It might be an easier road, but it leads to no where.

Be careful from whom you learn. Be careful what you learn. Be sure to get the real deal. Have a look at the courses that are taught at a university. Get their book, visit their courses. Books about popular science are nice, but they will never give you the same amount of knowledge in the same fine grained detail that university books will give you. Popular science books simplify. They have too. Even university level books do this. In the end, you have to have a look at the cited studies for yourself to see science as it really is: complex, sometimes confusing and never simple. But also extremely exciting and incredible rewarding.

Pitfall: Learning but not knowing

Make sure that you do not only spend your time learning, but actually testing your knowledge. Many people spend ages behind books but fail the exam, because they have read a lot, but never retained his knowledge or made sure that they could reproduce it on demand. They also do not make sure that they understand it, which is the next pitfall.

Self-education is, I firmly believe, the only kind of education there is.

Isaac Asimov

Pitfall: Learning but not understanding

You can spend hours a day learning about a domain but do not understand it. And what is worse, you might even not know that you do not understand it. In the ideal formal education, this is what good exams are for. If they do not only test factual knowledge, they find out if you did really understand the subject, if you can answer questions in your own words, if you can explain to others what you have learned. Unfortunately, because it is easier to do so, many exams test only factual knowledge but not understanding. A simply multiple choice test will show you (and your teachers) that you have retained the information, but it will not show if you really understand the subject. While learning, do not confuse knowing with understanding. While knowing a lot of facts might be satisfying, pure knowledge without understanding will rarely lead to new ideas. While passing an exam well is probably the most important thing for your career, it is important that you retain something more than just a grade. Make sure you do not only know the facts but the underlying structures, the processes, not only the what's but also the why's and how's.

This is more difficult for the autodidact. In some areas, e.g. drawing or photography, you can try to use your knowledge and see if it works. In other areas, the application is so far away that it is hard to test at all. Some books offer quizzes, examples, even case studies. Make sure that you do not only spend your time learning, but also making sure that you really understand what you are learning (see page 85).

Pitfall: Knowledge prevents criticism

Some people think that with a scientific degree or a certain amount of fame, they receive less criticism because they have proven themselves. Nothing could be further from the truth. As a beginner, criticism is often softened up because you are expected to make mistakes. As an accomplished scientist or artist your fame might have a positive influence on the treatment of your works (especially that it will be

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more likely that they get attention), but you will be criticized no matter who you are. Why? Because you make mistakes, no matter how good you are. Because there is always something that could be improved. Because creativity is not stable. And because your work is much more visible. And with attention comes criticism because more eyeballs spot more mistakes.

If you want fame as a protection against criticism it will not work.

Pitfall: Reinventing Ideas

There are probably countless inventions that were invented countless times. Studies that did test the same effect over and over again. Sometimes the fault lies within the publication of ideas. In science this is a problem with treatments that have no effect. Journals often do not publish these results and thus, other researchers thinking along the same lines also waste their time trying it out. In art it is often difficult to get an overview of all styles and artists. The internet could have made this easier, but with the rise of its cheap publishing technology more and more artists publish their works, which makes it extremely difficult to find out if ones own work is really original.

Impara l'arte, e mettila da parte.

[Learn the art so that you can forget about it.]

Unknown

Sometimes the information that someone else had a similar (or the same) idea comes when trying to patent it. Sometimes when one of the thousands of eyeballs on the internet mentions that he has seen something like this before. And then you find out that your work might have been extremely difficult, and effortful, and with a lot of brilliant ideas, but unfortunately it is not creative, because it is not original. You could be proud of yourself if you had developed it a little bit earlier (sometimes ages earlier). You probably would not have done it if you had known about it, if you had invested more time and effort in your research. Sometimes there is no one to blame, sometimes you can blame your sloppy research.

But whatever the case, take your lesson and try to do it better next time.

You find some information about parallel creativity and how to deal with it on page 341.

PITFALL: GIGO

In computer science, there is the abbreviation GIGO: garbage in, garbage out. If you give a computer the wrong information, you will receive the wrong result (unless the errors cancel each other out). In creativity, there are a lot of sources for garbage. Sometimes you get the wrong information, sometimes people who are utterly convinced tell you something that is utterly wrong. Books can be wrong (and few people read the errata). Measurements can be tainted.

Name the greatest of all inventors: Accident.

Mark Twain

If you invent by accident you are going to have an accident.

Daniel Wessel

Sometimes these mistakes can lead to new ideas.

Sometimes things work out brilliantly even with the wrong information. But in most cases, they do not. Whatever the case, make sure to check the information you put into your creative project, even when things turn out the way you want to.

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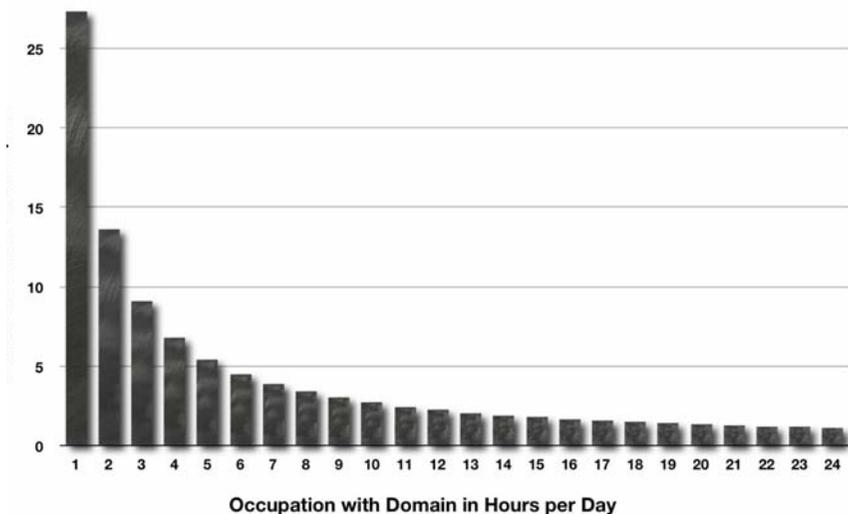
You need time to learn about the domain and for the incubation phase — and time is a very precious commodity. In a normal life there are countless things competing for your time: friends, work, leisure, TV, surfing the net, etc. Having time just to let the knowledge stew, letting new ideas emerge, is difficult to find. Even standing around thinking is regarded critically (unless you are a smoker) and if you answer the question “What are you doing?” with “Nothing,” you will find yourself doing a lot (of talking) soon.

“I thought about it all the time.”

Sir Isaac Newton, on how he discovered the law of gravity

HOW MUCH TIME DOES IT TAKE?

Getting to know a domain so that the own work becomes recognized by the field as creative (e.g. in art or science) will take a long time. How much depends on the structure of the field (e.g. well-structured fields like mathematics), the individual characteristics (e.g. intelligence, interest) and the amount of time one invests each day. The following graph illustrates the last point. Simon and Chase (1977) determined that 10,000 hours are necessary to reach expertise in chess. How long does it take to become an expert depending on the number of hours a day one invests in the subject?



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 reach expertise (in chess).

Don't count the days, make the days count.

Mohammed Ali

This illustration is simplified in a number of ways: you or your domain might not require that many hours (but more), you can have good ideas during the time you get acquainted with the domain, and it is not the mere “doing the hours” that will lead to expertise but the work you do in them. But it shows that it will take consid-

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erable time and constant work to reach proficiency.

Being creative in a way that sets you apart from the daily creativity will take a lot of work and consequently time. *It will not happen over night.* Be sure to understand this and consider it carefully. And first you have to consider how you get the time for it.

He who devotes sixteen hours a day to hard study may become at sixty as wise as he thought himself at twenty.

Mary Wilson Little

MAKE TIME & DEFEND IT

We can dream about having more time or doing things when we have the time — only that this time will remain a dream. Most people do not even manage to realize the things they dream they will do when they are retired, they just stretch their normal activities to occupy the whole day.

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.

Time is precious, no one will give it to you

To be creative, you have to make time and defend it. Against people who think they have the right to your time, even against other activities that bring more short time fun.

The more success, the harder the battle

The more successful you are, the less time you have. You will have other people who think they have a right on your time. Train to defend the time you need for your creative projects early on. Make no exceptions even if it is more fun to talk with others than to work yourself through new studies or developments. Other will probably not understand your behavior, especially if you use the time for incubation and you are obviously “not doing anything with it”.

A Short Story about using time

In March 2008 I drove home after a day at work and thought about renting two DVDs. I decided to return home first to finish some work left-overs before driving to the video store. After the work was done, I played around with iPhoto and started making a photo album with my best photos. I lost track of time and when I finally went to bed I had a 100 pages photo album in portfolio style. It was not only a mere collection of my best photos but it also showed me that my first year of photography was not a waste of time because some of the photos were actually very good (field: me). It was highly motivating (and still is, when I look at the album).

On that evening I had the choice between either relaxing in front of the TV with

DEFEND YOUR TIME

set & keep priorities

set & keep regular time-periods for creative work

lock the door

go to a public work room, e.g. in the university library

switch off the cellphone and mute the telephone

see page 73 (organize yourself)

You will never find time for anything. If you want time you must make it.

Charles Buxton

Talents are best nurtured in solitude; character is best formed in the stormy billows of the world.

Johann Wolfgang von Goethe

Secret to success: Stay away from TV. “I haven’t watched TV for 20 years. At 5 hours a day, this works out to 36,500 hours. Need I say more?”

*“Studmuffins of Science”
Calendar*

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two movies or doing something creative. I decided to do something creative (which creating a portfolio is beyond the auto-flow function).

Even if this was not planned the message is clear:

Think about how you use your time and what you will have to show for at the end of the day.

HOW TO TACKLE IT IN TIME

Keep the following recommendations in mind you want to be creative in a domain within reasonable time.

Combine your creativity with your work

Some people are in the happy position that they can work creatively. Others have routine jobs that leaves them with enough time and mental resources to think about their projects, write down ideas and sketch them out in their mind. Others find time during their work to squeeze in creative activities. For example, in my home town a postal worker with a love of photography always takes his camera with him when he delivers the letters. If he spots an interesting motif, he simply stops his bike and spend a few minutes shooting pictures. Even if his job is not creative but highly determined (delivering the letters to the correct address) he has found a way to be creative during his work.

Consider your domain carefully

Getting to know a domain is a long term project that will take a lot of time. Since it will take a huge amount of time (and energy, and resources) consider carefully if you really want to invest this much effort in a domain (see page 18 and page 91).

Do you really want to spend the next four years working continuously in this domain?

Work regularly

Unless you work regularly (e.g. two hours every day) it will take forever (literally a lifetime) to become proficient.

Structure your learning

Giving the amount of information/techniques you have to learn, structure your learning. Make an outline of the domain you want to know, from global to specific, when you know a little about the domain. This will show you where you stand.

When people say to me: "How do you do so many things?" I often answer them, without meaning to be cruel: "How do you do so little?" It seems to me that people have vast potential. Most people can do extraordinary things if they have the confidence or take the risks. Yet most people don't. They sit in front of the telly and treat life as if it goes on forever.
Philip Adams

Much may be done in those little shreds and patches of time which every day produces, and which most men throw away.
Charles Caleb Colton

Pick a savage so far back in the jungle that they don't even have installment-plan buying. Say he has an I.Q. of 190 and Peewee's yen to understand. Dump him into Brookhaven Atomic Laboratories. How much will he learn? With all possible help? He'll learn which corridors lead to what rooms and he'll learn that a purple trefoil means: "Danger!" That's all. Not because he can't; remember he's a supergenius – but he needs twenty years schooling before he can ask the right questions and understand the answers.
"Have Space Suit will Travel"
by Robert A. Heinlein

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Do

Knowledge is important but too much learning can stifle your creativity. You never know enough. You can read forever about how you can do something or what was done, without ever doing something. From time to time engage in actual creativity — it will give you experience, grounds your knowledge to reality and keep your motivation.

Do what you must, but remember that everyone will leave this earth with items still on their to-do list and no one went to the grave wishing they spent another hour at the office.

*“People First, Then Technology”
by P.G. Daly*

See also “A case for time (Part II)” in chapter 6 (page 288) for further ways to make more time.

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MAKING TIME FOR INCUBATION

Time for incubation is actually a pretty thankful time. You do not need to learn. You do not need to be at a special place (e.g. your lab). You do not need special equipment. You just need time to do something else.

However, time to letting the thoughts circle in your mind can be hard to find. At least in western societies there is this need to use time efficiently. Sitting around thinking is regarded as slacking, as wasting the most precious commodity there is. However, there are some activities you can do that will provide you will ample incubation time:

Walking and Bathing

Two of the best situations to have time to think and letting ideas come is walking and bathing. You are doing something that is socially accepted (i.e. no one will disturb you) and you have the resources necessary to capture ideas.

In a bathtub, you are essentially sitting around, relaxing, letting your mind coming up with ideas. Just make sure you have the infrastructure ready to capture them (see page 177).

While walking it appears that you are using your time (to get to a destination), when at the same time you are undisturbed to think. Make sure that you have something to write with you at all times (see page 168), so that no ideas get lost. Walking has the additional advantage that you can do it every day. If you live near your workplace (< 20 min per foot), consider walking to your work. It will not only give you time to wind down from work but also provide you with a time for ideas.

Before and after Sleeping

Lying in bed and waiting for sleep can be a good time for ideas. The problem is with capturing them, because you will likely forget them in the morning. You can even use the time after you wake up for ideas, also make sure you capture them.

Meditate/Daydream/Midday Sleep

Try to allow yourself the time to daydream or start to meditate or a midday sleep. Relax your muscles, become calm and focus on yourself. Try to allow yourself all kinds of silly thoughts.

MAKE TIME FOR IDEAS

walk
do nothing (if you can get away with it)
mid-day sleep
drive with a bus/train
sports (esp. jogging)
shower/bath
toilet
shut-down period before/after falling asleep

"I'd rather walk."
Henry J. Wilcoxon-Ash

When inspiration does not come, I go for a walk, go to the movie, talk to a friend, let go... The muse is bound to return again, especially if I turn my back!
Judy Collins

If you are seeking creative ideas, go out walking. Angels whisper to a man when he goes for a walk.
Raymond Inmon

The isolated, social inept researcher or artist is just a very devoted researcher or master with different priorities than the rest of his immediate society. If he appears to be absent-minded it's because he is, he is thinking about a project that means more to him than the current company and when he reacts strangely, it's because you just pulled him out of a depth of 20,000 miles without decompression.
Daniel Wessel

A Case for Time

Presentations and Meetings

Ever noticed how few people are actually “there” during a presentation or meeting? In presentations people often drift off and think about other things because this is the only time they have to sit down without working on something a having time to think. And sometimes ideas occur. It is actually a good time, you normally have something to write with you and other people will thank that you are making notes about what is being said. (Classical) concerts and movies can be used similarly (but the writing is more difficult).

Travel Alone

At least in western cultures it is unusual to be engaged in conversations with other travelers on the road. So if you travel alone, you will not only have stimulating changes in scenery but also time for yourself. No wonder a pilgrimage is often mentioned as a time for revelations (ideas about oneself): you travel, focus on yourself and have time for ideas. Travels by train are highly recommended: you are in a stimulating environment with different people and a changing scenery that you can actually watch, for an affordable price you can travel for hours and you are free to write down occurring ideas.

Spend some time alone

This is not a recommendation to become an isolated wacko on a mountain, but while social engagement is certainly stimulating it also leaves you with little time and mental resources for important matters. Make sure you have time for yourself where you can think about your projects.



Blocks

CREATIVE BLOCKS

People sometimes experience blocks to creativity. The writers block is the typical example when writers want to be creative, but they cannot think of anything. In many cases these blocks indicate a suboptimal strategy. Silvia wrote in “How to Write a Lot”, that at least *for scientific writing there are no writers blocks*. Scientific writing is simply a craft where you follow specific guidelines. You know what you have done, you know what you have to write. It is not Shakespeare, it is technical writing for a specific audience. But what for creatives in general?

Blocks usually occur in two situations: while generating ideas and while realizing ideas (see page 299 for more information on the second case). Make sure you identify which kind of block you are facing.

“Can you believe it? Me — a muse, for God’s sake! I sit down in front of the typewriter, and what do I get? Nothing. Blank page. I can’t even write a grocery list.”

“What about what you did with Jay and Silent Bob? You inspired them.”

“That’s the cosmic joke. I can give out a zillion and nine ideas a second, but I can’t keep any for myself. Her quirky sense of humor.”

Serendipity, an ex-Muse suffering from a writers block, and Bethany in “Dogma” (1999)

Blocks while generating ideas

Often people have troubles “finding” ideas. The stereotypical picture of the writer, nicely displayed by Brenda in “Six Feet Under” is someone sitting in front of his computer, typing: “What do I have to say that hasn’t been said before?” Take care that generating ideas and implementing them are two separate steps. If you do not have any ideas, have a look at the following questions:

Are your aims clearly defined?

Often people do not know what they want to do, what they want to achieve. It is hard to generate ideas under these circumstances.

Do you have the necessary knowledge?

As written at multiple points in this book, knowledge is necessary to be creative. If you want to write a great family saga about a emigration family in America, you need to know lots of information about the time, the history, the reasons, the emotions, etc. If you want to do scientific research you need to know the open questions, the gaps, the unknowns. In a lot of papers there is a section where the authors state which kind of research is needed. It is sometimes easier to solve an existing problem than to come up with a problem yourself.

Can you use one of the strategies in this chapter?

In this chapter there are a number of strategies to help you generate ideas. While they are no magic bullets, they might stimulate ideas. Try them and see if they work.

Techniques and Tactics

Now that we have covered the hard work necessary and the time needed, a few words about creativity techniques. Creativity techniques are structured instructions on how to be creative, an organized way to be creative.

“You can’t force creativity.”
LifeDev.net

The following techniques might be useful, however, they will not work for all areas and in all situations.

IMPORTANT PRELIMINARY NOTES

You have to work first

Sometimes creativity techniques are advertised as delivering ideas without any effort. Unfortunately, creativity techniques are like secrets to success: they will not work unless you do (or rather did). You need to know the domain first. You need to have something to work with. Consider brainstorming: you can storm your brain but there must be something to pillage in there first.

Mostly it’s a question of knowledge, skills and time.
Unknown

They give you an excuse to spend time on thinking

If you have worked (hard) getting to know the domain, creativity techniques might be helpful even if they have no additional effect: You will spend some time on the subject and you have a good excuse sitting around and thinking — you are not wasting time, *you are applying a technique.*

Break the routine

Creativity techniques can help you to break your routine. To force you to do something different, to guide your attention and your thoughts.

Do not expect miracles

There are no secret buttons you can press to produce great ideas. Personally, I prefer writing down any idea 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. This strategy might not work for you, so you will have to try different techniques, until you find the one that works for you in the given moment.

“Genius doesn’t work on an assembly line basis. You can’t simply say, ‘Today I will be brilliant.’”
Kirk in Star Trek TOS: “The Ultimate Computer”

There is no silver bullet

Like organizing creative in general, when trying to generate ideas with the help of techniques and tactics, there is no guarantee that a given tactic will work, nor that a tactic that worked once will do so all the time. You have to be flexible in the use of tactics, because best tactic for you and the situation you are in will vary. That is the reason that it does not matter that some tactics are mutually exclusive.

There is no single best tactic or technique that ensures creative ideas in everyone

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at any time in any subject area. This is simply impossible. People are different, working styles are different, circumstances are different, areas are different (e.g. in some you work alone, in others you can only advance knowledge as an interdisciplinary team because the subject matter is so large and difficult that it has to be distributed over different individuals).

THE BEST TECHNIQUE ...

... is the one that suits you best in the given situation.

Creativity and the conditions in which a person is creative strongly depends on the person — the situation, conditions, experience and personality of the person determines if the person is creative, there has to be a person-environment fit. So, some techniques work for some people some of the time. To find the perfect technique (for the given time and situation) is like being the fairy princess searching for her prince: you have to kiss a lot of frogs until you find the one that is right for you.

Now let us have a look at different techniques ...

Techniques and Tactics

STRUCTURAL STRATEGIES

The first cluster of techniques and tactics deal with strategies that change the way you work in general and are independent from concrete ideas.

Keep your independence

Sometimes people identify themselves with only one thing, one method, one perspective. *Don't*. Keep your independence. Even if all your colleagues around you are herding into one direction, take a step outside the flock and think about it: is this is really what you think you should do, or if it is simply a case of *presumed* safety in masses. Do not reduce yourself to one aspect only. Keep your options open and your identity diverse. Do not think of yourself in only one term, even if this term is creativity.

Under normal conditions the research scientist is not an innovator but a solver of puzzles, and the puzzles upon which he concentrates are just those which he believes can be both stated and solved within the existing scientific tradition.

Thomas Kuhn

A Time For Ideas

If you experience a drought of ideas, make sure it is not because you do not have the time required for incubation. You need time off to let your mind generate ideas. If you are in action 24/7, it is no wonder that you have no ideas, there is simply no time. Make sure you have time for ideas. Regularly. Every day of the week. See the tips on page 95 for ways to have more time for ideas (if you are overworked, they wont help. Find a book about work techniques, e.g. Getting Things Done, or work-life-balance). And reduce the daily stimuli that bomb your life.

Here is Edward Bear, coming downstairs now, bump, bump, bump, on the back of his head, behind Christopher Robin. It is, as far as he knows, the only way of coming downstairs, but sometimes he feels that there really is another way, if only he could stop bumping for a moment and think of it.

"Winnie-The-Pooh" by A.A. Milne

Seek solitude

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?

You can also do this with colleagues if you all want to work together on the same problem. Cut the connection to the outside world (e.g. leave your cellphones in another room) and concentrate on the problem.

Be Open, be Prepared

Sometimes the problem is not a lack of ideas, but the lack of capturing these ideas. Write down the ideas you have, you are more likely to recognize a valuable idea this way.

Chance favors the prepared mind.

Louis Pasteur

Look at the world around you with a sense of wonder

The best inspiration is not on the height of a mountain but what directly surrounds you. We are used to the world, take much for granted that a more naïve person would be amazed of. Take a close look around you. Try to see it which different eyes: How would a child see the world? How a foreigner? How someone from a different century? Have a look at the people you interact with — how do they

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behave at the moment? How did you get them to know? How have they changed? Look at the newspaper. Take one that you do not usually read. What does amaze you, strike your interest? Go to the museum. Look at art from different centuries. Look at contemporary art. It is not so much of attaining a different perspective (see page 102) but a way of living, a way of seeing the world, of interacting with it (which is why I see it as a structural strategy).

Do your own thing

Creativity is doing something original, but all too often, we are constrained by the people around us. Authority, traditions, the voices around and inside of us. Focus on your own thing to come to a solution no one else does.

Ignore Authority

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.

Ignore Tradition

Tradition is only the intangible authority of the past, working in the present. Ignore it. You are searching for a new solution and tradition for tradition sake has no merit.

Follow your inner voice

Even if you do not know for certain what will be the next step, sometimes you have slight preference, a guess what could be done. Follow this quiet inner voice, 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.

Break the routine

Many strategies try to induce change by travel, different perspectives, etc. A change in the routine you work might give you the stimulation you need.

Follow the ideas

Get 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 ideas out as far as possible, they give you more to work with later on.

The greatest obstacle to discovering the shape of the earth, the continents and the ocean was not ignorance but the illusion of knowledge.

Daniel J. Boorstin, The Discoverers

If "everybody knows" such-and-such, then it ain't so, by at least ten thousand to one..

Excerpt from the Notebooks of Lazarus Long in "Time Enough For Love" by Robert A. Heinlein

Every great advance in natural knowledge has involved the absolute rejection of authority.

Thomas Henry Huxley

"The past is over."

Unknown

Trust that little voice in your head that says "Wouldn't it be interesting if ...?" And then do it.

"More Joy of Photography" by Duane Michals

"If you want to get ahead, you have to take chances ... stand out in a crowd ... get noticed."

Star Trek Quotations

"When it rains, let it pour."

Unknown

Techniques and Tactics

PERSPECTIVE STRATEGIES

The way you look at a problem often determines if you can solve it. The following techniques will allow you to look at the problem differently, not only in a physical perspective sense. Other changes in perspective (e.g. displaying the material differently and changing the physical perspective) are also described.

Challenge Assumptions

Assumptions are the curse of expertise. Experts have a lot of knowledge and routine, they use assumptions to free resources and come to conclusions quicker and easier. Unfortunately, this leads them to overlook important details, work routinely (but not original) or under false premises. The unstated assumptions sometimes are not true, or not true enough. We think we see what is going on when we see only our expectations, what we think we see. We think we understand the problem when in reality we have not devoted the necessary attention to it to fully understand it.

Make your assumptions explicit and test them. You see the power of this technique when you try to find out how a magic trick was done. They usually break some assumptions your senses take for granted, e.g. that a ball is solid (and not out of flexible material) or that a playing card has only one side with a value (instead of two). And in magic as when thinking about a problem, we usually see only what we assume or expect.

Not Either Or — More than Two Options

It is tempting (and easy) to see a problem or its solution only in terms of two conditions. But there are often more options available than to “take it or leave it”. Modifications are often possible or a new approach that contain both extremes or takes the problem from a new perspective. Don’t be fooled by a false dichotomy.

Redefine the Problem

Often assumption are made about the nature of the problem and how to solve it. Consider the 9-dots-problem: if you work under the assumption that the outer points define the area where you can work, you will not solve it. Do not think that the problem has to be solved as it was presented to you or in its context. Bypass the problem, redefine the borders, turn it upside down or to use the cliché: “Think out-

A rock pile ceases to be a rock pile the moment a single man contemplates it, bearing within him the image of a cathedral.

*Antoine de Saint-Exupéry,
Flight to Arras, 1942*

Don't take laws as laws, what we see might not be the whole truth and laws might change.

Unknown

“First, your return to shore was not part of our negotiations nor our agreement, so I must do nothin’. And secondly, you must be a pirate for the Pirate’s Code to apply, and you’re not. And thirdly, the Code is more what you’d call ‘guidelines’ than actual rules. Welcome aboard the Black Pearl, Miss Turner.”

Captain Barbosa in “Pirates of the Carribean: The Curse of the Black Pearl”

The reasonable man adapts himself to the world. The unreasonable man adapts the world to himself. All progress, therefore, depends upon the unreasonable man.

George Bernard Shaw

If a tree falls in a forest, and no one hears it, does it make a sound?

Yes, it does make a sound, because a sound is defined as mechanical vibration traveling through the air or another medium at a frequency to which the human ear is sensitive. So a falling oak makes a pretty serious sound, even without an ear around.

Unknown

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side of the box.”

Break the Routine

If you work under assumptions and routine you will have difficulties of seeing things different than they usually are. You have to challenge your assumptions and break the routine if you really want to do have new ideas.

Challenge even assumptions you like

Make sure you do not solely focus on challenging assumptions that you do not like anyway. Sometimes you have to challenge some assumptions that you hold dear, e.g. that the hypotheses you have are right. Because sometimes, your hypotheses might be wrong and even the ever present possibility of an error in the data might not insulate your hypotheses anymore.

Re-Estimate the difficulty of the problem

One way an excellent player can lose against an amateur is by making mistakes in the estimation of the difficulty to compete against him. In short, he can over- or underestimate this opponent and both can lead to his downfall. It is the same with problems. You can get stuck because you try to find a much too complex solution for a simple problem as easily as by trying to solve a complex problem with too simple tools. A common example is dealing with problems of the operating system: in a lot of cases, a restart of the computer will work immediately while editing settings won't. Take a look at the difficulty of the problem and allocate the necessary resources for it.

Change your approach

In creativity the journey is not that important compared to the goal. If you find that the current way (method, style, perspective, etc.) does not work, then change it. Often we act like a chicken that is standing in front of a fence: unable to climb over it, we try in vain to break through to get to the food on the other side. The thought of taking a step back and walking around the fence does not occur to us, because we are used to trying it this way and we have already invested time and resources in this approach.

While persistence is important, take care that you are persistent in wanting to reach the goal, to realize the project, but not persistent (or inflexible) in your approach to this goal. Sometimes it takes a while working on a project to find out how you can realize it, and when you do, make sure you change your work accordingly and as often as you need to.

Question your Methods

Do you see what is going on? In most sciences, you cannot directly observe what is of interest to you. In art they are the tools to create your work. You use methods to provide you with the necessary data or results. You use tools to express yourself. Unfortunately, they can also give you a distorted view of reality and limit your options.

The following problem is trivial, but it can be hard if you overestimate it:



Source: The Simpsons

What is the next symbol?

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Powers and Limitations

Look at the powers and limitations of the used methods, what they can answer and what they cannot, where they are precise and where they become fuzzy. Do not uncritically use one method and think just because it is established it delivers the right answer. Methods bias the answer, they influence what you can see and what you can create from it.

Use Methods from different Domains

Use methods from different domains that provide you with different perspectives or options. You can either try to learn about different domains yourself and transfer them, e.g. from physics to biology, or from one style to the other, or you can also work interdisciplinary in heterogeneous groups, where different members have their own approach. You get a more complex and complete picture this way. Most problems are just too complex to be analyzed with only one method.

Develop your own

If existing methods are not useable, develop your own. This is more common than you might think — it is astonishing what creative people have developed while working on something else. Sometimes they are remembered more for their methods (if they are useful and applicable to other questions) than for the work they did with them.

Follow new technological advances

New technological advances should also be watched carefully. In art they have vastly enlarged the toolbox. Digital tools offer powerful options that were not available earlier, e.g. working with high quality digital images or capturing a broad range of colors with HDR photography. In science new, more precise or flexible methods of data gathering allow the tackling of questions that were beyond the limitations of the domain a few years ago (e.g. watching attention in informal settings via mobile eye trackers). Since new technology often has teething troubles, you will be forced to find creative solutions for that too.

Consider the Exceptions and Fuzzy Borders

While most theories are founded on averages, it is worthwhile to have a look at the cases that do not fit into the theory and at the areas where the theory becomes fuzzy. Mistakes in measurement excluded, these areas often lead to new, improved theories, that can explain the central data and the exceptions/border data.

Look where no one else is looking

One way to be different is to look where no one else is looking. If the herd is running in one direction, following on goal, method or

Let us suppose that an ichthyologist is exploring the life of the ocean. He casts a net into the water and brings up a fishy assortment. Surveying his catch, he proceeds in the usual manner of a scientist to systematize what it reveals. He arrives at two generalizations:

(1) No sea-creature is less than two inches long.

(2) All sea-creatures have gills.

These are both true of his catch, and he assumes tentatively that they will remain true however often he repeats it.

Sir Arthur Eddington

There seemed to be one quality of mind which seemed to be of special and extreme advantage in leading him to make discoveries. It was the power of never letting exceptions go unnoticed.

Francis Darwin, on his father, Charles Darwin

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approach, try to find a topic that interests you even when no one else is interested in it at the moment. Runco (2006) called this “buy low and sell high”. You invest time in something when you have it for yourself so that you have already established yourself in it when it becomes en vogue. Of course, it might never become popular, or the herd was right and (one of the herd) found the solution to a problem.

Turn the situation upside down

Can the problem be turned into an advantage? Can it at least be described as one, e.g. the lack of any manual functions makes a camera very user friendly? Sometimes trying to see a disadvantage as an advantage might lead you to a creative solution.

Consider the trivials

There are usual areas of a domain that are considered trivial. Things that people neglect because they are too easy, too simple, too common. However, take the time to come to your own conclusion. Are they right? Or is there something to it that can lead to something of value, something creative?

Ask questions

Remember the W-questions (which, what, whose, who, whom, what, which, where, whence, whither, when, how, why, wherefore, whether)? Ask them to yourself regarding the problem at hand. Make sure you can answer these questions.

Look at the big picture

Sometimes we are so caught in the present, in the individual case, that we forget the big picture. Ford’s success was not to build an individual Model T, he found a way to build hundreds of them, thousands. 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. Look beyond the individual object at the big picture. Place it in the larger context and see what you can do.

Describe it differently

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. There are a lot of ways to do so: you can make a MindMap (see page 238), write it on a MagicChart (see page 211), make an outline, write a letter to yourself, talk to a friend about it, etc. 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.

Switch between different mediums

Whatever program, material or form you use to present your primary idea, it has

I felt silly adding “Brainy” — but there had been a row between Pop and him, and years earlier my best teacher had said, “Never neglect the so-called ‘trivial’ roots of an equation,” and had pointed out that two Nobel prizes had derived from “trivial” roots. “*The Number of the Beast*” by Robert A. Heinlein

No amount of genius can overcome a preoccupation with detail.
Unknown

I think perhaps the most important problem is that we are trying to understand the fundamental workings of the universe via a language devised for telling one another when the best fruit is.
Terry Pratchett

A good catchword can obscure analysis for fifty years.
Wendell L. Willkie

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affordances. A text editor will force you to present the idea in a different form than an outliner. Oil colors will set different accents than aquarelle colors. If you need additional ideas you can try to present the idea as far as you have it with one medium. It is possible that taking the idea out of the collection and bringing it in this form will stimulate ideas, because the affordances of the medium will close the gaps you still have in your idea, e.g. you can see the direction where it is going and will automatically do what is necessary to present your ideas. Just remember to bring the new ideas into the collection, especially if the venture into a concrete program is only temporary. This book, for example, owes much to a layout study that quickly became a 200 pages pre-version of this book, foreshadowing much of its contents.

Rearrange it, then expand it

You can try to rearrange the problem, bring it into a different order. If you are using an flow-chart or outline, you can try to flesh out the parts you have ideas to. If you are a musician, you can work with sound samples, arrange them in different orders and expand them as needed.

Lay it out before you

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. This is one of the major advantages of paper compared to a display: you can put it all in front of yourself.

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.

Look at the data

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. If you have ideas beforehand, jot them down, but then put them aside and really look at the real data, the facts, not your expectations.

Look at an individual case

While in quantitative science aggregations are necessary to make any accepted test, the close analysis of a single case (or a small number) can provide a more complete picture that can be tested with more subjects.

Break it down

A complex problem is often only complex because it was not sufficiently broken down. The Wright Brothers for example solved the problem of flight by

"The plural of anecdote is not data."
Roger Brinner

The temptation to form premature theories upon insufficient data is the bane of our profession.
Sherlock Holmes

I abhor averages. I like the individual case. A man may have six meals one day and none the next, making an average of three meals per day, but that is not a good way to live.
Louis D. Brandies

Nothing is particularly hard if you divide it into small jobs.
Henry Ford

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breaking down the complex problem into different, separately easier to handle sub problems (e.g. aerodynamics, weight, power, etc.). Writing a book is much easier once you have the thread and the synopsis for individual chapters. 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 leave 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, but in manageable packets.

Simplify

We have a tendency to see things more complex than they are. We consider a machine as a whole as broken while in reality only a small component is defect. Try to see the problem more simpler — what is really relevant and what merely distracts? What is important? What can you do without? What is the really relevant aspect?

"Keep it simple; as simple as possible, but no simpler."

Albert Einstein

Look at the core of things

We often assign objects a name and use it synonymously with the function it provides, e.g. a shower is ... well, a shower, not water pouring out of a hose at different temperatures. One of the keys to flexibility 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 and function that was assigned to it.

"I don't care about what something was designed to do, I care about what it can do."

Gene Kranz in "Apollo 13"

"I've always prided myself on seeing things the way they truly are," Thufir Hawat said. "That's the curse of being a Mentat. You can't stop analyzing your data."

"Dune" by Frank Herbert

Go further

To distinguish yourself from the rest find the areas where others fear to go, where they think they should not go. Go further than the rest if you have a good reason to do so.

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INSPIRATION STRATEGIES

Creativity is often associated with inspiration. The following techniques and tactics might help you to tap into this inspiration.

Look for inspiration in existing works

Analogies

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 the stories are true or not, analogies can be a tremendous help understanding problems or providing inspiration to problems. However, *if the important aspects are not equal, they also can distract you from the solution.*

Inventor	Invention/Discovery	Analogy
Eli Whitney	cotton gin	cat who tried to catch a chicken through a fence
Samuel Morse	telegraph station	stagecoaches that changed the horses at each stop
Louis Pasteur	research on human skin	knowledge about grapes
Kukele	benzene ring	dream of a snake that bit its own tail
George Bissel	oil pump	brine pump
James Watt	steam engine	tea kettle
Sir Marc Brunel	underwater tunnel	worm tunnel
George de Mestral	velcro	cockleburs sticking in the fur of his dog and his clothing

Inventions and discoveries by analogy (attributed). Based on M. Csikszentmihaly (1996) and Runco (2006).

Associations

On a simpler level than analogies, using associations can lead to interesting ideas. Whether you start simply by writing down whatever comes in mind regarding the topic or use a more strategic solution (e.g. checking the synonyms of central terms in a thesaurus or with Google), associations might break the circle you are running in.

Ask your collection

The best way of solving problems is having the solution before it occurs. If you think 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. idea collection). It might seem like a waste of time to create

There is only one way in which a person acquires a new idea: by the combination or association of two or more ideas he already has into a new juxtaposition in such a manner as to discover a relationship among them of which he was not previously aware.

Francis A. Cartier

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a collection from which you will actually use only a small part, but it is actually a pretty good training to deal with “what if”s.

Forced Relationships

A common technique in courses, usually used in forced scenarios where a fictional problem (e.g. sale of violins went down in a company) should be solved by finding links between the important aspect (e.g. violins) and a (semi-)randomly selected word (e.g. laser pointer). The search for links between two unlike subjects is supposed to generate ideas. While I have my reservations against off-the-job creativity training (forced “fun-time” in an artificial situation with little consequence), the strategy might be useful.

Borrow, Adapt or Steal

This technique from Runco’s book “creativity” is not as dishonest as it sounds. Great discoveries were made by transferring the ideas from one area to another, e.g. Darwin drew upon geology, Watson and Crick upon Linus Pauling’s alpha-keratin protein model. Artist often combine existing styles (e.g. Elvis drew upon Gospel and Country music) or revisit earlier stories (e.g. Shakespeare). Is a reinterpretation still a creative act? I think so, since you do not copy the original 1:1 but add your own ideas, even if the basis or structure might be the same. But if you use this be honest and state your sources to avoid issues of plagiarism.

Inventor	Invention/Discovery	Inspiration
Charles Darwin	evolution	geology
Sigmund Freud	psychoanalysis	neurology/model of medicine
Jean Piaget	cognitive development	biology
James D. Watson & Francis Crick	double-helix model of DNA	Linus Pauling’s structure of the alpha-keratin protein
Elvis Presley	famous music style	gospel/country music
William Shakespeare	famous plays	existing sources and works
Benjamin Franklin	famous quotations	known quotations

Inventions and discoveries by borrowing. Based on M. Csikszentmihaly (1996) and Runco (2006).

Browse the Internet

Sometimes it can help to get inspiration from the largest source of information on earth: the internet. This does not mean that you google for the solution, but that you use it as an inspiration to get ideas. Google for the terms, use image databases or the image search or use flickr. If you are writing a story, flicking through pictures on flickr can give you ideas for characters of stories, or setting, or plots. If you are searching for a motif, reading in Wikipedia might give you associations that lead to interesting shots.

Oblique Strategies

Oblique Strategies is a system that consists of a series of cards. One card is dealt out, the problem is considered in the light of the question on the back of the card.

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It might sound strange but it can actually help to see the problem in a new light.

Unfinished works

Every dissertation, every major project in science raises more questions than it answers. Artists sometimes die without finishing their major works. If idea collections would be publicly available, they also would be a good source of ideas. 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).

Existing works

If you look on the web, there is a lot of fan fiction out there. People who love a series or movie so much that they write stories about the things the main characters could have done different or at all. Especially for beginning writers using an existing story universe can make it easier for you to write a story, since you do not need to create the world and the characters but can focus on the story. You work with established characters, know how they would act and can focus on the plot. In drawing, you can have a look at existing works and “copy” them with your technique or with different tools. In science you can replicate experiments with different methods or operationalizations to see if you come to the same conclusions.

Consider the natural world

Evolution has a long history of trial and error and produced some astonishing solutions. Some great “inventions” were made by looking at the natural world for inspiration or suggestion, e.g. Velcro (Cockleburs sticking to the fur of Mestral’s dog) or the armored vehicle of Leonardo da Vinci (tortoise shell). It is not necessary the biological nature that can be helpful. The name ‘Oz’ of the ‘Wizard of Oz’ is supposed to come from the filing cabinet of its creator Frank Baum (A-N, O-Z) so nature is more than plants and animals.

Have supportive and inspiring experiences

Sometimes all that is needed is a moving experience that fuels up your batteries and provide you with the energy to continue your work. Sometimes, moving experiences lead you to consider new options. If the work is stagnating do something that sweeps you away, be it a visit to the opera, to the theatre or even to your favorite mistress.

Visit an inspirational environment

Sometimes it is hiking, sometimes it is the museum or a trip to the relatives. But there are some environments that one finds stimulating. It not only gives you a break or the time off you need to think about the project, it might provide you with ideas.

Travel

The easiest way to make sure that you have a lot of time and visit an inspirational environment is to travel. Not only will you find stimulating or comfortable places (if you do not detest traveling), traveling itself can be very stimulating and provide you with a valuable shift of perspective. You cannot keep up your routine and are forced to try different things, become more flexible in your actions. Runco mentions that the actual effects of traveling depend on the person: for some it facilitates creativity, for others it brings them down to earth, and for others it is a stressful distraction, i.e. from a creative perspective a waste of time.

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Look at your mistakes

Yes, it hurts. It hurts when you have to look at your mistakes, the failed experiments, the grotesque monstrosities that grey on 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.

The capacity to blunder slightly is the real marvel of DNA. Without this special attribute, we would still be anaerobic bacteria and there would be no music.

Lewis Thomas

Improve the Infrastructure

The infrastructure is extremely important for creativity. Not everyone has the benefit of working in a company that actually gives time off for creative projects, but there are some things you can do to transform the environment into something that supports your creativity, not hinders you. For tips regarding the work space see page 73.

You have the capacity to learn from mistakes. You will learn a lot today.

Unknown

Surround yourself with different people

You do not need to work with different people in teams. It is often enough that you know them and stay in contact with them. 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.

Improve your Tools

The tools you use not only allow you to create creative works, they can also stimulate it. If you ever bought a new computer or 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 come to ideas.

Computer programs

Steve Jobs once said that “computers are bicycles for the mind”. As CEO of Apple he might be biased, but he is right. Computers are incredible tools to help you visualize data, to store and rearrange information. It can serve as external memory and help you to focus on the main points. There are several programs with the aim of helping you to think, e.g. DevonThink, Tinderbox, Gapminder (for data visualization), etc.

Try new versions

Have a look at a new version of the tool you are using — often they allow you to do things you could not do before. This might inspire you to try out new things or things you always wanted to do. For example, the Nikon D3 (or D700) with a fast lens allows you to make photos in low light conditions, something that was much more difficult (or even impossible) before. A new graphic program might allow you to give your images a certain twist while a new program for writing novels might facilitate your work so much that you begin to enjoy it again, because the program deals with an aspect you did not like before and that prevented you from realizing project.

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Learn more about your tools

If you ever saw another person operating the same equipment (e.g. a text processor like Word) but solve a problem with different methods (or not at all), you immediately realize that it is not about the tool, but about the interaction of the tool and the user. Taking a course or asking experts to have a look how they work can give you new capabilities and stimulate your creative work due to a new sense of mastery of the tool and the new options you have. Explore the functions the tool has that you have previously overlooked, what the Icons do that you have not tried before. Find new methods in which you can use the tool. For example, one way to use the Serial Letter function of word is to create a tear-off calendar, since it does not matter for word whether you use it to write letter addresses or dates and quotes on a specifically designed page.

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GETTING HELP

This book is about individual creativity, but this does not mean that you have to work alone. Besides getting inspiration, other people can help you to deal with difficult problems and help you to develop creative ideas. They can help and point you to the things you missed and allow you to use their expertise. Also, you have to verbalize your problem and your ideas so far, which helps you to see it in a different light.

Surround yourself with smart/creative people

You learn a lot from people who are smarter and more creative than you are. They can stimulate you, give you ideas, explain things or serve as an example. Try not to be the smartest ass in the stable, because you are not, not on any subject. Clubs for diverse kinds of art exist in a lot of cities, if there is none where you live, start one or search one on the internet. If you find a forum (or any group), avoid the malcontents and trolls, and try to strike bonds with the few people who are actually interested. You can try to build a virtual community consisting only of people with shared interest. For some areas, there are summer camps (e.g. for students or artists). If you are still in school or at the university, find out if there are programs for scholarships that included meetings with other members. If you are working in science or engineering, try to find the few colleagues who actually love the subject and meet with them, perhaps for dinner once a week or perhaps after work (napkins are great for sketching ideas). There is usually more than one person in any given institution who loves the subject. Find them. If you find a good project you are both interested in, try to tackle it together after work or on a shared vacation. Why would anyone sacrifice their holidays for this? Because it is fun, because you both might gain from the experience or the results (you are certainly motivated to make it work if you use up your holiday for this).

Join a club

You're creative — joint the club ... or a club, which deals with the area you are most creative in. It is easier in school, college and university to find art clubs or people with similar interests (that might respond to a notice), but even for adults larger cities should offer some organized art or academia clubs.

Join a Forum

Distance does not matter in virtual communities that center around forums, but make sure that you really talking with engaged people. There are a lot of mal-

"I remember my father once told me that nature is very powerful, but sometimes even nature needs help."

"Shadowrun - Who Hunts The Hunter"

"It is wonderful to work in an environment with a lot of smart people. It challenges you to think and work on a different level. If you play with better players, you learn a lot: perspectives, intellectual arguments, new ways of thinking about things."

Marissa Mayer, Vice-President of Search Product and User Experience at Google

"The people around you can make or break you. I have wasted too many precious years in the company of idiots who tried to keep me down."

Unknown

The web does this amazing thing. There's an instant community. The isolated wacko can become part of this international movement.

Michael Bellesiles, Associate Professor of History

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contents and trolls (people who provoke others just for the fun they have in doing it) who can spoil the fun. Get to know the really interested and strike bonds with them.

Build a real virtual community

Virtual communities of committed people (e.g. recruited from a forum) might give people a continuous boost of energy. The distances does not matter if you see them in (video) chat every week and since you know them there is less likelihood of trolls.

Visit a summer camp

No luck in your class? Visit a summer camp. Some organizations like “Deutsche Schülerakademie” [german pupil academy] or Mensa (an international high IQ society) offer camps where talented and intelligent children can meet and learn in a stimulating environment. For adult academicians there are some conferences which offer tutorials or workshops, either as part of or pre/post of the conference program.

Visit a conference

Visiting a conference can be a very stimulating event. All these people, burning to learn and talk about their research. Many young researchers return home highly motivated to start new lines of research. Unfortunately, most of the time it does not last very long. Make sure you take something with you from the conference. A good idea or a shared research project and keep up the contact when you return home.

Look beyond the boundaries of your department

Finding a colleague in an other department, who is as interested in research as you are, might lead to a creative boost. Not only does he differ in background and area of expertise, which leads to all the benefits of work in heterogenous groups, you probably meet him infrequently or rarely (e.g. once a week for dinner) which leads to rapid information exchange and the possibility of stumbling upon an interesting research question. As said, napkins are great for sketching ideas.

Schedule a holiday to work on a specific topic

There is no need to wait for conferences to meet your colleagues and tackle interesting ideas. If you plan on addressing a specific problem with the help of your colleagues, schedule a holiday and use it to do so. Make sure everyone understands that while this is a holiday you are planning to work on the specific topic. Nevertheless plan some time for relaxing activities and sight-seeing, not only to help you regain your energy but also to do something different to get the creativity going.

Schedule retreats with creative colleagues

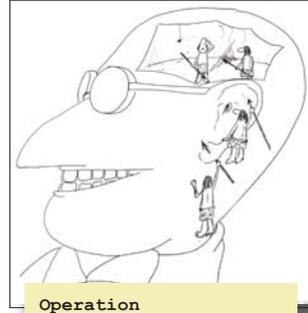
German computer scientists are known to meet at Schloss Dagstuhl (Leibniz Center for Informatics) to work on specific problems. Away from the daily business and surrounded with their colleagues they can work quite effectively. Since they are regular guests they already know all there is to know about their area of the castle (which is not much) so the distractions by it are non-existent (as opposed to minimal if you did not know it). It also has one of the best-sorted libraries of computer science in Germany and a very well sorted and stocked wine cellar.

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Brainstorming

Brainstorming is a favorite tactic everyone seems to know about. Unfortunately, it is not a magic bullet. Some rules of brainstorming, e.g. no criticism, are unnatural (even if a person is trying not to criticize, if you know the person you can predict how this person reacts). People often fear ridicule because unlike the artificial off-the-job creativity training where this technique can be a lot of fun, you see your colleagues again and they will remember if you uttered any wacky ideas. It also cannot be used as a substitute for knowledge, yet is often used where the persons are neither experts nor do know all the details (“It’s o.k., we’re producing ideas, not stating facts.” *Yeah, right.*). If used alone it is like sitting down and asking the mind to produce ideas on demand (“O.k., I am here, now where are the ideas.”) which often paralyzes the brain. In groups it deludes individual work, when others capture your ideas and state them again with slightly different words, which might impede the contributions of creative individuals. While brainstorming can work (although studies show that individuals producing ideas alone results more and better ideas) it is often over-estimated. Unfortunately, it is fun to teach and learn. Modifications of brainstorming, e.g. Delphi-Method are better but also more effortful. They demand individual knowledge and ideas and track where the ideas come from.

“I don’t do brainstorming — it’s my brain, I just knock and they let me in.”
Henry J. Wilcoxon-Ash



Operation
Brainstorm
Status
Mission Accomplished

If you are interested in using Brainstorming, here are the rules by Osborne (1963):

1. Criticism is ruled out. Adverse judgement of ideas must be withheld until later.
2. “Freewheeling” is welcomed. The wilder the idea, the better; it is easier to tame down than to think up.
3. Quantity is wanted. The greater the number of ideas, the more the likelihood of useful ideas.
4. Combinations and improvements are sought. In addition to contributing ideas of their own, participants should suggest how ideas of others can be turned into better ideas; or how two or more ideas can be joined into still another idea.

Why Brainstorming does not work

Runco points to studies which show that individuals working alone produce superior ideas in terms of fluency, originality and feasibility. If individuals are working alone there is not production loss, no performance matching with less productive group members (who drag down the performance), no evaluation apprehension (fear reactions by other members of the group) and no social loafing (letting others do the work).

However, brainstorming is very popular because it seems so plausible that it works, it leads to a feeling of competence even for uncreative participants and because it is easy to do.

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Delphi-Method

The Delphi-Method is similar to brainstorming in the sense that multiple people are working together on a given problem, but the Delphi-Method does not have the shortcomings of brainstorming.

The participants are chosen based on their *expertise* for the topic at hand. They do not know the identity of the other participants until the end of the process (if at all). A panel director gives the participants the questions (e.g. the problem to be solved), on paper or digital, and collects the individual answers. Irrelevant information is deleted, as is any information that would hint the identity of the expert. The answers are sorted and redistributed to the experts, who then comment on it and develop the ideas further. The answers are again collected, edited (e.g. critique that is not constructive is deleted), sorted and redistributed. The process repeats itself until a consensus is reached.

Since the experts work independently from each other, social loafing (doing nothing and letting others work) is not possible. Experts have more time to think about the problem and their answers than during a brainstorming session. They can also review material or contact other people. Since the own position or idea is not publicly associated with the own person, earlier statements can be revised at any time. People do not defend their idea due to public commitment to it. They are also free to express their opinions and critique others, independent of the status of the person and without the fear of repercussions or evaluation apprehension. The focus is on the problem and the ideas to solve it.

The Delphi-Method takes more time than brainstorming, but it can be supported by technology and if done correctly, it should deliver superior results.

Work in heterogenous teams

When people are left to their own devices, they usually surround themselves with people who are similar. There is less conflict involved, their own opinions are supported by others and they feel at ease. However, only people who are different from you can offer you new perspectives. In the worst case, you might get good arguments why you do something a certain way. In the best, their perspective will enhance your work. However heterogeneous your team may be, make sure that each member is equally valued as a human being — and still able to communicate with each other.

Expert Opinion

There are impressive mistakes experts made in predicting the future, e.g. regarding drilling for oil, germs, telephone and microchips, audio in movies, faster-than-light-travel, etc. These mistakes are funny and we have a good laugh at the experts who, with all they knowledge, were wrong anyway. Experts need to organize knowledge, so they need to make assumptions which might be wrong. Real or

imagined knowledge can lead to narrow-mindedness due to overconfidence and imagination of results rather than actual experimentation or thinking. But more often than not, experts are right. We notice the exceptions and talk about them, but they would not be so mentionable and interesting if they were not exceptions. So in general, an expert might show you something you missed, an error in though or

Always listen to experts. They'll tell you what can't be done, and why. Then do it.

Excerpt from the Notebooks of Lazarus Long in "Time Enough For Love" by Robert A. Heinlein

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calculation, an aspect that is not represented enough or a technique you could use.

Get A Partner

A work partner who also invests in the project, might bring along a useful set of skills and ideas that might help your project. You share the results, but a partner might be more likely than an outsider to help you and invest time and effort. Be careful however, a partner can also drag you down, so choose your partner carefully.

I have friends in overalls whose friendship I would not swap for the favor of the kings of the world.

Thomas Alva Edison

Talk to the ones who work at the basis

If you are working in R&D in a company, talk to the people who actually produce the units. Talk to the sales persons who actually meet the customer. These people can tell you a lot about your products, from a practical and the customer perspective.

Non-Opinion/Non-Knowledge

Help does not always need to have the required knowledge or be creative themselves. If you have to tell a lay person what your problem is, you have to take the idea from the often highly abstract way of thinking and break it down to a level that anyone can understand. This change of perspective can be very helpful. Explaining an idea to someone else will bring a lot of implicit assumptions to the open, show a lot of contradictions that you can overcome early on.

Argue

There is nothing wrong with a good argument. It can be very stimulating to fight for ideas, hear different arguments and proposals. As long as you keep the respect for the other person and fight fair, arguments can lead to the best solution.

Play advocate switching with a partner

The Wright Brothers used this technique a lot. When presented with a problem, the first brother would argue for solution A, the other for solution B. Each brother would fight for his solution but during the discussion they would suddenly switch sides. Now the first brother would defend B, the second A. Some time later they would switch sides again and again. This has the huge advantage, that each person can find arguments for all ideas and that he is not adopting a particular idea. The argument for a solution does not become a matter of pride (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.

"He's in favor of school vouchers, Dad."

"No, Mallory. He's really not."

"Yes, he is."

"No, he's not."

"I read the position paper."

"It's opposition prep."

"Opposition prep?"

"When we're gearing up for a debate, we have the smart guys take the other side."

Mallory and Leo in The West Wing: "Six Meetings Before Lunch"

"One man's brain plus one other will produce one half as many ideas as one man would have produced alone. These two plus two more will produce half again as many ideas. These four plus four more begin to represent a creative meeting, and the ratio changes to one quarter as many ..."

Anthony Chevins

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Be careful of group creativity

While the right help can be very effective for producing ideas, it can also bring a creative project to a stand still. Social loafers (people who let others work), people who are not informed (but offer suggestions anyway or ask questions the whole time) and people who want to drag out the meeting as long as possible can sink your project. If you chose to tackle a problem with the help of others, be very, very selective in the kind of persons you ask for help.

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DISTANCE STRATEGIES

Sometimes the distance to the problem is the problem.

Take a step back

If you are really trying to solve a problem, one of the most difficult things to do is taking a step back. Sometimes you want to force the issue and think if you only try hard enough you will make it. Often, however, you can reach your goal much easier (or at all) when you take a step back from the issue.

Do something different

Occupy yourself with something different and come back to it at a later time. You can use any of the ways to get incubation time (see page 95).

Hit the books/drawing board

Going back to an earlier phase or version can help. Try to take a different direction to avoid getting stuck at the same place.

Laugh about it

You know that you have a serious problem when you cannot laugh about the matter anymore. But showing humor can actually help you to get some emotional distance from the problem, so that you can try to solve it. Yes, it is very bitter when the company is nearing bankruptcy or when five people are trapped 60m below the earth in a cave-in, but when the emotions are derailing every thought, a joke can help you to get creative ideas (or get you ostracized or fired).

Work hard

This is the opposite of taking a step back. Sometimes it pays to continue working on a project, even if you think you have no creative ideas. If you think that you stop working as an easy option, because work is boring at the moment, make a conscious effort to stay at the ball. Remember that people who are paid for their creativity do not have the luxury either to say "I got nothing." or "I don't feel creative today, I rather stay in bed.".

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CHANGE OF OPTIONS STRATEGIES

The options you have in a given situation can also influence whether you have a creative idea or not.

Reduce the options

Creativity seems to be about freedom. However, constraints can immensely help creativity.

Constrain your creative work

A blank page is a terrible situation. You have all the options, and consequently, you do not know what to do. Constrain your options, they narrow down the focus to a point where the ideas come. Draw some random lines and see how they work, start a few sentences and let them guide you until you come into flow (then you will probably have to erase the beginning, but you are left with good work and you can rewrite bad parts). Sometimes it can help to reduce the material you have, to focus on a selection of the things that are available to you. Creative is often associated with complete freedom but freedom often brings paralysis. Constraints bring focus and ingenious solutions. To be willing to reduce choice to find a creative solution is not something that comes naturally, but it is extremely powerful. In real life, remittance work gives you the necessary constraints to work with and be creative, in private, you have to set the constraints yourself.

Constrain your field of activity

Ask yourself what you want to do, or say. What 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?

Enlarge the options

Besides constraining the options, enlarging them can also be helpful.

Deviate from reality

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.

Change your Materials & Methods

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

I asked Ring Lardner the other day how he writes his short stories, and he said he wrote a few widely separated words or phrases on a piece of paper and then went back and filled in the spaces.

Harold Ross

"Possibly nothing at all; the overflow of my brain would probably, in a state of freedom, have evaporated in a thousand follies; misfortune is needed to bring to light the treasures of the human intellect. Compression is needed to explode gunpowder. Captivity has brought my mental faculties to a focus; and you are well aware that from the collision of clouds electricity is produced — from electricity, lightning, from lightning, illumination."

The Abbe, when asked what he would have achieved if he had not been confined to a cell for decades, in "The Count of Monte Cristo" by Alexandre Dumas

Do not quench your inspiration and your imagination; do not become the slave of your model.

Vincent Van Gogh

No great artist ever sees things as they really are. If he did, he would cease to be an artist.

Oscar Wilde

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(e.g. HDR photography), details or display information differently. Methods from other disciplines can help greatly, even if they are not accepted by the field of the domain, they can at least stimulate ideas.

“Take the phasers off stun.
No more Mr. Nice Guy.”
*Benjamin Sisko in Star Trek
DS9: “Playing God”*

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CHANGING YOURSELF STRATEGIES

You can try to change yourself when you want to generate ideas, which is easier and more often done than it first appears.

Get in a positive mood

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.

Use your mood

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 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 task.

Dream

At least in some stories ideas come in dreams. 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 (see page 173). 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.

Use Lucid Dreams

Some people do not only remember that they dream, they do notice that they are dreaming while they are dreaming. Most people are so surprised if this (accidentally) happens that they wake up. With training, however, you can learn to stay calm — and then something wonderful happens: You can take control of your dreams. Literally. Lucid dreams, as these dreams are called, enable you to change the dream to your liking, allowing you to try out ideas 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. Sounds like magic, but it works for some people. There is information about lucid dreaming on the web (e.g. <http://www.lucidipedia.com>). Common strategies include remembering ones 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

He'd heard of this sort of thing. Great inventions sometimes did arise from dreams and daydreams. Didn't Hepzibah Whitlow have the idea of the adjustable pendulum clock as a result of his work as the public hangman? Didn't Wilframe Balderton always say that the idea for the Fish Tail Escapement came after he'd eaten too much lobster?

Yes, it had all been so clear in the dream. By daylight, it needed a bit more work. *"The Thief of Time" by Terry Pratchett*

To sleep, perhaps even dream.
Unknown

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your alarm clock on your wristwatch/cellphone or a vibrating wrist watch). A reality check is simply that you move your eyes quickly (something which does not work as well in dreams) or touch 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.

Drugs

A typical association of creative people, especially writers, is their affinity to drugs, especially alcohol. Besides the fact that some used drugs to *drown their imagination* rather than to fire it up, because they cannot bear what comes naturally to them, drugs are neither prerequisite for creativity nor do they automatically produce ideas. While they might loosen inhibitions (if this is your problem) and produce links between aspects that are typically unrelated (and thus provide ideas), they have several disadvantages: they damage your health, they might (will) become addictive (i.e. compete for your time and resources and force you to be less creative), and while the ideas might be original most of them fail a quality check (if you manage to write them down at all). So unless you search the experience for itself, I would not recommend drugs for creativity.

I don't do drugs. I am drugs.
Salvador Dali

I hate to advocate drugs, alcohol, violence, or insanity to anyone, but they've always worked for me.
Hunter S. Thompson

Stay awake for a long time

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 or they images that stimulate them. 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 away for more than 24 hours.

When you have insomnia, you're never really asleep, and you're never really awake.
Fight Club

Controlled Madness

If you have a streak of madness in you, try to follow it for a while. Remember that being mad is not enough, since the goal is not to be original (that is easy), but that others attribute creativity to your work. To achieve this, the work must not only be original but also be good for something (cp. page 25).

And those who were seen dancing were thought to be insane by those who could not hear the music.
Friedrich Wilhelm Nietzsche

"Don't be afraid of your darker side, have fun with it."
Troi to Riker in Star Trek TNG: "Frame of Mind"

Keep an untidy mind

Sherlock Holmes (i.e. Sir Arthur Conan Doyle) once said that the reason for his sharp intellect was a well furnished attic (i.e. his memory where he only stored things that were of interest for his work). While the metaphor for memory is false (the brain is not limited like an attic, on the contrary, more knowledge allows the storage of more knowledge), one could suppose that

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the opposite would work as well. 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. If you have wide interest you have a wide selection of odd bits of information that you can combine. Be interested in the world around you, even if it has nothing to do with your project at the moment.

If a cluttered desk signs a cluttered mind, of what, then, is an empty desk a sign?

Albert Einstein

Keep a paracosmos

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. It is a good exercise for creativity and you might transfer ideas from the imaginary world into the real world.

"Every now and then I go into my own little world but its ok ... they know me there"

Joel Hodgeson

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JUST DO IT STRATEGIES

Even if you do not feel “inspired” or do not have a good idea, sometimes the best strategy is simply to do it, to start working and see where it end.

Produce a lot

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 it out 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 lead to new and better 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.

“Just have lots of ideas and throw away the bad ones.”

Linus Pauling

Experiment

One way to produce a lot is to experiment. Test different alternatives, gather data, make sketches. Picasso, for example, did over 20,000 sketches, even on what would later become other drawings. You do not see the experiments and from the perspective of the later product they seem like a waste of time. But they force you to really see what happens instead of trusting your (even with unmatched expertise often fallible) assumptions and imagination. Experiment, just try different options, introduce some variance. In drawing you can often photocopy your work or make a photo and print it, its even easier if you work on a computer (just save the file under a different filename when you experiment or work with layers). In science experiments are effortful, but there is no substitute for real data. The Wright Brothers for example collected huge amounts of data with their wind channel before deciding on a design.

“I have not failed. I've just found 10,000 ways that won't work.”

Thomas Alva Edison

Remark: Given the ability science has to destroy this planet, if you are working with powerful technology please do not blindly experiment. Get your data elsewhere (e.g. from natural sources), especially if you are working with supercolliders or fusion.

Deviation Amplification

Runco mentions a tactic that requires you to reduce the idea to the key concept and then explore different alternatives. These alternatives (deviations) should be explored until you are sure that you found the best solution.

Try it

Often trying to find a suitable tactic prevents you from actually doing it, trying it out. This becomes a serious problem if you think you have your reputation to protect, e.g. because you only did successful project so far (or simply never having set fire to the laboratory). Do not be intimidated by your past suc-

Research is what I'm doing when I don't know what I'm doing.

Wernher Von Braun

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cesses or your untarnished record. Just try it. You have more information afterwards.

"If I had thought about it, I wouldn't have done the experiment. The literature was full of examples that said you can't do this."
Spencer Silver on the work that led to the unique adhesives for 3-M "Post-It" Notepads

NO PREFERENCES?

There are a lot of techniques you can choose from — and you can always find your own. I have tried not to give a preferences while describing these techniques. Does that mean I have no preferences? No, I have found my own preferences, but it is up to you to find your own.

Finding Problems

Another instance where creativity is needed is, if you want to find a problem in the first place. Often this is more difficult than solving an existing problem.

"I don't go looking for trouble. Trouble usually finds me."

Harry Potter

STRATEGIES TO FIND PROBLEMS

If you are not working on a specific project but have problems with creativity in general, e.g. feeling uncreative and burned-out, consider the following strategies:

Change the Domain

One way to rekindle the creativity is to change the domain. You will have to learn it first, but your previous background might help you there. You might be slower in learning, but you have knowledge and experience, and some of this might be compatible with the new domain. Usually people learn only one domain (at least in science) and few have expert level experience in other domains. Your perspective could lead to good ideas in the new domain.

"If I have no more ideas, I'll change the domain."

Friedrich Boecking, one of the winner of the German future prize

Keep in mind however, that this is a major career move and should be well thought out. You will be older than your colleagues, but know less then 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 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.

Consider the Future

You can try to consider what kind of future you want and how to influence the present to realize it. Think about the things we do today that are not perfect (there no shortage of) and how we could improve upon 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).

Where, why and how do you want to live tomorrow?

Unknown

Why do we use inefficient atomic steam engines to generate electricity?

Unknown

Look at the past

Methods, knowledge and resources change. You can look at the past to find works that could not be realized as they should with yesterdays methods, and try to use todays methods for it. Look for projects that artists have abandoned and try to adapt them to todays taste. In science, research often had questions that could not be solved with yesterdays methods. Perhaps some of these questions remained unanswered but could be solved with todays technology.

A science is any discipline in which the fool of this generation can go beyond the point reached by the genius of the last generation.

Max Gluckman

Continue where others have failed

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

Finding Problems

artists died before their time (i.e. before their work was finished).

Look at the world

The people around you have probably enough problems they would like to have solved. If you search a problem you can tackle, ask them. Look at newspapers, they are full of problems.

“As a circle of light increases, so does the circumference of darkness surrounding it.”
Albert Einstein

Find a need

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).

I don't think necessity is the mother of invention – invention, in my opinion, arises directly from idleness, possibly also from laziness. To save oneself trouble.
An Autobiography by Agatha Christie, 1977

Customers

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. There are a lot of books available for entrepreneurship that will tell you how to make money. Since this is neither my area of expertise nor my aim, I suggest you consult them for further instructions.

Think Different

Thanks Apple Inc. for that one. Look at things the society takes for granted and reject it. Try to improve it, e.g. society relies heavily on cars (and this causes problems), so how could this be solved differently? Which functions cars provide? What is important in a car? What other ways are there to solve the functions without the problems?

Take part in a contest

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, since you have judges who will see a lot of good work and consequently have a lot of experience to judge your work. However, make sure you know and like the contest rules — some organizations hold contests got 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.

Capturing Ideas

In this chapter we deal with an important step in creativity that is often neglected: Capturing ideas. The word “capturing” was not used for aesthetic reasons. Not only can ideas be very hard to grasp, they can also be captured by different media. It does not matter if you write them down with paper and pencil, type them into your blog or tell them to your voice recorder. What matters is that you get them down fast. In the following chapter, we have a look at the reasons to capture ideas (page 131), how it should be done (page 135), how to evaluate different capturing methods (page 141) and the quality of tools to capture ideas (page 143). We will also look at missed ideas (page 145). The most practical part in this chapter are concrete ways to capture ideas (page 146) and capturing ideas scenarios (page 168), but in between we also look at worst cases in capturing ideas (page 162), what you can do when you “have nothing to capture” (page 164), and the possible disturbance of capturing ideas by the presence of other people (page 166).

Why capture ideas?

Not everyone captures ideas (e.g. write them down, record them), some scoff at the very idea of it. What are the reasons against capturing ideas and why should you do it anyway?

TO CAPTURE OR NOT TO CAPTURE ...

Why people do not capture ideas

So far I encountered the following reasons, why people do not capture their ideas.

Too much effort

Argument: "That's too much work!"

Counterargument: Infrastructure can reduce the amount of work and effort necessary. Training reduces felt effort.

Current mood/energy levels determine behavior

Argument: "I am too tired and it's not that good anyway."

Counterargument: Emotional reason. Superficial evaluation of idea. Bad ideas can be and often are the basis of better ideas.

Stigma of a snoop

Argument: "What will people think of me when I take out a notepad and write things down."

Counterargument: There are inconspicuous ways to capture ideas. What is more important? Your reputation of a bore or an idea that could lead to discovery, fun, money or power? Value your ideas more than the crowd around you, that does not know what is going on. Value and fight for your ideas from the beginning.

Others can read it

Argument: "Thoughts are free, but I get into serious trouble if I write what I think."

Counterargument: Free thoughts are free to get lost. Writings can be protected against unintentional reading.

Fear of showing signs of a bad memory/unprofessionalism

Argument: "This is my job, I should be able to remember this."

Counterargument: Even professionals jot down ideas (e.g. Helmut Newton, Robert A. Heinlein). It is hard to remember ideas, if you have more than one. Your memory is not bad, you just have more ideas than others to remember.

Trust in own memory

Argument: "I remember them anyway."

Counterargument: Untested hypothesis (one would at least need to remember that one had an idea). Nobody has a perfect memory especially over longer time frames.

RULE NR. 1 IN CREATIVITY

Get It Down Fast!

(I found this rule on the net after coming to the same conclusion. So much for parallel creativity.)

Write down the thoughts of the moment. Those that come unsought for are commonly the most valuable.

Francis Bacon

"I had a very good friend who was in the Stasi, he did the same thing."

A colleague to me while I was writing down a book idea (wait, he had a very good friend who was Stasi?)

"I do not have a bad memory, I just have a lot of ideas."

Unknown

Why capture ideas?

Memory can be there but not available for recall.

Unconscious quality control

Argument: “Only a remembered idea is a good idea.”

Counterargument: Untested hypothesis. Even bad ideas can be and often are the basis of good ideas.

Errors in memory improve the idea

Argument: “Remembering improves the idea.”

Counterargument: Remembering ideas without having written them down is like walking the line without a safety net — they can be lost. You do not need to look at your notes, but it is reassuring that you can.

Ideas are an ubiquitous resource

Argument: “There are always more ideas.”

Counterargument: Might vary in quality. Pooling of ideas is necessary for larger projects (see page 61). Possible lack of availability when there is time for a creative project. Solutions may get delayed.

Why you should write down your ideas

Capturing ideas on the fly helps you in a number of ways:

Nothing gets lost

Creative ideas are fleeting, they might be gone in a second, especially if new ideas come or an external disturbance occurs (e.g. a conversation occupies your full attention).

It frees up resources

You can only remember a limited number of ideas at the same time, so additional ideas might get lost or prevented.

It can stimulate more and better ideas

Written down ideas can be the starting point for further and better ideas (e.g. at a later time).

You can exercise conscious and deliberate quality control

Not influenced by current mood or energy levels.

You can cartograph the river of thoughts

Prevent yourself from running in circles, able to take a different direction at a previous step. You see where you are going and where things are still uncharted.

CAPTURE YOUR IDEAS

It will help you to

- remember them
- make them available when you need them
- flesh them out
- stimulate new ideas

TRY IT

Capture them 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
- you think it is worth the effort

Why capture ideas?

SOME THINGS TO KEEP IN MIND WHEN IT COMES TO CAPTURING IDEAS

You should remember the following points when it comes to planing how you capture ideas.

Find out the scope of your creative projects

Do you have projects that need a lot of ideas?

Did you shrink away from projects that were too large, too unwieldy, to big?

Perhaps you had the necessary ideas, but you did not capture them.

I started carrying a note-pad because I thought, or at least I think now, if I have these ideas and they come whenever they want to, whether I like the moment or not, the least I can do is write them down.

Daniel Wessel

Security, not Stimulation

A working capturing system should allow you to relax and have ideas, because you know that you can capture them when you need to. It should not be stared at in a “Oh, white sheet of paper, inspire me.” manner. It is a safety net to capture your ideas *when* they occur, not a flag to *make them occur*.

Doesn't it look silly if you walk around writing?

Yes, it does, doesn't it? And what is more, it costs effort to do this. But what is the alternative? I mean, look at commuter trains in the morning. You never find more depressing looking, more blank looking, more people right out of a zombi-movie (without the blood-frenzy energy) than there and then. If I have the choice to look silly because I write down my ideas and spend most of my time in my own paracosmos, I am happily doing this. Sure, it hurts when others (try to) make fun but on the other hand, you get insight in their character, when they laugh like hyenas, but sadly unable to grasp the situation.

“I'm rather creative than attractive or liked.”

Unknown

Focus on the capturing

If you feel anxious about writing down ideas in public and cannot use a cellphone (strangely enough, it is totally acceptable to write SMS that then can be saved as a draft to store the idea), concentrate on your writing. One person asked me whether I think people look strangely at me when I walk through the city writing while walking. I honestly had no idea. For this to notice I would have to closely look at them, and to be honest, my notes were more important than other peoples faces.

Write it down before you enter a new setting

If you have an idea, write it down before you enter a new setting. E.g. if you have an idea during your drive home, write it down in the car, before you leave it and enter your home. Otherwise the immediate demands of the new setting (*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?*) or your established behavior (e.g. running on “autopilot” and doing the usual tasks like starting the computer or logging in) will probably displace your idea. The same goes for entering the office or even sitting down in front of the computer.

Why capture ideas?

For a few pages more

A captured idea might give you a few pages more in the book you are writing, a nice twist for a dialogue or a nuance for a side character. It might not be much, but over time, it accumulates — and this is what makes your idea grow into a full scale project (see collecting ideas in chapter 5).

If you record everything
you produce nothing.
Unknown

Pitfall: Capturing Everything, Doing Nothing

Keep in mind that capturing your ideas is just the first (albeit an important) step. Unfortunately, some people do only capture their ideas, nothing more. They always have new ideas, but they do not try to implement a single of them. In the end, they are doing nothing else, just stockpiling a lot of material that is useless in the end. Make sure that you also do the next steps: collecting (i.e. structuring, enlarging, enhancing, restructuring them) and realizing the ideas. It is easy (and not creative) to have ideas. To be really creative, however, you also have to make (*create!*) something out of these ideas.

At times you will find that in the process of realizing an idea you get additional ideas what could be done, either to improve the current idea or for new ones. It's great to have these ideas, but if you have already decided to implement an idea, do not include them, but write them down for a second design you can try later. Nobody is forcing you to discard ideas — they still might be realized, but not now, otherwise you will never realize anything. The *feature freak* is a related problem, addition idea (feature) after feature until the whole project cannot be realized (or used) at all. Some people might even have the problem that they want to record everything, because everything could be used as an inspiration. But ask yourself — will you ever have the time to look through the data and find the inspiration again? Select, aggregate, build up the ideas on higher levels, otherwise you'll be like the person who developed Xanadu (the software) and who tried to record anything and was buried beneath all the data.

How to capture ideas

Capturing ideas on a regular basis is not easy. It takes time until it becomes a habit. There are many reasons why you do not want to capture an idea in a given moment: you do not want to interrupt what you are doing, you have nothing to write nearby, you are in a public place, and much more.

We first take a look how you should capture your ideas before looking at ways to make it easier for you to capture your ideas.

HOW YOU SHOULD CAPTURE YOUR IDEAS

Your goal should be to capture your ideas, no matter how. It is not about how good it looks (neither on paper nor while doing it), it is about how many ideas you get vs. how many you miss.

The following rules show what is important in capturing ideas:

1. Immediately

Ideas are fleeting. If you ever had an idea and thought: “That’s a great idea, I’ll just do this and then I’ll write it down ...” you will probably know that some ideas just are fucking gone when you wanted to write them down later (if you remembered having the idea at all). *Gone, vanished, lost without a trace.* For this reason you must get them down immediately. Beware of a change in setting — if you had an idea while walking home, write it down before you enter your home. The change of setting usually demands a lot of attention (for checking your surroundings, greeting family, friends, pets, picking up the mail, etc.) which will — in most cases — kick the whole or parts of the idea out of your mind. This even means that you should make quick notes when you have a new idea even while you are writing down a previous idea. Otherwise you concentrate on writing down the current idea (of which you have already noted enough to remember it) and forget the new idea in the meantime.

IDEAS ARE FLEETING

Ideas are fleeting and disturbances from others can happen anytime. So get them down as fast as possible.

2. Always

So, your mind produces ideas, reinforce this. Why should it generate ideas if you do not record them? It is a waste of time, of energy. You say to yourself: “I might have an idea, but I value it so little that I don’t even record it.” While not all ideas might be great, do not devalue them too quickly. Record them consequently, sort them, create links between the ideas. If you are doing research and you have an idea while reading an article or conducting an experiment, jot it down, perhaps more will come later on. Recording is difficult if you are working at the time or in conditions where ideas float freely (e.g. in the middle of the night, in the bathtub, in a relaxing atmosphere), but the motivation to actually record them is extremely low. Train yourself to always record the ideas, no matter how tired you are, how comfortable or how occupied. Remember that this requires you to have something to capture your ideas with you at all times. You can delegate most of this to the

KEEP BARRIERS LOW

The reason why so many ideas get lost is, that it takes too much effort to capture them. You have to find your own ways to capture ideas, that are fast, (almost) effortless and easy to use for you in the current situation.

How to capture ideas

infrastructure (see page 71, page 139, and beginning from page 146).

3. Fast

No matter if you use a notepad, a computer or a recording device, you have to be faster in capturing the essence of the ideas than in generating and developing them. People usually think faster than they can speak or write, so a verbal transcript of your ideas might not be possible. The point is to get the ideas out of your mind to make room for new ideas. If you are hanging onto a thought and desperately trying to remember it, you cannot generate new ideas. Once you have recorded it, you can forget it, or better, develop the thought further. But once you are slower than the new ideas, the process stops like a traffic jam, so get the keywords to remember the idea down as fast as you can. The speed needed to capture ideas is a strong argument for paper because most people can jot down ideas faster than they can write it on the virtual keyboard of a PDA or smartphone (yes, a full fledged keyboard is faster, but rarely available).

4. Effortless

One important point is that capturing an idea should be as effortless as possible. It is difficult enough to get something to record in the first place and interrupt what you are doing to capture your idea. If you have to wait for five minutes until your computer is booted or you have to walk to your desk to get your journal, you are not making your task any easier. Invest some time in finding out the easiest way for you to capture your ideas. There are different ways described from page 168 onward choose from.

5. Write now, sort later

Organizing ideas is important. The whole book is about that. But while you are jotting down your ideas, don't mind the sorting. Who cares if the idea for a new negligee is written right beside a funeral arrangement? The ideas are transferred later to an other kind of media anyway. Do not waste your time with trying to find the right place for the idea beforehand, you will only lose the idea (*"Where should I put ... what?"*). Write now and save the sorting for later, when you know how the idea looks like and where it belongs.

6. Explore the idea if you like, even if the project does not seem immediately viable

This point goes back to Barbara Sher's "Refuse to Choose" where she talks about her "idea journal" and that she uses it to flesh out ideas even if they do not seem to be particularly viable at the moment. If you have fun while exploring the idea, use this particular reinforcement of your creativity. If you started with a few bad ideas that ended up in brilliant ideas, you will not so easily discard bad ones in the

"Sometimes when I'm talking, my words can't keep up with my thoughts. I wonder why we think faster than we speak."

"Probably so we can think twice."

Calvin and Hobbes in "Calvin & Hobbes" by Bill Watterson

CAPTURE WITHOUT INTERRUPTING WHAT YOU DO

The best way to capture ideas is to do it in a way that provides no interruption to what you were previously doing. If you are walking, write while walking. If you are making notes while learning, simply write the idea to the notes, even if it has nothing to do with them — just mark it noticeable.

BE SURE TO TRANSFER IT LATER

Especially if you are making notes not in your capturing tool but in what is currently available, make sure that you transfer it to your collection or its inbox (see page 187) as soon as possible.

How to capture ideas

future.

7. Use simple, flexible methods & techniques

For capturing ideas, a notepad and a pencil is much better in most cases than a program on the computer. Not only is it available faster and without costing too much concentration (pressing buttons and searching for the program), it is also more flexible (you can easily write anything (including musical notes), sketch, draw, etc.) and it is not so damn perfect. A computer is made for precision, not for quick random sketches and scribbles. The perfection of the computer slows you down and forces you to display your idea on a level of sophistication that the idea might not be ready for.

Unless you are sitting in front of the computer and only want to capture text, use a real paper notepad. Remember: The goal is to capture the idea, the transfer to the idea collection comes later.

8. Make sure you understand it later

Nothing is worse than investing the effort to capture an idea and then not being able to understand them later. Not only do you lose the idea, you will either be left with the nagging feeling that you lost something precious or it will undermine your attitude to write down your ideas in the future. So look at the captured idea — is your handwriting easily readable? Do you have written down all the necessary information? Is the context clear when you see it later? It only takes a few seconds to provide an idea with the necessary context information: What is the idea for? Which project (adding “@Project_name” serves very well)? What are the next steps?

BASIS RULES FOR CAPTURING IDEAS

1. Immediately: Get them down fast.
2. Always write them down.
3. Fast
4. Effortless: Keep the barriers low.
5. Write now, sort later
6. Explore the idea (even bad ones)
7. Flexibility: Use simple, flexible methods and techniques.
8. Make sure you understand it later when you are in a different situation (readability and context).

How to capture ideas

FACTORS DETERMINING IF AN IDEA GETS CAPTURED

The following factors determine if an idea gets captured:

Objective Costs of the Medium

Example: Using an expensive notebook vs. using a cheap notepad.

Subjective Costs of the Medium

Example: Using a blank and perfect notebook for the first time vs. using a half-used cheap notepad.

Social Costs

Example: Being in a group situation where other people look strangely at you when you wipe out your notepad and jot down an idea vs. being alone in the bathroom.

Physical Costs

Example: Lying in bed with eyes closed nearly asleep vs. typing at a computer anyway.

Specific Demands of the Environment

Example: Time pressure or high demands on attention vs. nothing to do.

Specific Value of the Idea

Example: Idea highly relevant for current work vs. idea not usable at the time.

General Value of Ideas

Example: Having a lot of ideas all the time vs. being in a idea drought.

Available tools to capture the idea

Example: Sitting in front of the computer vs. walking along a nudity beach.

Considering these factors can help you to choose methods that will increase the likelihood that you capture your ideas.

How to capture ideas

INCREASE THE CAPTURE RATE OF IDEAS

The following strategies can help you to capture more of your ideas:

Keep something to capture with you at all times

Keeping your favorite method of capturing ideas with you (e.g. a notepad and a good pen) will not only allow you to capture ideas (more easily) in the first place, but also remind you of doing so. Nothing is easier than to say “ah, I have nothing to write with me anyway” to discard an idea. *Don't*. Make a conscious effort to capture your ideas and take something to do so with you at all times.

Get the right attitude

Value your ideas. Even if you think they come again or you remember them later, capture them. After a few weeks, try to remember which ideas you did have and then look them up. Did you remember each and every one? If so, congratulations, you have a good memory. Now try a year, or two. Did you miss some good ideas? Imagine if you had not written them down — they would have been gone for good. Even if you think you have a very good memory, capture your ideas. You can try to remember them when you transfer them into your collection and make a game out of it. It will show you how much (and how fast) you forget your ideas (or important details) and even train your memory.

Get cheap materials

Use material that is much cheaper than the lowest possible value you could attribute to an idea, because you may have an idea that seems worthless to you but might lead to a groundbreaking project later and you would not want to miss that idea because you did write it down.

Optimize your infrastructure

It is much more powerful to change your infrastructure than to go the extra mile or beat the obstacle every time you want to do something. If you keep a separate notepad and pen next to your bed at all times as part of your infrastructure, you will write down more ideas then if you try to force yourself to get up and walk to the desk (even if there is a designer lamp and an extremely expensive leather bound notebook with a fountain pen waiting). The easier it is to use something, the more likely you will do it. It is not a question of design, or price, or features, but of *pure usability for you*. Even if you love your iPhone, if you work faster and easier with a pencil and a cheap notebook, use the later. Use something that works, not only for

There are ideas floating around everywhere, all you have to do is to write them down when they strike your mind.

Henry J. Wilcoxon-Ash

OPTIMIZE YOUR INFRASTRUCTURE

Get cheap, easily replaceable, low-maintenance material.

Use good quality tools. Pens that do not write clearly or not in all positions (e.g. lying on the back) are a nuisance.

Avoid expensive tools that are hard to replace your just “too perfect” to get spoiled by an idea. If you need high quality paper to make good sketches use it. For most thoughts cheap paper works with less resistance.

Break in the material as soon as possible. Personally, I cut my notepads from A5 notebooks. They are already “ruined” by the imperfect cutting, so I waste no thoughts in waiting for a good idea to break them in.

VALUE YOUR IDEAS

Consider each idea worth the effort to write them down. Evaluate them later.

You can always discard a written idea, but you cannot retrieve a forgotten one.

How to capture ideas

capturing the ideas but also to get them to your collection later. A voice recorder might be easier if you like to babble about your ideas, but an idea on page can be transferred much easier.

Have a look at your infrastructure. Changes there will be more beneficial than any good intentions you might have. But remember to keep the infrastructure this way if you implement something.

Capture first, collect later

Even if you think you want to do it right from the beginning, capturing an idea and putting it in the right place are two distinctly separate steps. In capturing an idea, immediacy, speed and ease of use are paramount. This is not possible to achieve with a good idea collection. There, other criteria (see page 213) are important. Sorting an idea in the right place takes time, for example, which is incompatible with the speed demand needed to capture it. You can also speed up the “sorting in the collection” process if you first capture a few ideas and then transfer them *en block* to the collection. This is much easier than doing this over and over again for one idea each. But be careful that the amount of ideas you have to transfer becomes not so large and repulsive that you will not begin to transfer it.

Evaluating an Idea Capturing Method

Capturing ideas is about availability, speed of access, ease of use, flexibility and resistance. The idea must be captured fast, but as accurately as possible, and last long enough to be transferred to the idea collection.

There are countless ways to capture ideas. In a ditch, almost anything will do. One can divide the methods between pen & paper (see page 146), stationary ways (page 150), and digital (see page 153).

"My glorious prose, filtered through the minds of the insane? [a sudden, consoling thought] Who knows? They might improve it."
The Marquis, using the inmates of the asylum to overcome censorship, in "Quills"

CRITERIA FOR EVALUATING IDEA CAPTURING METHODS

The following criteria, in descending priority, are useful to evaluate methods to capture ideas.

1. Availability

It is trivial that you cannot capture an idea if your method is not available. Since settings differ in characteristics, you often have to use different methods in different contexts. If you have nothing to write on while eating with colleagues, a napkin will do, if you are on a conference, your notebook or calendar might be the place to quietly jot down your thoughts. However, your main capturing method should be available in most contexts. This strongly favors paper over digital.

2. Speed of access

If you have ideas often, the time needed to begin capturing it should be *below five seconds*. This may sound impossibly short, but think about it. You are interrupting what you are doing, and if you are in a highly demanding setting or new ideas come pushing after the first one, you are likely to lose it if it takes longer than that. Mobile digital devices often take longer than five seconds. Compare it to a paper notepad: In both cases you have to take it out. With paper you actively find a free page (faster with a bookmark) and start writing or sketching. With digital you have to turn it on or unlock it, open the correct program, write or type or sketch the idea (if the program allows it). Some devices even ask you if and where to save it (including entering a filename). Even if you open an existing file, you often have to scroll to the end or create a new page for sketching. Sometimes you even have to wait for the device to load programs or files. Personally I think it is the waiting that kills idea capturing with digital devices (besides that fact that a wrong push of a button can speedily delete all your ideas). It is highly aversive and unnecessary. Paper might not be cool, but it is fast.

3. Ease of use

Some devices make it hard to input ideas, because they were not specifically built for this purpose. And some capturing methods force you to change your preferred way of capturing. If you are used to jotting down ideas in bad but fast handwriting, a digital keypad on a mobile device will slow you down considerably and will be aversive, i.e. it will lead to resistance to use the capturing tool and consequently to missed ideas.

Evaluating an Idea Capturing Method

4. Flexibility

Even if you are only trying to capture words, there often comes then time when you want to add a sketch to illustrate a point. Or some chords. Or a diagram. Can the capturing method do this? Again a strong argument for paper which can do more than most digital programs can (and much faster).

5. Ruggedness

A determinant for availability but important enough to warrant its own point. How much can the capturing method take before it breaks down? I have dropped my notepads on the ground and into the bathtub, used them in the rain and in the desert. The writing did survive (well enough). Damaged notepads could be easily replaced (I always have a few lying around). Now consider a mobile digital device. Most likely it would not only not survive, you probably would not use it in that situation in the first place, nor could you replace it when it was broken and it had to be replaced or repaired. Despite the adds and media stunts and additional functions (mobile digital devices are great for communication), nothing is as resistant and useful as a notepad.

BE CREATIVE

Sorry about the pun but there is no situation, where you cannot capture and idea. There are stories of songwriters using toilet paper, of prisoners making their own pens (albeit not only for writing purposes) and of people leaving themselves a message on their phone to remind them of an idea. There is always a way, the question is, are you willing to do the effort for the idea at hand?

THE BEST WAY TO CAPTURE IDEAS

Which is the best way to capture ideas? The one that works best for you in the given situation. This may change over time, over location, or the kind of idea you have. But you can try out different methods until you find the one that works best for you in most instances. This will give your capturing of your ideas some regularity and become a habit. But keep in mind that this is a matter of personal matching: you have to find your own way that suits you.

The quality of tools for capturing ideas

There is an endless discussion online about the best strategy (paper vs. digital) as well as the best material (e.g. which pen is best) for capturing ideas. This discussion is a waste of time that could be better used for creative purposes.

SOME COMMENTS ON TOOLS AND QUALITY

It is not about the tools

Unless you want to do high quality artwork sketches, e.g. you are doing calligraphy, the tool used to capture ideas it is just that, a tool to get an idea into a (semi-)permanent form for later review and elaboration.

There is no best tool

People differ in their preferences, physical characteristics, liking of analog vs. digital technology, area of creativity, the situation they are in, and much more. So, there can be no “best” tool but the one that is “best” suited for you and the job at hand.

High quality can be negative

Some people have the best toys. A Faber Castell fountain pen, a Moleskine notebook, a sleek leather bag. If you are envious about their equipment consider that high quality can also have negative consequences for writing down ideas. You might not want to use your expensive stuff for “stupid” ideas, only for well-thought out ones. But how could they be well thought out if you do not capture them? So get cheap notebook because then you wont think: “Ah, gee, don’t want to spoil the beautiful notebook with this idea, it is not good enough.” Remember that it is only a tool, not a priceless exhibit of your creativity (unless you are da Vinci). Get a cheap one, hell, get the demo piece because it is already used. I did not write the notes for this paragraph on an demo piece, but only because the saleswoman did not let me buy it because it had no price tag.

But take care regarding the paper quality. Make sure the pen writes smoothly and that it is a pleasure to write.

Find out what you like best

Find out what you like and will work with (e.g. does not take too much effort or are intimidated by it). What this is you have to find out for yourself.

TRY OUT WHAT WORKS FOR YOU

Go to a store and spend some time trying different pens and papers. Try it for a while with the solution you think works best for you. You should feel comfortable using it because you will use it quite often.

“Number 3 pencils and quadrille pads.”
Seymour Cray (1925-1996), when asked what CAD tools he used to design the Cray I; he also recommended using the back side of the pages so that the lines were not so dominant.

You can capture a \$1.000.000 idea with a 25c pencil as easily as with a \$2500 limited edition fountain pen, but you are more likely to do so with the former if you do not immediately see its value.
Unknown

I tried out [...] the Moleskin notebooks (verdict: Hemingway, Picasso, and Chatwin? Too much pressure to be great).
Unknown

The tool should never become more important than the idea.
Daniel Wessel

The quality of tools for capturing ideas

It's only a tool

Especially if you are intimidated to act creatively or by the work that is to come, you might be tempted to search endlessly for the “best” method for you. The best pen, the best paper, but wait, does this pen really work best with the paper? And where do I put it? And the cover of the notebook — *is it really me?* Should I create a new one that really represents and stimulates me? The ways are endless to delay the actual work with ideas. *Don't.* Find something you can work with now, you can always improve it later.

Remember: They are only tools and should be treated as such.

“Do you know what a ‘duvet’ is?”
“It’s a comforter ...”
“It’s a blanket. Just a blanket.”
Tyler Durden and Narrator in “Fight Club”

Missed Ideas

When you begin capturing your ideas there will be times when you will miss an idea. Often. Perhaps you just were too tired, or you just had to do some important thing, or you just had so much fun that it seemed like a shame to interrupt it. And sometimes we follow ideas in daydreams that pop like bubbles when someone interrupts us, taking the idea with it. Whatever the reason, missed ideas happen. The aim of this chapter is not to prevent you from ever missing an idea. That will not work. The aim is to make sure that it happens not more often than it absolutely has to. To reduce the frequency of lost ideas as close to zero as possible, even if zero missed ideas is never reached.

GETTING MISSED IDEAS BACK

Unfortunately, getting missed ideas back is hard and there is no guarantee that you are successful, *nor that you will know whether you are successful or not*. Even if you think you remember the idea, you might have forgotten some details and also forgotten that you had them.

The following strategies might be helpful (but of course, the best strategy is not to miss them in the first place):

Retrace your steps

The same strategy you probably use when you walk into a room and forget why you went there in the first place. The actions you did, the things you saw, the thoughts you had determined the idea. If you can retrace the thoughts and emotions immediately before the idea, you might have it again.

Reduce the anxiety

Reducing the anxiety of having missed an idea can help you remember it. I tell myself that any idea gets back three times, even if I do not truly believe it. When I miss an idea, I have two chances left, then only one, then it is truly gone. This reduces the anxiety somewhat and sometimes the idea really comes back (I think).

Try it again later

Since 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. This does not mean that capturing or collecting ideas is not necessary, on the contrary. They provide you with something you can return to work to in the first place.

There should be an elegy to ideas lost due to bad handwriting, fried hard- and compact discs, the abyss in my apartment, the lack of proper writing tools, the power of sleep deprivation, the fear to be a ridiculous fool or a genius and to thousands of other reasons why an idea died before its time.

Daniel Wessel

IT IS NOT THE END OF THE WORLD

Missed ideas can leave you with a terrible feeling and impair your work. Bu great ideas often occur to multiple people, see parallel creativity on page 341, so the idea probably will be realized by someone else.

Ways to Capture Ideas

On the following pages we take a look at different ways to capture ideas. We will start with paper, then some stationary capturing methods, then the different digital devices and the mind itself. Finally we take a look at adverse conditions while capturing ideas.

PEN & PAPER

Pen and paper is simply the best tool to capture ideas. There is nothing that is available as fast, as resistant to the elements, as flexible to capture anything from letters to complex formulas, sketches and chords, and as easily and ubiquitously available and as cheap. You do not need to limit yourself to one "capturing tool" like with a PDA or cellphone, but you can put notepads and pens where ever you spend your time regularly and for longer time frames (e.g. kitchen, bathroom, bed, desk, car, workplace, sports bag). While you should always carry around at least something to write (there is enough paper around from napkins to toilet paper to printer paper), this ensures that you will have something to write when you left your handbag or your pants somewhere else.

ADVANTAGES

- fast access
- price irrelevant
- without value for others
- highly versatile on the fly
- resistant to adverse environment (e.g. rain)

DISADVANTAGES

- backup difficult
- takes up space
- can be misplaced easily (nothing "of value")
- socially not accepted

Pens

You should always have a pen handy. There is nothing more practical than that and nothing so widely neglected. There are pens for all pocket sizes and tastes: Pens that fit into the wallet, pens that write against gravity (e.g. Fisher Space Pens, uni PowerTanks or the common pencil), pens with their own light source that allow writing in the dark, etc. There are also pens that have a metal mine that write nearly forever and that come as key-ring version (which, by the way, can easily be modified to work as a *pendant*). While it is not about the pen you use (even if there are beautiful ones) find an affordable, high-quality pen you like writing with.



left side from left to right:

Lightpen: writes in the dark and against gravity

Fisher Space Pen, uni PowerTank and a normal pencil that all write against gravity

above: Fisher Bullet Pen: small enough for the wallet and writes against gravity

Ways to Capture Ideas

Paper

There are also countless kinds and forms of paper on the market. No matter the size of the pocket, there are notepads available (even if you have to cut it in size). The quality of the paper also differs: the texture, the thickness, even the reaction to water. Notepads like *"Rite in the Rain"* can be used while walking through the rain (or while standing in the shower, which is essentially the same thing).

Facilitating capturing with pen and paper

Visit a well-sorted stationery shop

Visit a well-sorted stationery shop where you will find a large stock of possible pens and kinds of papers. Try the pens until you find the ones that you like, then try which ones work on the paper you like best. Remember that it must be easy to write without having second thoughts to actually write, e.g. due to the quality of the paper.

Keep Pens and Notepads where you will be

There are some places where nearly everyone will spend at least some time during the week, like at the desk, in bed, in the kitchen, on the toilet and in the shower. Make sure you put a notepad and a pen at each of these places. More often than not, your normal notepad will not be available (e.g. you are currently transferring the ideas) and you might not be willing (or able) to leave the place to get it. The beauty of notepads is, that they were made to tear off the pages. This means that you can use a lot of different notepads if you tear off the pages afterwards and collect them all at the place where you transfer the ideas to your idea collection.

Keep it easily available at all times

Often the second you put the notepad away you have another idea. For this reason (and for general speedy access) make sure that you have your notepad easily available. A handbag might contain enough storage space, but a back pocket is much, much faster. If you have to use a bag, do not store it in the main compartment but in a side compartment that is reserved only for your notepad.

Cheap paper rules

Keep paper with you at all times that you like to write in, but whatever you use, it should not intimidate you (e.g. have no value by itself). Capturing ideas fast leads to pages with spidery handwriting and much wasted space, which is fine. If you want to slow down to write your ideas in a tidy script, don't. You think faster

INFRASTRUCTURE

Always keep Pen and Paper ready (e.g. a small pen and some post-its in your wallet).

Use cheap good quality materials that do not intimidate you.

Keep it fast and simple. While leather cases and Hipster PDAs might look nice or interesting, they probably slow you down.

TO CAPTURE

Ballpoints are way faster than anything with a cap and can be used with only one hand.

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

Use Steno to keep ideas private.

Use whatever paper you use daily, e.g. a corner of your booklet or calendar but if you use diverse places to capture ideas transcribe them at the end of the day otherwise you might not find them again.

Spiral bound books will continue to lay open on a desk whereas stitched book 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 without holding them open.

Feel comfortable while writing.

Ways to Capture Ideas

than you can write anyway, further slowing down the thinking process leads to missed ideas along the way.

Plain, ruled or checkered

Capturing ideas is not about being tidy. You should write clear enough to be able to understand your ideas later, but normally the guidelines or boxes are not necessary. 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.

Train to Write Blindly

If you are not writing with a light pen (pen with a flashlight build in) all the time, you will come in situations where it is too dark to see (e.g. on the way home in a street without street lamps). Writing blindly is not that hard: You know the letters, you feel the dimensions of the page, all you need is to make sure it is actually blank. Write larger than normal and have a look at it when you can see again.

Train to write while walking

Walking is a good time for ideas, however, if you stop each time you have an idea, you will always be late(r than planned), which will act as a strong reinforcer not to write down your ideas. Walking while writing 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

WAYS

Ballpoints, Gel, Ink
Pencils, mechanical pencils
Metal pens that write almost forever
Notebooks, Notepads, booklets, slips of papers
index cards (e.g. Hipster-PDA)
Post-Its (used as a notepad)
Booklets

“Ah, the joy of having a new notepad.”
Unknown

“With a notepad I can write while being drunk without breaking anything.”
Unknown



Ways to Capture Ideas

notepad and the scene in front of you while writing to avoid to bump into something or having something bump into you.

Spiralbounds

If you are right handed and the spiral is on the right side and hinders your writing, simply turn the notepad around.

Have new ideas or develop existing ones

Begin a new page if you want to think about new ideas. Continue writing on an already written page to think about the previous ideas.

Rugged and noticeable

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 (no, I think of walking through the rain or having a glass of beer spilled over my clothing).

If you use a soft cover you can miss it if the notepad is falling out of your back pocket. If you use a hard cover, it might be too inflexible to wear it there.

HIPSTER PDA

The Hipster PDA is a collection of index cards, held together by a clip or a rubber band. You can pre-print the index cards with your printer, if you like, and easily enlarge the amount of cards. While it looks like a gag it is actually quite useful if you change the content of the things you take with you quite often. There is also a "Hipster PDA Shuffle", which consists of index cards holding together by the clip of an iPod-Shuffle.

Ways to Capture Ideas

STATIONARY WAYS TO CAPTURE IDEAS

If you spend a lot of time in one place, e.g. the lab, your office or in your work room at home, it pays to use an additional stationary, wall-based capturing method.

Countless Methods

There are a lot of different wall-based capturing methods:

Blackboards

Often used in science departments like mathematics and physics, writing with chalk on a blackboard is still a nice albeit dusty way to capture ideas.

Whiteboard

The business white-collar alternative: a surface that requires special markers to write upon. Less dusty than a blackboard and better quality. The markers can write on nearly any surface (esp. mirrors), but make sure that you can erase them without a trace (which might be possible at first but not if you leave it on for longer time periods).

MagicCharts

Thin plastic foils that stick to nearly any smooth (or even semi smooth) surface. 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.

FlipFrames

Essentially a (very) large notepad that can be put on a holding structure or the wall itself. Has 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).

Paper on the Wall

The easiest way: simply take large sheets of paper and put them on the wall. It has the same advantages and disadvantages of FlipFrames. If you do not want to tape normal paper on the wall, consider using Post-Its. They stick to a lot of surfaces. But keep in mind that they were designed (or discovered) as temporary solution. They will fall down, even if there is no one who thinks that the lab is stuffy and could use some fresh air while a storm is raging outside.

ADVANTAGES

highly motivating to use
great for continuous work on a difficult problem

very high presence — at least in the beginning

DISADVANTAGES

fades into background quickly

only available in one place

INFRASTRUCTURE

Keep alternatives ready (at least to handle a spacial overflow of ideas)

TO CAPTURE

Keep the tools to write handy

WAYS

blackboard, whiteboard, MagicChart, FlipFrames, Paper on the Wall, Smart-board

Best blackboards: At Fermilab, every office has at least one that stretches from the floor to the ceiling.

“Studemuffins of Science” Calendar

Ways to Capture Ideas

Smartboards

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). It is very powerful but beyond an idea session not recommended, the analog alternatives are way superior for this usage unless you want to modify existing information.

Facilitating capturing with wall-based methods

Use your breaks to have a look at the wall

If you are working at the computer and you make a break, stand up and walk in front of the wall. Take a pen 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.

Start anew regularly

If something does not change, it fades from attention quickly. 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 are working on clearly, and give you the room to expand.



Magic Charts transferring the white wall behind my desk into a very large whiteboard.

Ways to Capture Ideas

Keep the writing material close by

While a orderly desk is something to be desired, the pens (or pieces of chalk) to write on the wall *need to be close to the wall*. Do not put them in the desk drawer or the cupboard. They either belong on the cupboard if it is immediately next to the wall or somewhere else close by the wall. 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 the 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 have forgotten the idea.

Keep alternatives close by

The wall has some limitations that other capturing tools do not have (as much). First of all, the amount of writing you can do is often rather limited. While the space itself is much, much larger than any normal sheet of paper, the writing itself is necessarily very large, which results in a low information density on the wall. Second, you often have no spares. If the wall is full, you first have to backup the information before you can continue (unless you use MagicCharts and have some replacement foils or a paper based solution). And backing up the information takes time (especially if the camera chip is full or you cannot find it and you have to transfer all the information manually).

More information in the Collecting Ideas Chapter

We will have a second (longer) look at these capturing tools as an idea collection on page 227. These methods sit at the border between a capturing tool and a collection. They are more permanent than a simple capturing tool (where the ideas should be transferred to the collection as soon as possible). Here it can be very beneficial to let the ideas “on the wall” to stimulate you to develop them, making them some kind of externalized part of your regular collection. However, keep in mind that human attention decreases quickly if something is unchanging (see page 210) and that while you might actively develop ideas in the beginning the development might end quickly.

Backups, Backups, Backups

One reason that these methods are considered in (more) detail in the Collection chapter is that they should be treated like collections, especially regarding backup. 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 my MagicCharts one time, 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 really seriously or the children want to draw some pictures (“*but there was some gibberish in the way*”). So make backups, at least photographic ones from time to time (and be sure to include the images in the backup cycle of your idea collection, do not leave them on the digital camera or the cellphone!).

Ways to Capture Ideas

DIGITAL WAYS TO CAPTURE IDEAS

Digital technology seems to offer various options to capture ideas, some companies even advertise with it. However, while there is a lot of things digital tools can do that paper cannot (like crashing), they do have serious disadvantages for capturing ideas. The most important disadvantage is that they *are not available every time and everywhere*. There are situations where they are either *forbidden* (like on a plane), not well accepted (e.g. during a concert) or not taken (e.g. into the sauna). As objects of value they are *highly coveted by thieves* and if stolen or broken, there often is no *replacement* (immediately) available due to its *high price*. Digital devices *consume power*, they must be continuously charged or will not work or even lose the data. *An the input is often slow!* Another problem is that they often *require conscious thought to operate* which might interfere with your memory of the idea and the generation of new ideas. While you can open a notepad without consciously thinking creating a new document on a smartphone often requires conscious decisions (like selecting the program and naming the file). While they have their strengths when it comes to *backups* which should be done with collected but not captured ideas (see page 265), the captured idea is extremely *ephemeral* until distributed to different backup sources. While cameras have their uses for *1:1 reproduction* of objects (esp. sketches) and voice recorder can be very helpful for songs, tunes and stories (provided you have the privacy to talk and someone will transcribe the information later), they are often slower than paper for writing (except with full-fledged keyboards). They also put the focus on the *format* and *layout* too much, instead of just making sure that the information is captured. The *large storage space* is also a disadvantage since the device should be used for capturing but not for collecting ideas and you are likely to wait too long to transcribe it to your collection.

Due to these reasons I do not recommend digital devices in this phase of the idea process, except if one wants to capture words while already using a computer and can start the program less than a second, or you need to capture images or sounds exactly as they are.

Facilitating capturing with digital devices

Have pen and paper available as backup

Even if you use an other system to capture your ideas, e.g. your personal computer, your cellphone or something else, have pen and paper available as a backup. You will face situations where the digital device is not available, because it is either

ADVANTAGES

- easier transfer to collection
- 1:1 reproduction
- often independent from ambient light
- easy backup

DISADVANTAGES

- not everywhere available
- needs power source
- valuable
- often only one device available/difficult or costly to replace
- fragile
- often not instantly available (startup of device/program)
- input is often slow

INFRASTRUCTURE

Get a functioning non-digital backup.

TO CAPTURE

- Create shortcuts for you most often used programs.
- Use plain text files to capture text (quicker to open).

WAYS

- cellphone, smartphone, PDA
- voice recorder
- camera
- computer

Ways to Capture Ideas

drained of power, forbidden (e.g. planes), to fragile (e.g. during a rain shower or in the bath) or something else. Even PCs have their times when the operating system is busy or the system is currently rebooting.

More on facilitating capturing with digital devices when the specific methods are discussed.



Laptop stolen!!!?

*Keep the device but **PLEASE** return the CD which was in the laptop case with the label "Diploma" to a mailbox of the Schellingstr. 6!!!*

Disadvantage of digital devices: coveted object of theft.

Ways to Capture Ideas

Cellphones, Smartphones, PDAs

Take a close look at your cellphone. Today it is hard to impossible to buy a cellphone that is *only a phone*. Most devices are minicomputers that have functions that come close to a normal computer. You have a voice recorder for musicians, a video recorder for dancers, text for writers, etc.

Multimedia Capture

While the devices have disadvantages for capturing ideas (see previous pages), they can have their uses, since they can capture multimedia. If you consider that it looks like cellphones of the future will be today's smartphones, these multimedia capturing functions will be broadly available and you should be consciously aware of them. You can capture images, voice, movement (e.g. dance steps) and much, much more.

Social acceptance as a plus

It also seems to be more accepted to write on a cellphone than to write something in a notepad. People will likely think that you just have to tell someone something and they are right. You have to tell your future self about an idea you have.

ADVANTAGES

Close personal possession (might not be always allowed to use but almost always carried with)

Multimedia Capture

Text: Word Processor#, SMS (save as draft), Notes#, Appointments#

Images: touchscreen#

Audio: Recorder#, Mailbox (call own number), Programs for scores#

Photos: camera (photo)#

Video: camera (video)#

Writing socially accepted

Not available on all devices

DISADVANTAGES

Input of text extremely slow

Ideas are rarely transferred

Risk of damage/theft

Risk of data loss

INFRASTRUCTURE

Find out what your device is capable of. You often can enhance the functions by additional programs.

Transfer ideas as soon as possible. Since the storage is often huge, digital devices often suck in ideas and take them with 'em when they die.

TO CAPTURE

Use when pen & paper is either not available or not accepted.

Ways to Capture Ideas

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. 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 where writing is not possible (e.g. while driving).

Do not make it to your personal blackbox

Yes, voice recorders allow you to record ideas while you are doing something else with your eyes, hands and feet, e.g. driving a car. But do not make it your personal blackbox that gives account of your last seconds before you were involved in a deadly accident. Keep your main attention on the road, especially if it is not a dedicated voice recorder but a cellphone (which will be harder to use without looking).

Get it in new writing as fast as possible

Make sure to transfer the idea immediately when you have the opportunity to do so. There is usually a *point of no transcription*: the amount of information on the device is just too much and seems overwhelming that you will not transcribe it.

Unless the tone is important, do not store the audio files

Audio files take up more space than text (backups!), they are not searchable and you do not stumble over your ideas. They have virtually no presence and you cannot skim over them. Unless you are recording music or a specific tone of voice, do not store the audio files but transfer the information to text.

Transcribe the essence, not the words

Do not try to transcribe word for word, unless it is important, but try to remind yourself of the idea in general and then write down the essence. You will often use different words if you write something down than as you talk about it and the unnecessary words will slow you down and make transcribing it more effortful.

Use a good software combination to transcribe ideas

With a digital voice recorder (including cellphones) you can transfer the audio files to the PC. Transcribing them is much easier if you open them in an audio application (e.g. Quicktime) and transfer it first in a simple text file. You can switch between the text file and the audio application with `Cmd` (or `Strg`) + `Tab` and use the

ADVANTAGES

- 1:1 capture
- Usable without looking
- Widely available via cellphones and smartphones

DISADVANTAGES

- Audio only
- Tend to accumulate information that must be transcribed

INFRASTRUCTURE

- Keep a voice recorder easily accessible in your car.
- Make sure you can use it without looking.
- Transcribe the information as soon as possible. Full storage is deadly to ideas.
- Have an earpiece to transcribe the audio information. Stating ideas in the privacy of a car might be o.k. while hearing them aloud in a train might not.

If you collect ideas on the way to the office or the gallery, transcribe the ideas immediately after you arrive when they also are 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.

TO CAPTURE

- Do not babble the idea but try to tell it as concise as possible. While talking is effortless (for most), transcribing is not. Think before you talk and keep it concise.

Ways to Capture Ideas

Space key to pause the audio application. This way you can transcribe audio information without taking your hands off the keyboard.

WAYS

(Digital) Voice Recorder

Cellphone (Program, Mailbox)

mp3-Player

Computer program (e.g. Audiorecorder, Circus Ponies Notebook)

Ways to Capture Ideas

(Video) Cameras & Scanners

Professional digital cameras are great ... for creating creative photographs. However, to capture ideas you just need the necessary information. You need to get it down, fast and easy. In most cases, low quality is good enough, if you want to capture smaller objects you will likely use sketches. If you really want to carry a camera, a small, always carried and readily available rugged digital pocket camera is sufficient. There are some models that are sufficient, e.g. waterproof up to 10m (rain!), shock resistant and dust proof. But consider using a cellphone with a camera. You are more likely to have it available.

Sufficient not perfect

Working with a small camera trying to capture an image or a sketch often means that the quality is less than optimal. But who cares? You will not put a simple sketch on the wall, unless you consider it as an artwork, and with some cameras it is impossible to make good pictures if the conditions are not perfect (and they never are). The focus should not be on perfect capture but on clarity, the ability to search and remember it.

For Text: Write it, do not photograph it

While it might seem tempting to capture text via a quick photo or scan, it is also completely useless to do so. Text in an image cannot be searched and even the best OCR will not be able to transfer your handwriting in text.

Make it searchable

Images cannot be searched without additional information. Make sure you use tags/keywords and provide a description for each photo, at best as title that is saved within the image itself. This gives you more flexibility with the image and helps you understand a sketch even without other information.

Scanners

Scanners are often too effortful to use and an overkill unless you want to archive an image in high quality. It might be tempting to do so with sketches but your note or sketch does not have any worth by itself. You just need to be able to understand it, so keep it small, fast, and with little effort — in most cases a picture from a camera is sufficient for that.

ADVANTAGES

1:1 capture

Widely available via cell-phones and smartphones

Can substitute scanner

DISADVANTAGES

Image/Video only

Additional information needed for storage/search

INFRASTRUCTURE

A small, easily portable camera (at best in the cellphone) is much more useful than a full-frame DSLR. You will use it more often, you can use video and you won't blow gigabytes that slow you (and your collection) down.

TO CAPTURE

Add tags/keywords.

Use an adequate quality level: while best quality sounds nice it is often an overkill for capturing images/sketches and wastes space.

Transcribe the written information that you have photographed to make it searchable.

WAYS

Cellphone camera

Small compact camera

Small rugged compact camera (waterproof, dust proof, rugged construction)

DSLR (not recommended for capturing)

Scanner

Ways to Capture Ideas

Personal Computer

PCs are great tools if you want to capture text and you are sitting directly in front of it. A lot of us do, every day, at work. If an idea comes during work, computers can be used to capture it. Unfortunately, most computers cannot be used for sketching and the programs usually have high affordances regarding the layout.

Laptops/Notebooks/Sub-Notebooks

While notebooks can be carried almost everywhere, they are often still too big and unwieldy to be actually taken anywhere and anytime. Given that you will probably have to take it out of your bag where it is most of the unused time for protection and add the time to boot and to open the application, notebooks take too long to be ready to capture ideas.

Keep it simple, keep it fast

Use a simple text editor that is available in an instant to capture ideas. Do not get caught up in formatting. This comes later, if at all, in the idea collection. It is tempting to use the idea collection for capturing ideas on the computer, if you use a digital collection. *Don't*. You have to interrupt your work flow, open the collection, search for the place to put the idea. This takes time, increases the risk of losing the idea and is more effortful and kills capturing in the long run. Simply have a file called "input_ideas.txt" available, open it, make a new paragraph and write it down. Once you have the digital text you can copy and paste it anywhere and it will not get lost until you do (soon, hopefully, a very large text file of ideas takes a major effort of a whole weekend to transfer into the idea collection).

Keep alternatives handy

Even if you always use the computer to capture ideas, keep a paper alternative ready. Not only for sketches but also for the moments when the computer is busy or you cannot interrupt the current program (e.g. a game that cannot be left with Alt+Tab).

Privacy

If you write in public, use a small font to prevent others reading your notes. You can also use a symbol font (unlikely that anyone can decode the non-letter symbols while you type).

ADVANTAGES

Inconspicuous for writing down ideas while working

Multimedia Capture depending on hardware (e.g. microphone, webcam, tablet) and software

DISADVANTAGES

Availability

Affordances (e.g. focus on layout)

Risk of theft and damage

INFRASTRUCTURE

Use the Task Bar of your OS at the bottom of the screen for a shortcut to the capture-text-file itself. One click will open it.

If you have two displays, try putting them above each other. It is easier for the neck.

TO CAPTURE

Use Notepad or another simple text editor to capture text. It is available in an instant and the data format is highly compatible.

From work you can send ideas at home per eMail.

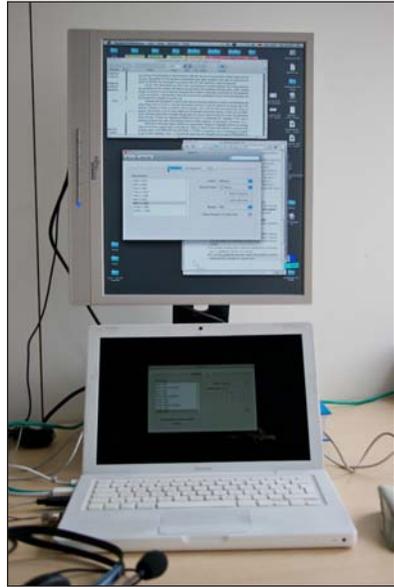
WAYS

Notebooks/Subnotebooks

Personal Computer

Public Computer Terminals

Ways to Capture Ideas



right side: "Apache-Setting" — ordering a second monitor for a notebook above the notebook makes it easier to work

below: Most task bars can store not only links to programs but also to individual files (lower row, two files on the right side). These text files are available in an instant, making it easy to capture idea without major interruptions of the work process.



Ways to Capture Ideas

MIND

I strongly argue against trying to capture ideas by simply trying to remember them (see page 131). But there are situations when there are no tools available and your memory is all you have.

There are some things you can do to improve your memory of your ideas until you have the chance to physically capture them or transfer them to your collection.

Memory Techniques

Train your memory. Not only will it help you with getting to know the domain, but you also have a device more when you capture ideas.

Anchors

One way to remember something is to imagine putting it in a place where you will be in the future. E.g. you want to remember to order flowers and you visually 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 (or cleaning the keyboard).

Story

A good way to remember more than one item is to make a story of it, where the items appear in remarkable roles. Place parts of your idea in unusual places.

Memory to Capture to Collection

Most of the time you will have something to capture your ideas before you have access to your collection and you should use the opportunity to capture the ideas physically as soon as possible. If you ever have more than one idea retained in memory and access to your collection, capture them first *before* you enter the ideas in your collection. Once you start thinking where you put them and see the other ideas in the collection new ideas might occur, displacing the ones that you still keep in memory.

ADVANTAGES

Always available
Extremely private

DISADVANTAGES

Reliability unclear

"A man of your intellect not being good with names and numbers. Especially an economist of your stature."

"It's not intellect, it's memory. It's a different gift. A wonderful one. I've never had it."

Mrs. Harrison and President Bartlet in "The West Wing"

Worst Cases in Capturing Ideas

WORST CASES

While a loss can happen with all capturing methods, digital devices and especially computers have unique *capabilities for catastrophes*.

Errors

Errors come as software, hardware and user errors. A crashing software often leave the data intact (or at least readable with a text editor), but a serious hardware error (e.g. a broken hard disc) usually *kills all data*. Sometimes the hard disc can come back for a while (page 273), but make sure you make regular backups (page 265) or sync the data (page 270). User errors can also happen, especially when you are tired. You wont tear apart your paper notepad when you are tired, but you might accidently press "delete all" in the gallery of your phone. This happened to me one time and I had to watch as my pictures were deleted one by one as there was *no way to cancel the operation once it started* and I did not think about "simply" removing the battery.

Loss, Theft, Destruction

Even the old reliable desktop PC can get destroyed when the house burns down or the cat decides to spray the competition. Mobile devices are in even greater danger of loss. Not only can you literally loose it somewhere (or, if you are flying, someone might loose it for you), digital devices are highly coveted by thieves. No one would steal a notepad but a mobile phone or a notebook will get stolen if someone sees the opportunity, needs money and can justify it for himself. Digital devices are also notoriously vulnerable to destruction. While a notepad will survive a fall from the 11th floor, for most devices the first floor is enough for a terminal impact. Water (rain, coffee, wine), temperature (frozen display), dust and magnetic fields are also dangerous for digital devices.

"There is no right and wrong.
There's only fun and boring."
The Plague in "Hackers"

When you loose a digital device, you usually face several problems at once:

Someone else has your data

Normally more than just the last few notes but the work of the last few months, your images, your music, etc. You can only hope that your account password holds or that the finder will format everything.

The last backup might be old

If you have a good infrastructure, e.g. an external hard disc for backups on your desk which you plug in every evening and automatically makes a backup, you are lucky in case of a loss. Most people are faced with a gap between their last backup and the point when the data was lost, a gap that sometimes is as large as several months, even *years*.

Backup not found: (A)bort
(R)etry (M)assive heart
failure?
Unknown (from DOS times)

"But I thought YOU did the
backups ..."
Unknown

It is hard to replace

You can get a new notepad from the next store. If you just need a piece of paper, it is available everywhere. But if you loose your phone or notebook, you have to invest a large amount of money and wait a long time (days to weeks!) until you can continue working. Even if you have the money on the bank, ordering and reinstalling

Worst Cases in Capturing Ideas

your programs and data will take some time. Make sure that you have your programs available. If you use a Mac you are lucky: Time machine can store your data in a way that you can easily reinstall all your data when you get a new computer.

For more information see backups on page 265.

When you have nothing to capture

No matter if you are used to capture ideas with pen and paper, stationary means or digital devices, you might get in a situation where you (think you) have nothing to capture your ideas.

WHAT YOU CAN DO WHEN YOU HAVE NOTHING TO CAPTURE

There is always a way to capture ideas ... if you are creative

The Abbe in *"The Count of Monte Cristo"* by Alexandre Dumas, confined to his cell without any tools, nevertheless wrote his master piece 'A Treatise on the Possibility of a General Monarchy in Italy'. He invented a preparation to make the linen of two of his shirts "as smooth and as easy to write on as parchment", he made his pens of the cartilages of the heads of the huge whittings that were served on maigre days and for ink he used the coating of soot from the old fireplace in his cell mixed with wine or — for important notes — used his own blood. The Marquis de Sade in *"Quills"* also used blood and his clothing, to pin down a story, later he used the minds of the insane in an improvised version of Chinese whisper to get his story from his cell to the maid who wrote it down (since one madman got overexcited by the content of the story and subsequently killed her, this probably was not the best idea). Even confined in the dungeon, he found a way to write, using his own excrement and the dungeon walls — o.k., definitely not a good way to spend the day.

These are some extreme cases which are unlikely to happen to anyone reading this book, but they illustrate that it is possible to make notes, even write whole books, in nearly any circumstances. In a real life example, a famous songwriter used her lipstick and toilet paper to write down some lines that came to her in a hotel room. I was once confined to a room where I had nothing to write but using a piece of the cardboard from a roll of toilet paper as pen, some red antibacterial salve as ink and the toilet paper itself as paper solved that problem.

Even if you have no paper available, no pens, and there is no one to borrow it from (yes, you can ask for a pen and paper), there are ways to note ideas.

What you can do when you have "nothing to capture"

No Paper

While you might have *no paper*, there is absolutely no way that one ever gets in a situation with *nothing to write on*. Toilet paper, napkins, handkerchiefs, bills in your wallet, band-aid, package material, clothing, even money can be used to write on. *Do not make a knot in your handkerchief, write on it*. Most pens work on skin (ever writ-

SUBSTITUTES FOR PAPER

skin (many write on the hand to remember things)

napkins

leaves (yes, paper also grows on trees)

toilet paper (set priorities)

Kleenex

paper cups

money (priorities)

paper packaging

clothes, table cloths

NO PEN

Build one (fishbone, bone, metal, plastic, cardboard)

Scratch with hard material (metal, keys, fingernail)

NO INK

Use anything that leaves a trace on paper, e.g. fluids like some cosmetics, salves, wine, blood, most drinks) or semi-hard materials (e.g. some cosmetics like lipsticks, some stones, etc.).

You do not need to write with the whole object that can leave a trace: cut off a small part and use it as ink.

When you have nothing to capture

ten on your hand?), some longer than others and some definitely too long. Even lost in the woods you have the leaves (and bark, and stones) that you can write on (besides your skin).

No Pen itself

Having no pen at all leaves either building one (e.g. via a piece of plastic or cardboard) which is a viable option only if you also have or can make ink. Otherwise, you still can try to etch something in paper with a hard material (e.g. a metal key or your fingernail).

No Ink (or whatever fluid is used)

If shaking or wetting the pen does not work you can try to substitute the ink by almost anything that leaves a trace when put on paper. Check any fluid you have nearby to see if it works but make sure it stays visible for some time (some “inks” fade pretty quickly and cannot be brought back by chemicals or heat). Juices (of fruits!) will probably work although you might need to heat up the paper to make it visible. Lipsticks works as well, so do other cosmetics (you might have to build yourself a pen). Even chocolate — gasp! — will do the trick. Using your blood as ink can lead to a serious infection but will also work.

Neither pen nor paper

Look at “no pen” and “no ink”. It is possible to create both, even with limited material. While blood and bone (of the food you eat!) might be too harsh for all but the most devoted (and probably imprisoned) creative, you can often find materials that work as well.

Choose a different way to capture

Remember that you can change the media completely. Paper is not the only way to record ideas — electronics work as well. Most cellphones have a recorder built in, nearly all cellphones have mailboxes (simply call yourself if this redirects you to your mailbox). If you do not have a cellphone with you but access to a public telephone, call yourself. Call your answering machine. Type yourself an SMS and simply store it as draft for later retrieval. If you have access to a computer terminal, send yourself an eMail.

Reduce the risk of this worst case scenario

Make it to your second nature always to carry them. Regularly check their functionality (e.g. replace if ink gets depleted, carry replacement cartridges). You can also use pens that write (almost) forever (e.g. Fisher Millennium Pen).

Capturing Hell is other people

If you ever whipped out your notepad in public and frantically started jotting down an idea, you know the looks: Other people staring at you, trying to find out what you are writing — or simply “what the hell is wrong with you”. If you do it a few times at a social gathering, you start building (or burying) your reputation. Somehow having fantasy, having ideas and writing them down, is not as accepted in this society as it should be. Perhaps they are curious, perhaps they are envious, perhaps they are condescending or perhaps they fear your ‘wiredness’ like a socially transmittable disease.

DON'T LAUGH

This section might sound ridiculous but believe me, when you capture your ideas regularly when they occur, this will become a problem.

“Hell is other people.”

Sartre

Most of the time I suppose they are simply afraid that you might write down something about them, something negative, something they do not know about, and that will be preserved “for all eternity” (i.e. for their lifetime). One colleague once commented my note taking behavior by saying “I had a very good friend who was in the Stasi, he did the same thing.” While I found his connections to the Stasi very interesting (and noteworthy), I think he also had a point: Most people are fairly egocentric and paranoid when someone writes something down. They think the note is about them, especially if you were talking with them some time before (although my colleague would have been right if he had asked me a few minutes after the comment). In the course of day, however, you have talked to a lot of people and if you write something down, most of them will (falsely) suspect you write about them. And they almost never suspect it is something positive. Whatever it is, you often are in the position where you have to choose between losing social reputation by looking wired or losing an idea by not writing it down.

AVOIDING NEGATIVE SOCIAL CONSEQUENCES OF CAPTURING IDEAS

But there are some techniques you can use to capture your ideas and keep your reputation.

Make slow movements

Yes, the idea was there in a flash and it might be gone in a second, but like handling an animal with sharp teeth or a poisonous sting, move very slowly. The faster you move, the more likely is it that other people notice you.

In handling a stinging insect, move very slowly.
Excerpt from the Notebooks of Lazarus Long in “Time Enough For Love” by Robert A. Heinlein

Hide it

If you feel that some ideas are coming, excuse yourself. Take a walk outside, go to an empty room or even to the bathroom (“Hey, look, free paper!”). Close the doors. You cannot use this tactic more than twice an evening without looking suspicious or like you have a weak bladder. You can of course drink a lot of beer and make this responsible, but this would probably interfere with idea generation and make you (look like) an alcoholic.

Make them believe they know what you write

One of the problems is that people do not know what you write. If they think they

Capturing Hell is other people

know what you write and understand the reason, your behavior is not regarded as wired. Forcing yourself to look at a concert poster or the newspaper prior to writing something down might lead most people to believe you are interested in the concert (and write down the dates) or that you have found something interesting in an article. A newspaper has the advantage that you can use it more than once (making it look like you are copying the whole article). Of course you should spend some resources to recognize what you claim to note — looking like you are interested in a neonazi band or a teenage girlband might not leave a better impression.

Use the calendar

Somehow taking a calendar and writing a short note is regarded as more acceptable. Everybody spontaneously remembers to write down an appointment or a note to buy milk, so if you are looking like you check your schedule and write down an appointment, people at least think they know what you are writing. They are not curious, they are not afraid you write about them and they are not envious since they also own a calendar. Given that the year has only about 365 days so you might want to put some post-it notes in your calendar to give you more space for writing.

Use your cellphone, smartphone, PDA

It might be impolite to use the phone while someone is standing near, but, in today's declining etiquette and fast paced rhythm, few people will mind if you take out your phone and begin pressing buttons. Most will assume you are either checking for messages (even without sound, the vibration alarm could have sounded) or writing messages. You should do the second, but instead of sending them, save them as drafts. If you use digital devices and enter the text via "the pointy thing" you have the advantage that you can always claim that you are just checking and rearranging your schedule (see above).

Focus on the task

If you do not mind other people staring but you feel that their staring is interfering with your writing try to focus on the task at hand. Do not try not to think about them (it will not work) but concentrate on what you want to write. At this moment make the note you are writing the most important thing in the world for you.

Write for a long time

Write for long periods — before they see you. They probably will not relate the writing to themselves.

Just give in

No, not in not writing down the ideas, but in the whole "I am creative, I will write down whatever I want whenever I want." thing. Like Nike says "Just Do It.". Once your reputation is gone, why should you hold back? Or to use the words of Margaret Mitchell: "Until you've lost your reputation, you never realize what a burden it was.". While it is not nice to be an social outcast, you are at least free to follow your dreams, aren't you?

Capturing Ideas Scenarios

Let us take a look how you can capture ideas in different contexts.

ON THE MOVE BY FOOT

Walking gives you time and resources to think (compare page 95) and to capture the ideas. You also have enough privacy that this time is relatively free of disturbances (depending on the amount of people you know and where you walk).

Walk Often, walk alone

Walking does not only mean hiking. While a hiking trip can give you the time to have ideas (if you are not stunned by the scenery), the daily, regular, solitary walks from home to office (if this is manageable) provide a constant opportunity for ideas. So do walks through the city, if you can navigate without having to concentrate too hard on the surroundings.

Keep a notepad with you all the time

Look at the “all” in the heading. You will never know if an idea comes when you walk, regardless if you are “just getting a pepsi” or “just taking a leak”. Even if you are in your own home or in the office, you might not get something to write where you are getting the idea. And you might not make it back to your desk without being disturbed by something or someone. And any disturbance might kick the idea out of your mind. So make a habit of always keeping something to write with you, e.g. a notepad in the back pocket and a pen in your side pocket is ideal due to the ease you can wipe out both to jot down an idea. You can also carry a small pen and some paper in your wallet as backup solution.

Write while walking

Having ideas on the move puts you in a difficult position: Should you stop and write it down, losing time (who knows, how much, what if you hit an oil well and the ideas start pouring out?) or should you continue driving, violating the first rule and risk losing it?

Actually, in most of the cases you can do both at the same time.

Writing while walking may look silly and get you a questionable reputation, but it actually works. If you always have pen and notepad ready in an easy to reach pocket, you do not even need to slow down. You can slightly fold the notepad a little. The slight fold keeps the paper upright and

WALK OFTEN, WALK ALONE

Try to walk as many distances as possible if you have the time.

The idea is to have time to let your mind come up with ideas. You cannot do so (in a socially accepted way) if others are present.

INFRASTRUCTURE

Keep your capturing tools accessible and usable at all times (including during a rain shower).

TO CAPTURE

Use a method you can use while walking.

A simple notepad in the back-pocket and a pen in your pocket are invaluable.

Notepads are easier to write in when you walk compared to notebooks. There is nothing flapping around. Take spiral bound notepads.

You can bend the notepad a little which gives it more resistance to your pen, allowing you to write while you walk.

If you have a good pen, you can write on whatever you have in the other hand (e.g. paper cup of coffee, your hand).

Cellphones and smartphones are more inconspicuous. Using the telephone while walking is widely accepted and typing is often interpreted as sending an SMS or entering an appointment.

You never know where you are — paper is much more resistant and easier to replace than digital.

Capturing Ideas Scenarios

hard as a piece of wood, making it easy to write on it (see page 148). Remember than you do not need to write beautifully or with a lot of expression, just jot the ideas down. If one of your hands is occupied (e.g. you are carrying something), you can write on it or still call your mailbox or use the recording function on your cellphone.

But, it looks stupid ...

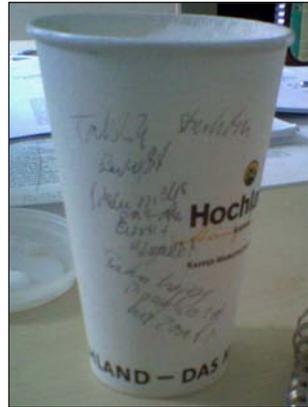
Writing while walking seems to be an invitation for a kick in the ass. Hell might be other people, but in this case the hell might be deserved. In *“Back to the Future”*, George McFly walked along the school corridor with a notepad in his hand, writing ideas for his book, while being kicked all the time (o.k. he had a sign on the back). This might not happen anywhere but in fiction (or in schools), but it nonetheless looks strange if you walk through the streets frantically writing down in your notepad. There is an easy solution to the anxiety that comes while doing it — simply concentrate on writing down the ideas and you will not care what others think. You wont see most of the people ever again and frankly, even if you did, isn't a good idea worth more than the stares of people who have no idea on what you are working? Ignoring them costs effort, but look at it this way: You want to be creative, you can't stop every time you have an idea, so you might as well get the idea down while walking and be done with it (for the moment).

Adverse Conditions

Adverse conditions in capturing ideas is mostly water surplus: it damages paper and kills electronics. Lack of water is rarely a problem since only a few writing utensils need extra water to work, neither is heat, since most pens work in extremes where human beings will neither have ideas nor live long enough to record them. Pens are surprisingly reliable even in adverse conditions: the fisher space pen for example works in a temperature range of -35 to 120 degrees Celsius, upside down and even under water. More more than any human being can take.

Writing in the rain

You might want to search a dry place to write your ideas down, but if you are walking in the rain, you probably have a good reason to do so and an important goal to reach. Stopping and writing something down is probably highly contrary to your current motivation. This might lead you to discard or miss low presumed quality ideas which is a bad thing.



PERSONAL COMMENT

It is a sad world that capturing ideas on the move is frowned upon, or laughed at, instead of it being simply tolerated because the captured ideas actually makes the world a little better, even if they bring a little bit of fun to someone.

"I do not know how they look at me when I write down ideas while walking, I focus on my writing, that's more important."

Unknown

SAFETY

Make sure you keep your eyes on the road and that the area is safe. Bumping into a lamp pool is painful, letting a car bump into you is deadly. And getting mugged while having ideas sucks.

"Rain is only a problem if you don't want to get wet."
Old Samurai Saying in "Sin City: Sex and Violence" by Frank Miller

Capturing Ideas Scenarios

However, having an idea while walking in the rain or standing in the shower is essentially the same thing, so most recommendations regarding ideas in the shower are applicable here (see page 175). You probably will not take a diver clipboard with you, but having a spare notepad or an all-weather notebook will serve you well.

Umbrellas

Having an umbrella puts you in a better and worse position at the same time. On the one hand, you are essentially protected from water (save in a storm) which allows the use of electronics, on the other hand you have only one hand left. Using the recorder on your cellphone or calling yourself and leaving yourself a message on your mailbox will probably work. If you want to write something down you might need to do some one-hand acrobatics and use your mouth to hold the pen while you shift your notebook to the hand that hold the umbrella, but it will also work.

When it rains, it pours

You are walking in a heavy storm (why would you run if you are already as wet as you can become?), the rain is pouring down and your mind follows with one brilliant idea after the other. Any electronics that did not die already in your wet pockets will do so if you put it out, any paper not made out of plastic will dissolve in a second. Yet, you can still save some ideas. The ink of some pens is surprisingly water resistant and the skin of your arms might be a good canvas for them. You can also try to blindly write in your pocket or backpack, if you know that it will a) protect your notepad from the water and b) you know exactly which page is free.

Capturing Ideas Scenarios

ON THE MOVE BY CAR

Especially if you drive a route regularly that has few demands on attention (e.g. a straight country road instead of inner city rush-hour traffic), ideas can come. The problem is, that on the one hand, you have “nothing to do” but on the other hand, you have to steer a ton of steel faster than anyone could run, and that could kill you (or anyone you hit) in an instant.

While capturing ideas are important there is not idea worth dying or killing for (although some revolutionaries, terrorists, and religious nuts will disagree with me on this point).

Important rule: It should NEVER focus attention

A lot of things we do while driving draw some of our attention: talking, changing the radio station, inserting a new music storage, etc. This is all well (and even beneficial in some situations since it prevents your from drowsing), *but no activity save driving should ever focus your attention*. If your attention is focused on something else than the road, you endanger yourself and most (more) likely others. Methods for capturing ideas on the road should adhere to that.

Do not write while driving

If you get in the habit of jotting down your ideas immediately regardless where you are, you might feel tempted to write them down while driving: *Don't*. Writing is not the medium of choice for the road. If you have only something to write (not even your cellphone to leave a message on your mailbox), and you really, really have to write it down, drive to a parking lot. While I do not recommend stopping while walking, stopping to write in a car if you are the driver is a must. A bump in the head after walking into a lamppost while writing is awkward, bumping into someone with a car while writing is murder.

Motorcycles: Never.

Ideas might come while driving a motorcycle but never, ever, try to capture them while driving. You will likely be writing your suicide note and the idea cannot be that good (besides: few ideas are realized after its creator is dead and they probably wont find your notepad in all that mess).

INFRASTRUCTURE

Make sure you have a voice recorder always available in the car.

Make sure you establish the habit of transferring your audio recordings immediately after you reach your destination. Otherwise you will probably never do it (see page 156).

TO CAPTURE

Nothing to write should be used, except in a parking lot. While there are notepads for cars, they should be used for glances (e.g. to find out where to drive) but not for writing while driving. Neither should a notepad on the front passenger seat be used even if it is easily accessible.

Even if you can write without looking (which is better than driving without looking) it draws too much attention from the road. Even in a traffic jam, the amount of time is often too short to write something down.

Use a voice recorder, either the function on your cellphone (or talk to your mailbox) or a cheap voice recorder.

If you have a headset for you cellphone, put it in before you start driving. This way you can easily record ideas.

If you have a passenger and the idea is tolerable, ask him to write it down. You can also use keywords that remind you of the idea.

Capturing Ideas Scenarios

ON THE MOVE AS A PASSENGER

The best way to travel while having ideas is as passenger: be it in a car, a train, a bus or a plane. 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. Consider taking the train if you have to travel somewhere instead of the car.

If the other passengers are annoying, listen to music on a headset to drown them out.

Capturing Ideas Scenarios

IN BED

After a hectic day ideas often creep in during the shut-down phase in bed. Did you ever have an idea while laying in your bed, half-sleeping? Do you remember yourself saying: *"I'll remember it in the morning."*? Did you remember the idea? Probably not, and if you forgot the idea, perhaps there were countless times when you forgot that you even had one too. Having an idea while trying to sleep forces you to chose between capturing the idea (and who knows how many might follow) or letting yourself fall asleep. In most cases, sleep would probably win. It will, if recording the idea takes a) getting up, b) turning on the lights, c) finding something to write, d) turning off the lights, e) laying down and f) enduring the anger of your partner, whom you probably have woken up. There are other, quicker solutions that will result in more captured ideas and the conditions for a different kind of f).

Criteria for capturing methods in bed

Low Barriers are Needed

To deal with the low motivation to write the ideas down (*"I'll do it in the morning."*, *"I'll remember it when I need it."* *Yeah, right!*) the barriers must be extremely low, i.e. fast, usable in the dark, and quiet (if you do not sleep alone).

Regular use

Especially after a demanding day it is very tempting to just forget about the idea (i.e. wanting to write it down in the morning). But if you exercise discipline and do it regularly, it will not be as aversive as it is at first. When you see in the morning what you have captured, you might consider it well worth capturing your ideas in the future (at least if you do it for a few weeks and there is the occasional excellent idea).

Unobtrusive

Since you are probably not alone, you also have to find a way to do so without disturbing your partner. Turning on a light will be very aversive for both of you (if your eyes have adapted to the darkness) and prevent you from writing down ideas. But there are a couple of ways to do without: light pens, PDAs/Smartphones and voice recorders.

Possible capture methods in bed

Light-pen with space pen mine in a knife sheath

There are pens that have a light source build into them, some of them are even equipped with a space pen mine (see page 146), which means that you can write while lying on your back, without the lights turned on. Since a pen lying in the corner of the bed is an uncomfortable thought when trying to sleep — your eye might not

INFRASTRUCTURE

Keep capturing device within arms reach.

Keep it easy accessible.

Keep it functioning.

TO CAPTURE

Light Pens carry their own, unobtrusive light source.

Chose a pen that can write against gravity (so you do not have to turn around).

PDAs/Smartphones have backlight displays.

Voice recorders can be used in the dark.

She patted her nightie. "I must take some notes, I've got my memo book somewhere ..."
"In your nightshirt?"
"It's amazing how ideas come to one in bed."
"Guards! Guards!" by Terry Pratchett

Capturing Ideas Scenarios

react well to it — a place for it is needed. It must be easy reachable even in absolute darkness, so a place on the night table is ideal. If you do not have a night table, try using a knife sheath or a similar construction (e.g. made of paper) taped to your bed-post. Make sure that you use this pen only and only for your ideas while lying in your bed. Only a few things are more frustrating in bed than having an idea, but when you reach for your pen you realize it is not there anymore.

Electronic device with backlight display

A PDA or Smartphone with backlight display can also work, if you can type in the speed of your ideas. The backlight display allows you to see what you type on the virtual keyboard without turning on the light.

Voice Recorder

If your partner sleeps very deeply or you have the questionable luck of sleeping alone, a voice recorder is a better solution. You can operate it in the dark, even with your eyes closed.

Computer with external monitor and remote keyboard

An overkill in most cases but if you want to use the computer while laying comfortably on the back consider using an external monitor attached on a monitor arm over your bed. A remote keyboard lets you type easily (the best case would be a separate keyboard laying to your right and left side). If you have the computer on standby this could be quite comfortable.



left: A notepad with a light pen, a small, sufficiently bright light source for noting ideas in the dark.

right: Originally a sheath for a knife it now holds two pens (one normal, one light-pen), both can write against gravity.

Capturing Ideas Scenarios

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. Lingering 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 since 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. Just one general recommendation: Use a shampoo that does not burn in the eyes.

Criteria for capturing methods in the shower

Capture the ideas inside the shower

Even if ideas come at the end of shower, capture them immediately. While it might be easier to do so after you leave the bathroom, the amount of possible disturbances that could lead to a missed idea are too great (people interrupting, having to concentrate on your shave or make-up).

Do not interrupt the shower

The same rule that applied to walking applies here: do not interrupt what you are doing to write down an idea. Otherwise you will never be finished and the interruptions by ideas become aversive, leading to lost ideas in the future when you stop writing them down because you "do not have the time" (it is the stopping that is aversive, the turning off of the water, while writing while (partly) standing under the running water still brings you closer to your goal of becoming clean).

Possible capture methods in the shower

Hang a cheap notepad on the outside of the shower

Use a cheap notepad and a long cord to attach it to the bar where the doors or curtains of the shower are attached. You can put the notepad on the bar (if you are so large) and take it down to write an idea without opening the doors. The cord will prevent it from falling in the water. You can also leave it dangling on the outside of the shower. If you have an idea, simply open the doors or pull back the curtains, grab your notepad and write it down while holding it on the outside of the shower. Most notepads do not mind some splashes of water and a soft pencil (e.g. 2B to 4B) can write if the paper is a little bit wet. After the shower you can tear off the pages you used and transfer them to a different medium.

Use an all-weather notebook

Some notepads are made to withstand at least some water (e.g. "Rite in the Rain All-Weather Notebook"s). They are expensive for everyday use but will withstand the climate in the shower much better than ordinary notepads.

INFRASTRUCTURE

Keep it reachable without interrupting your shower.

Keep it well stocked.

TO CAPTURE

Cheap notepad hung on some cord on the outside of the shower and a pen.

Water-resistant notepads are available.

Divers-Notepad will work in shower (but you have limited space).

Plastic clipboard and a 2B pencil will also work (limited space).

Capturing Ideas Scenarios

Use a scuba dive clipboard

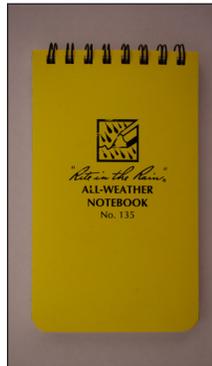
Divers can communicate under water with plastic clipboards and soft pencils. Something designed to withstand the pressure and full enclosure of water will also work in the shower. One disadvantage of this solution is that you have to take the whole clipboard out of the shower and back inside after you 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

You can also use a simple plastic clipboard (which will work as good as a diver clipboard) and fill it with sheets of plastic (e.g. the opaque back of loose leaf binder). This plastic will work like paper, give you much more space to write something down and you can take the pages with you when you leave the shower.

Water-proof recording device

Perhaps an overkill but if you find a water proof device that can record sound and get it installed in your shower without frying yourself you can actually continue showering while speaking your ideas. On the other hand you have to speak pretty loud enough to drown out the water.



above: An all-weather notepad. Resistant against rain, natural and harnessed.

left: Easily available when needed and protected from the water when not, a cheap notepad with a mechanical pencil works fine to capture ideas.

Capturing Ideas Scenarios

IN THE BATHTUB

A lot of creative people love the bathtub. It's the place where they can relax, where they have no telephone, no computer, no distractions because even the family can (learn to) respect the private hour(s) of bathing. You can relax in the hot water and open your mind — and often, you get great ideas.

Capturing them is often not a technical problem, since there are many ways to write in a bathtub. The problem is more *motivational*. Relaxing with closed eyes and wet hands, it takes a lot of willpower to reach for that towel and notepad. If this is a huge problem, do not try to remember which ideas you had in the bathtub but whether you had ideas or not. If you are leaving the bathroom with the strong impression that you had great ideas but can't remember them anymore, the next time you'll be in the bathtub it might motivate you to get them down.

Otherwise, there is no sense in taking a bath, is there?

Ways to capture ideas while bathing

Cheap notepad with a soft pencil

Since direct contact with water can be neglected a towel to dry your hands and a cheap notepad with a soft pencil is all you need. The pencil will write upside down while lying in the bathtub and the soft graphite will write on slightly wet paper.

Voice Recorder

While a battery powered (!) voice recorder will work, the device will not react kindly to the humidity of the bathroom and wet hands. Personally, I also find that speaking takes more effort than simply writing something down.

See also the points in "In the Shower" on page 175.

Caution: Steam kills digital Devices

If you have ever used a cellphone while bathing in hot water, you might have made the unfortunate experience that the steam can kill the digital device. It will do the same to smartphones, PDAs and notebooks. For this reason (not to mention the dangers of electricity near the bathtub) use paper.

Other Activities: Conceptual Work

The bathtub can also be used to develop concepts or a structure. If you use a notepad, write the concepts or topics on small pieces of paper with a water proof

INFRASTRUCTURE

Keep something to write handy. There are usually structures in the bathroom near the bathtub (e.g. turned off radiator, rim of the bathtub) that can easily hold a notepad.

Use a notepad specifically for the bathtub. The steam will damage the paper over time and if you accidentally drop it into the water you might not be able to recover all ideas. A notepad where you tear off the written pages after the bath will keep possible losses to a minimum.

Keep something to drink nearby. If you have a lot of ideas you should not interrupt the bath just to get something to drink. As long as you have a empty glass or a bottle, you can always refill it with tab water.

TO CAPTURE

Use a notepad (cheap or water resistant). Steam kills digital devices.

A divers notepad will work fine but is an overkill since you are not completely emerged in water.

A soft pencil (2B) will write on slightly wet paper.

A page per idea on a cheap notepad is not a high price. If you are very relaxed you will probably have difficulties with narrow handwriting.

Transfer the pages to the collection after the bath in case you did not write as much as you should have.

There must be quite a few things that a hot bath won't cure, but I don't know many of them.

"The Bell Jar" by Sylvia Plath

Capturing Ideas Scenarios

pen. If you wet the backside of the paper a little, it will stick to the tiles. This way you can use the whole wall next to your bathtub to develop a structure while relaxing in the tub.

"EUREKA!!!!"
Archimedes

Caution: Make your to test it first whether the paper can be removed without leaving any marks.



The tiles of the bathroom can be used for conceptual work while the rods of the radiator can easily hold a notepad (make sure the radiator is cold enough!).

Capturing Ideas Scenarios

DURING SPORTS

Doing sports is a great time for incubation and ideas. If you are using your body in a routine manner your mind is free for ideas. Capturing them however is often difficult.

Problems when capturing ideas while doing sports

Water

Electronics and even papers does not react well to sweat. If you exercise a lot, you might damage the device or make the ink unreadable. It is not only sweat but also any kind of water (rain, rivers) if you do sports outdoors.

Running

Few people can write while running at it often draws sarcastic commentaries from those you overtake while writing (on the other hand, who cares?).

Ways to capture ideas during sports

Staying at one place

Some sports you can do while staying at the same place, e.g. in a fitness studio. You can easily pack a notepad or a cellphone (on mute) with your sports gear and keep it near (on) the machine you train with.

Using the right gear

If you move, try to take a notepad with you or use an mp3-player or cellphone with voice recorder. There are holders to attach these devices to your upper arm, making them easily available while doing sports. If you sweat a lot, try water resistant notepads like "*Rite in the Rain*".

INFRASTRUCTURE

Store something to capture your ideas where you keep your sports clothing and keep it well stocked (e.g. a notepad and a pen in your jogging shoes).

TO CAPTURE

Even if you do not want to stop (e.g. you are running), you can often slow down a little to jot down some keywords.

Capturing Ideas Scenarios

AT THE COMPUTER

The computer provides countless opportunities to capture your ideas. See page 159 for more information.

Your own computer

Make sure to keep a Input-file easily available (e.g. shortcut from the task bar). If you are sketching use templates or saved work environments. If you find yourself doing the same tasks over and over again, you can probably automate them.

A foreign computer

You can use a computer that belongs to someone else to capture your ideas. Simply send them to your eMail-Account via Webmail or create a private blog entry. You can also transfer the file to an USB-stick or another medium.

Entering an idea in less than two seconds

If you use plain text files for idea capturing on a computer, you can do so in less than two seconds. On a Mac, you can use Quicksilver to open your input-file. On my computer, I have changed the Quicksilver command to `cmd+space` (formerly reserved for spotlight, which is now `alt+space`, I use Quicksilver more often). To capture an idea I press `cmd+space`, type the first three letters of my input-file (since it is the most frequently opened file via Quicksilver, the program prefers this file and displays it first), hit enter, and start typing. Takes less than two seconds and I can do so without ever taking my hands of the keyboard, e.g. without interrupting what I am doing. Afterwards I press `cmd+s` to save the file and `cmd+w` to close the window. A `cmd+tab` gets me back to the application I was working in. See page 237 for an illustration.

If you are using Windows put a link to your input-file on the task bar. You will have to use your mouse, but at least you can access it easily (see page 160).

Capturing Ideas Scenarios

AT WORK

Capturing ideas at work depends heavily on the kind of work you are doing. Are you working with heavy machinery or in a job, where continuous attention is required? Then it is probably better to use your pauses for capturing. Otherwise it probably falls in one of the previously mentioned categories: by foot (page 168), by car (page 171), as a passenger (page 172), probably not in bed, as this would be unfair to the customer (page 173), or during shower (page 175), bathtub (page 177) or sports (page 179) but most likely, at the computer (page 180). There is no reason why you cannot write your ideas while doing gardening, delivering pizza (cp. page 93), working in a factory, attending meetings (page 95), or sitting at your desk.

Keep in mind the special characteristics of the workplace setting

You are payed for your performance

In most cases you are payed for the work you do, not for capturing ideas. However, given that you cannot work all the time, making short notes is probably o.k.. The key is usually to do it in a way that the work is not negatively influenced. If you leave your post to write down a sonnet, your supervisor will probably be righteously angry. But if you make short notes while working and your performance does not decrease, it should be o.k. Keep it fast and continue working. However, keep in mind that doing something else than what you are paid for at work is risky. You might be able to make your point (e.g. it does not impede your performance but keeps you active), but do not count on it.

Keep your co-workers in mind

Writing down ideas is often regarded critically by others, not because of the ideas, but because they do not know what you are writing (see page 166). The problem is that you work with the same people every day and sooner or later they will notice it. You can use some less-snoop-like methods like typing SMS for yourself (simply leave them as draft for later retrieval), writing yourself eMails (from your work to your private account), opening a text document for ideas, etc.

Capturing Ideas Scenarios

AT HOME

Since your home is (mostly) under your own control, you can make it very easy for yourself to capture ideas. Place a notepad and a good pen where ever you spend some time (e.g. kitchen, toilet, bed, desk, couch) but keep one with you if you are dressed.

Leave the notepad, not the ideas

Since you can tear off the pages of a notepad, do so to prevent leaving your ideas around. If you jot down the essence of the idea, others might misinterpret it (I once had a photo idea where I wanted to demonstrate the power of knowledge: my teddy bear (Theo) should be crushed by the volumes of the Encyclopedia Britannica. I wrote down: "power: kill Theo with Britannica"). If you begin to write down all your ideas and ignore the inner censor, your notepad-pages have the quality of a diary regarding privacy. If you write down intimate or gift ideas for your partner, you would not want your partner (or any guest) to find it.

Collecting Ideas

If you have captured your ideas the next step is to transfer them into a collection. If you just keep your ideas in your notepads, digital device or as one file on the computer, it soon becomes confusing. There are enough people who brag about their “drawers of brilliant notes”, but whose ideas are so unordered that they never (could) expand or realize them.

In this chapter we will take a look at the reasons for collecting ideas (page 185), how to collect ideas (page 187) and to organize the idea collection (page 197), prioritizing projects (page 207) and remembering the central projects (page 210), evaluating an idea collection (page 213), different ways of collecting ideas (page 222) and some issues regarding the ways of collecting (page 256). Once you have decided for a way to collect ideas, starting the collection (page 257) and digitalizing information (page 259) are addressed. Then we come to modifying the collection, i.e. finding ideas (page 260), expanding ideas (page 261), restructuring ideas (page 262), and removing ideas (page 264). Finally we have a look at protecting the collection (page 265).

Why Collect Ideas?

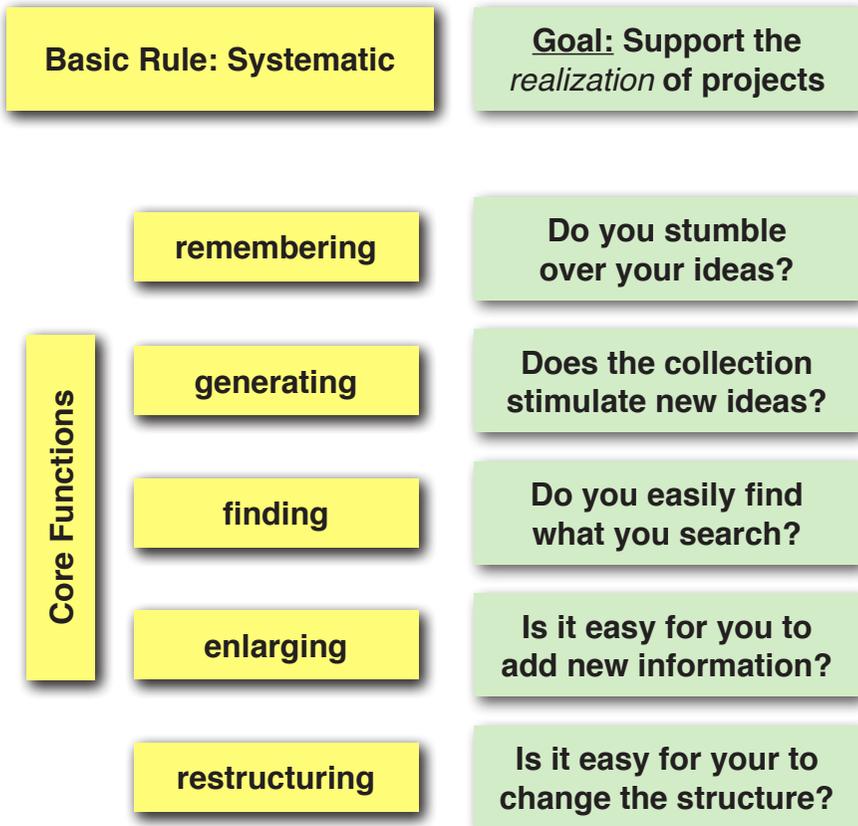
One important difference, between the successful creative who realizes complex ideas and the nut job with his drawer full of important ideas that he will “one day” realize, is the way the captured ideas are collected.

The key word here is indeed “collection” in the classical sense. It is not about mere storing, it is about a systematic, structured collection that takes time and effort to build and to be kept up-to-date. Making collections of ideas is not rare. Artists often collect interesting bits of information and scientists (hopefully) record what they are doing.

FUNCTIONS OF A GOOD COLLECTION

A collection is necessary because ideas often come for projects that are in their infancy, that are a long way from realization. Instead of discarding the idea (“Not now!”) you can place it in the collection. It will act as a crystallization grain and lead to the accumulation of related ideas. And when the time is ripe, you can refer to your collection and get all the related ideas at one time, even on one page.

To allow this the collection should have the following functions:



A good collection is a systematic, structured way of storing your ideas that provides the following functions: It should **remind** you of your ideas and possible projects (it should encourage you to flip through your ideas) which will lead to the

Why Collect Ideas?

advancement of current and **generation** of related ideas, it should allow you to **find** your ideas *in less than 10 seconds* (otherwise it will become a dump, i.e. a graveyard for ideas), you should be able to easily **enlarge** the existing information (otherwise ideas cannot grow freely) and you should be able to **re-structure** the information (order often becomes clear at a later time and you should not be stuck in a given structure).

In short: An idea collection should help your future projects to grow where ever there is growth, even when you do not know which kind of fruits it might bring.

Metaphor for the Collection

A good metaphor for the collection is an orchard (see cover image of this book): you prepare the ground (get knowledge and skills), you fertilize it with ideas (first ideas), over the time it grows (additional ideas, fleshed out ideas) and when you decide to realize the project it is time for the harvest, when you gather the fruits and process them to wine, juice or cakes (hard work of realization). Even the fact that some fruits mutate during realization or taste different than expected works with this metaphor.

A previous metaphor (and used on the mock-up cover of this project, see page 212) was a *butterfly collection*. You capture ideas (butterflies) that are freely floating around, collect them ... and use them? This is where the butterfly collection metaphor broke down and I had the idea of an orchard (based on a Dune novel). Ideas are not for collecting alone, you should *do* something with them, i.e. realize them.

Having dumped ninety percent of my packing onto Gwen I tackled the hardest ten percent: my business records and files. Writers are pack rats, mostly, whereas professional military learn to travel light, again mostly. This dichotomy could have made me schizoid were it not for the most wonderful invention for writers since the eraser on the end of a pencil: electronic files.

Dr. Richard Ames in "The Cat Who Walks Through Walls" by Robert A. Heinlein

If you happen to be one of the fretful minority who can do creative work, never force and idea; you'll abort it if you do. Be patient and you'll give birth to it when the time is ripe. Learn to wait.

Excerpt from the Notebooks of Lazarus Long in "Time Enough For Love" by Robert A. Heinlein

How to collect ideas

If you want to collect your ideas you should keep the following things in mind:

TRANSFERRING IDEAS FROM THE CAPTURING TOOL TO THE COLLECTION

How do you transfer your ideas from your capturing tool into the collection? It helps to use an intermediate step:

Collection Inbox

In the best of possible worlds, you would transfer your ideas from your capturing tool (e.g. a paper notepad) to your collection (e.g. wiki) whenever you have the time. However, given that transferring is often a boring task and we often “do not have the time” (i.e. have other priorities), it is important to have a step in between.

A collection inbox — an input file or folder.

If you use a non-digital way to collect your ideas, you can use a real box where you can store the pages from your notepad or the sheets of paper where you wrote down your ideas. However, make sure that that pile does not get too large. If you use a digital collection make sure to keep your collection inbox digital also. It helps you with the digitalization of your paper notes and will make it easier to transfer the ideas to their place in the collection. Instead of having to search for the place and type the idea there and repeat this process again and again, you have one file where you enter your ideas. If all ideas are entered for the moment and your capturing tool is empty, you can copy and paste in the right place. You can even pre-sort the ideas in your inbox file. Nobody would run over the whole field to plant a grain of wheat and then run back. It is much easier to collect some ideas first, sort them and then plant them in one session.

Why not leave the ideas in the capturing tool instead of using the collection inbox?

The collection inbox might seem like an unnecessary step. However, it has the following advantages:

You see how much you have to transfer

If you use a notepad you might not realize how many ideas you have already written. The pages in the physical inbox will point you to the fact that you should transfer them into your collection, before the pile becomes too unwieldy.

You reduce the risk of losing ideas

It is a gut-wrenching feeling to lose ideas because you lost your capturing tool (e.g. your notepad) or accidentally destroyed them (e.g. deleted the files). If you remove the pages from your notepad the damage is reduced if it gets lost.

You have already done the hardest step, the digitalization

If you capture with pen and paper and your collection is digital you should use a text file as collection inbox. Simply transferring your notepad pages to a digital text editor by typing them will take some effort, but after that the hardest step is done: the ideas are not digitalized. This means you can now move them to the appropriate place in the collection.

How to collect ideas

If digital: It is included in the backup cycle

If you use a digital collection inbox file, make sure to include it in the backup cycle. My *collection inbox* file is a text page in my wiki. As such it gets secured whenever I secure my collection. This means even if I loose my hard disc while the ideas are not yet in the right place in the collection, they are still available.

Get a routine to transfer your ideas from your capturing methods to your collection

As written before, it is important that ideas do not remain in the form in which you have captured them. Transfer them to your collection as fast as possible. You can do it at the end of the day or at a specific day of the week (e.g. Saturday or Sunday). But make sure you enter your ideas in the collection. Otherwise they will not be part of the backup process and might get lost. Think of the idea collection as a *stronghold*: It protects your ideas over time.

MARK TRANSFERED IDEAS IN YOUR CAPTURING TOOL

To prevent duplicate entries (see page 197) and accidently discarding ideas because you think you have already transferred it, you should explicitly mark ideas as transferred on your capturing tool. If you use a notepad, simply cross out the idea so that it is still readable but clearly marked as transferred. If you are using digital files (e.g. a text file on your office computer), delete the entry once you have transferred it. Some people laugh about the idea of crossing something out that you will discard anyway (e.g. crossing out an idea on your paper notepad, then ripping out the page and putting it in the trash bin). However this is the only way to make sure that you have actually transferred an idea and you are not accidently throwing away an idea that is not secured in the collection or that you store it twice. Just imagine you begin transferring a notepad page and you are interrupted. You take your notepad with you and when you next transfer ideas, you might not remember that you have already transfered parts of it. Marking transferred ideas also allows you to keep the pages or files for a while, until you have made another backup from your collection.

How to collect ideas

USAGE OF THE IDEA COLLECTION

Be very conscientious in the way you use your idea collection

An idea collection is not the famous drawer where you stash all your captured ideas. It is a structured collection and it is effortful but necessary to keep it tidy. Otherwise you will not see how projects emerge that have gained enough ideas to be realized, you will not remember projects and find additional ideas. It will just be an one way street, a graveyard that you never use because you will not find anything. If anything, you will just stumble over exciting ideas while searching for something different but you will hardly realize larger projects.

Use only one version of your collection

If you copy your idea collection on more than one computer (or USB stick) you have to be very careful which version is the current one. Imagine that you copy your collection file on your USB stick, you edit it while you are at the office, later you return home, sit at your computer and open the collection file there. The moment you enter something in the file, you have two different versions of your collection. While there are tools to automatically compare two files for differences, synching two files is very uncomfortable and should be avoided. The easiest way to do this is to use a clearly defined process which way the information flow may go and which files it may use. Make a strict difference between *capturing ideas* and *your collection*, even if you use the same tool for both steps. You can use files like “ideas_work.txt” and “ideas_home.txt” for capturing ideas on two different computers. You write information in both files depending where you are and from time to time, you copy them on your USB stick or mail them to the computer where your ideas collection is. There you transfer the information into the collection. Make sure that you empty the capturing file immediately after you transfer the information, otherwise you have the same entries twice. If you have a lot of ideas, it becomes very difficult to differentiate between the ideas you have already transferred in your collection and the ones you did not.

Using only one version does not mean that you must not make backups. On the contrary. But backups are not active versions of your collection. Backups should always be made, regularly (see page 265), but *they should never be used*. Unless, of course, you have no choice.

The collection is for ideas, not for products

When you use an idea collection you might be tempted to put all your finished creative works in it. For example, you might have photography as a hobby and now use the collection to store you pictures, all 10,000 of them. *Don't*. An idea collection is for ideas, not for products. While the idea for a specific photo belongs in the collection and the realization of the idea should be documented for the archive (see chapter 7), the whole product itself is often too large to be stored in the collection. If you have an idea for a portrait with some specific lighting, keep a sketch of it and the description in the collection until you have time for it. When you do, make the photograph. Then search the best photograph and archive it in the collection. But also store it with the other photos somewhere else, e.g. on a photo DVD or in your iPhoto or Aperture Library. Otherwise the idea collection will become unusable quickly if you indiscriminately store your products in it.

How to collect ideas

Use only one idea collection

Unless you are working in two vastly different contexts that are not compatible and could not possibly gain from synergy effects (and I can think of none for which this could be the case), use only one idea collection.

You might profit from links between (seemingly) unrelated Topics

Storing ideas for different contexts in one collection can lead to the situation where the information in the first context inspires ideas in the second one, even if they have nothing in common in surface characteristics. In the history of creativity, artists have often drew inspiration from science and vice versa, artists in one area have been inspired by artists working in a different one and scientists in one domain have often used ideas from another domain. The advantage of letting ideas inspire each other is just too important for creativity not to use it.

It will force you to keep the collection flexible

Even if you are working with text and would never, ever, want to store video, you might stumble upon a short clip that is a great inspiration. And then you have to store it. If you are open to storing different media in the first place, because in other contexts you need this, it will be much easier.

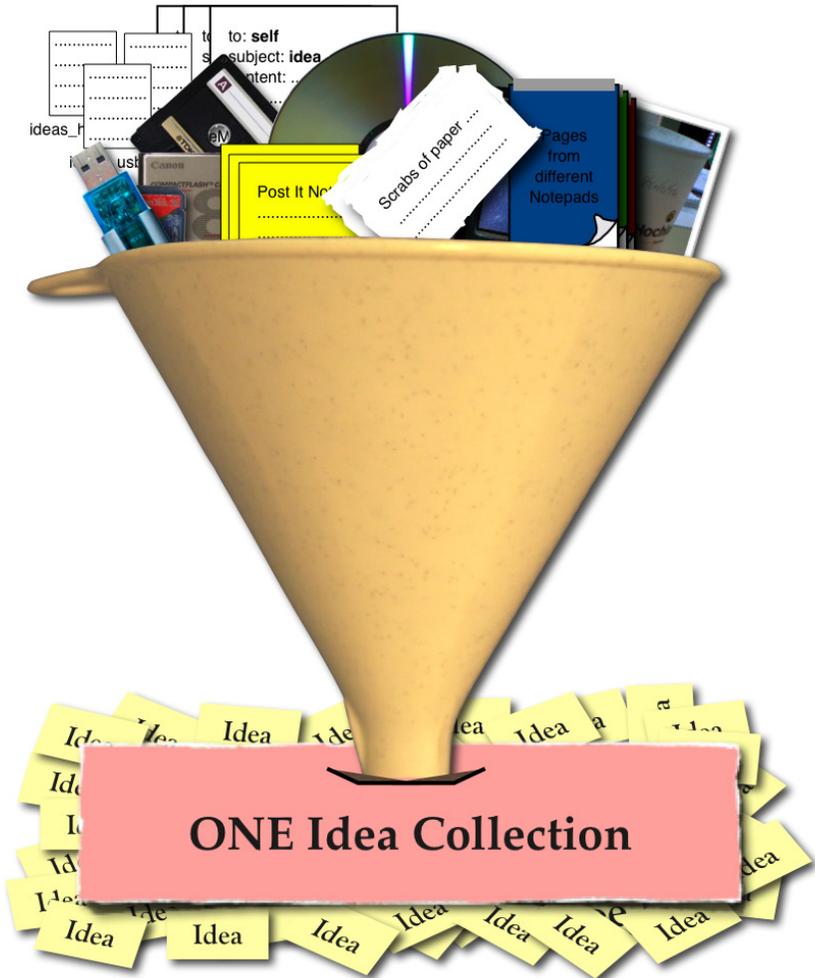
It makes backups much easier

If you have only one collection you can concentrate your (needed) efforts of keeping this single collection secure. As soon as you made a backup, *you have secured all your ideas*. If you use different collections you must take care not to neglect one collection while continuously securing the other one.

Store ideas independently from projects

As written on page 199 it pays to treat ideas and projects independently. Even if you are absolutely sure that an idea will only ever be used for one project, if the collection supports it, store it as a general idea and simply assign it to this project (via tags/keywords). This allows you to use to idea in more than one project which is extremely useful in case the project you wanted to use the idea for is not realized. The exception are descriptions of the project itself, e.g. the plot of a book. But even then treat the entry as a project and an individual idea. You can even use a complex plot in another story as side plot (or to foreshadow future events in an earlier book).

How to collect ideas



Many different methods and tools to capture ideas but only one collection.

How to collect ideas

THE IDEA COLLECTION IN THE ORGANIZATION OF YOUR CREATIVITY

The difference between collecting ideas and realizing them

An idea collection is not the area to realize ideas. Its aim is only to collect ideas. The realization happens when (if) you have collected enough ideas for the project to start the realization phase. At that time, you must find the tools to realize the project, which can be another program (e.g. a writing environment for stories) or having a look at the information in the idea collection and start sketching.

Why not use the final program or material for collecting ideas?

If the tools used to realize the idea is another program, e.g. a word processor, it might be tempting to use this program to collect ideas. In art, e.g. drawing, it might be tempting to just start drawing and put the idea on canvass when it occurs (and is still fresh). Unless you are currently trying to realize the very project (and only this project) I would not recommend it for the following reasons:

The final program/material has affordances

The affordances of the software or material to realize an idea can drag you in and form your idea into a concrete form where it loses its flexibility. A word processor is meant to be used for writing text, and you will likely use it this way. A canvass is meant for drawing, and soon you will begin drawing your painting, perhaps before you are ready. Ideas that are fleshed out too far (e.g. it is already written as a chapter) cannot be moved around as easy as ideas in an abstract, outline stage. An idea for a detail already painted on canvass is hard to erase. While fleshing out ideas can generate great additional ideas, one should not invest so much effort in a concrete structure that it loses flexibility, because one is not willing to smash the structure to put it in a better place. Additionally if you start to realize an idea or project before you have collected all necessary ideas, further ideas will be very hard to implement and the realization becomes confusing because it begins to grow (mutate) at all bits and ends. This often results in discarding the project because it “failed” and the start of an all fresh and new project which will likely go in the same direction.

The program takes the idea out of the idea pool that the collection provides

An idea collection can hold a lot of abstract, flexible ideas that can be used for different projects, perhaps with variations. Once a separate program is used, a project is started and ideas that go into that project file outside of the idea collection are lost to the collection. Of course, one can use ideas directly for the project *and* put it in the idea collection. During (or after) the realization phase, one should do this with the ideas one wants to revisit in another realization. But realizing a project should be a conscious decision and it should be done in a finite amount of time with a single project (see page 280). Collecting ideas for multiple projects in multiple places wears you down. It is unnecessary, often wasted work.

Not implementable if it is serial

If you already start using the ideas for the final product, you cannot integrate new ideas that demand a radical shift in perspective or focus. In the outlining stage you can easily shift your focus, e.g. to another subtopic or another character. This freedom is lost, however, when you have already written a lot of text. In drawing you cannot include new elements if they demand a different perspective in the picture (although how to include them can give you a challenge that might lead

How to collect ideas

to creative solutions). If you are still making sketches and collecting ideas, this is easily possible.

The “Final” Program might not be so final after all

If you have ideas for a project for some time, you might find a better program or methods for its realization. If you “collect” your ideas in the “final” program (or already start working with specific material), you will have a hard time to change it. In extreme cases, all your work is lost. While this can be a great way for a sketch or a first advance into the project, it often means losing time and wasting effort. And sometimes you will rather work with inferior program or materials instead of discarding what you did, leading to inferior performance.

No project history

If you “collect” ideas with a program or material (e.g. on canvass), there is often no *version control* involved, i.e. pervious versions are not stored. You write down an idea for a chapter in a certain way, then you revise it, and unless the software keeps track the original idea is lost (or overwritten, or overpainted). An idea collection helps you to see what ideas you had and the direction in which the ideas have moved. It helps you to keep track and return to a former idea if the current solution does not work out.

IT CAN ALSO HAPPEN DURING REALIZATION

The “final” program I used for this project was Pages, because I was intrigued by the speed with which you could create a book like this. Unfortunately, it turned out to lack some important features (e.g. page references, table of contents in Page Layout Mode) and I would have loved to use InDesign. Unfortunately, beside the high price, I did not want to invest the amount of time necessary to transfer the 400+ pages to a new program.

How to collect ideas

REFERENCE MATERIAL

Reference material is material that was not your idea but is helpful for your ideas. This can be inspirational texts or images, newspaper clippings, pictures, poems, music tracks and much more. While an idea collection is primarily about your ideas, reference material can also be included. New ideas are often build of and with previously existing ideas. However, be careful to notice the difference between something that was your idea and something you found somewhere. Otherwise you will either be accused of plagiarism or sloppy research. See page 63 for information about plagiarism.

The reference material, e.g. inspirational material, photos, newspaper clippings, can either be stored within your idea collection or separately.

Within the collection

Storing references in the collection should be used if the references are directly used for your ideas, i.e. your ideas build upon the reference and the reference is necessary to understand the idea. For example, if you use a newspaper clipping as a basis for a story or an image to illustrate how a character should look like.

Keep references explicitly marked as such

Make sure that you keep the references clearly marked as such at all times. You can use tags (#reference), different colors (e.g. underline the title in a different color), etc. Make sure that the modifications still exist if you copy or export the information (e.g. copying colored text into a plain text file will remove these markers!). Since you should always note the source this will serve as an additional reminder, that the idea is not your own.

Choose an adequate quality level

If you use a digital collection and you store the references in the collection, make sure that you choose an adequate quality level. If you have the reference as a high quality image (e.g. a 300 dpi scan of a newspaper clipping or a photo from a 12 megapixel camera), make sure that you change the format to a size that your collection (and your backup medias) can still handle. Keep in mind that in most cases you will not need the high quality just to be reminded of the idea. Ideally, you find the newspaper clipping online and copy it as a text, otherwise scale down the image as far as possible. Most photos can be resized and compressed as .jpg to sizes of under 50 KB. If you just want a rememberer, this is enough. You can still store the originals somewhere else.

As a different collection

You can store reference material in a different collection than you ideas. This allows you to use the specific advantages of a program for the kind of reference material you use. If your reference material is graphical in nature, you can use specialized photo library programs to deal with the images (e.g. Picasa, iPhoto, Aperture). If you have a lot of articles, you can use specialized literature reference programs

ADVANTAGES

Using existing infrastructure.

Easy to integrate your ideas with the reference material.

DISADVANTAGES

Collection gets larger quickly depending on the size of the reference material.

Difficult to estimate how many ideas you have in the collection since the space is shared with reference material.

Easy to confuse references (other peoples ideas) with your own ideas — unintentional plagiarism is likely.

How to collect ideas

(e.g. Endnote, JabRef, Citavi). However, you must make the links between your ideas and the reference material explicit and it will take more time to access the references from your collection. Make also sure that you backup the external reference as regularly as your idea collection. Otherwise you might loose all your references when the hard disc crashes.

IMPORTANT ISSUES WHEN STORING REFERENCES

If it is the work of someone else, collect the source

After a while it becomes difficult to distinguish between your ideas and other persons ideas (or even works), especially if some of their style rubs of (since you collected it, it probably appealed to you). To avoid confusions and the inevitable outcry of plagiarism clearly mark any ideas and information not your own with the correct *source*. Otherwise you cannot attribute it to its originator which is often necessary (e.g. for science projects). If you do not do this at the beginning, your collection is seriously flawed because it is extremely difficult to impossible to do so later.

Keep It small

While collecting things that are interesting, keep in mind that you must be able to handle the collection. Quotations for example are o.k., but including a whole book becomes unwieldy. That is what external references are for. Pictures must only be recognizable, not top notch quality. If you store a lot of pictures, keep the size of the individual picture as low as possible. Otherwise your collection becomes unwieldy and your backups suffer.

ADVANTAGES

Backups can be made independently.

Collection stays smaller.

Some programs offer unique advantages for specific content, e.g. photo libraries for pictures or literature reference programs for scientific sources.

Same reference material can be assigned to different ideas.

DISADVANTAGES

References must be clearly made.

Takes more time to access the reference material.

References can get lost.

More difficult to export the idea (printing/copying will lack the references).

How to collect ideas

CULTIVATION

Collecting ideas is not only putting them on a wiki page or on an index card and leaving it there. To develop your ideas you have to revisit them occasionally. Flip through your collection, remember the ideas that seem worthwhile to think about more often.

When you revisit old ideas you are likely to have additional ideas, solutions to problems that forced you to abandon the idea for the time being. Sometimes, things you have read in your collection will linger in your mind and lead to ideas hours later (see page 261 for more information on expanding ideas).

Besides enlarging make sure to restructure your ideas from time to time. Sometimes you see connections between other ideas and you can join them, other times you will split ideas in two, because there are two separate ideas that appeared to be the same. If you collect ideas for a certain project and you just write down different aspects, bring these aspects to a logical order from time to time. If you are planning to write a book and you have ideas for the plot, order them in the chronological sequence. Make subfiles for character descriptions and put all ideas for one character in one place. Sometimes you will not have a clear enough idea to see the structure, but when you do, ordering your wild collection of ideas for one project can not only show you where the unsolved issues are but generate further ideas (see page 262 for more information on restructuring).

Actively use your collection to foster the generation of ideas.

Organizing the idea collection

Before we take a look at the organization of the idea collection we will have a look at two important aspects: **duplicates** and **tagging/keywords**.

Then we deal with the two ways in which the idea collection can (should) be organized:

1. The first organization is the way an individual entry is organized. How do you write the information of the idea itself? Do you use templates? Free form?
2. The second organization is the relation of the entries to each other, internal structure of the whole collection. Is it alphabetical? Thematic? Chronological? Via an index number?

DUPLICATES

There are two kinds of duplicates in an idea collection: accidental and necessary duplicates.

Accidental duplicates

If your collection grows you will not have a complete overview of all the ideas that are stored inside. That is not a problem, that is what the collection is there for. But it becomes a problem when you enter the same ideas twice or material that should be closely related to an existing entry but is placed separately. Entering the same ideas twice can easily happen if you forget to cross out or delete an idea on your capturing tool (e.g. you use a notepad, transcribe the idea in the collection but do not cross it out and you transcribe it again the next time you update your collection, see page 188). This is especially likely if you use a text file to capture your ideas and simply move the ideas to your collection by copy and paste. If the capturing file came from your work computer and you did copy it on an usb-stick but did not remember to clear the file after you transferred the ideas to your collection at home, the ideas will be entered again when you copy the file again. Sure, your memory should tell you this, but the quality of the memory is related to the amounts of ideas you have — and if you have many ideas, even a good memory cannot cope (all the time).

Necessary duplicates

Sometimes you want an idea entry to appear in two places at once, e.g. if this idea belongs to two different categories (like ideas for stories and ideas for paintings). This leaves the question if you want to create a duplicate, a clone (or alias, link, replicant) or solve the problem with tags.

Duplicate

A duplicate is a copy of the same entry. The copies are independent of each other. If you change the entry in one instance, the other will not be influenced. This is desired when you want ideas to start out as the same but develop in different directions, e.g. an idea for a book and a picture start with the same general idea (a man who has the size of a bee and appears on a leaf of a tree) but develop differently (image: you have ideas regarding the perspective, the other elements in the scene which will become very detailed, the colors, the amount of detail, etc.; book: what happened before and after, what the man is thinking, the plot, other characters who are not visible, etc.). There might be some overlap and they can profit from each other, but eventually they develop in different directions. so. You simply write the idea a second time in the collection, e.g. on a second index card or you create a sec-

Organizing the idea collection

ond page in a wiki, etc., and maybe include a link between the two entries.

Clones (Aliases, Links, Replicant)

There are special kinds of duplicates that allow you to let the entry to an idea appear in different places at once, but if you change one instance, you change all of them. Depending on the program you use they are called clones, aliases, links or replicants. This is desirable if you have different indexes (all ideas regarding parties, all ideas regarding outdoor activities). An idea that belongs to outdoor parties can appear in both indexes. This kind of duplicate is possible with some digital collections (e.g. files and folders via aliases, in wikis via links, in Note Management Systems like DevonThink via replicants). You can simulate it in physical collections by making a link to a specific page or index card (see card *xyz*) and write this link in different places of the collection.

Tags

Tags (or keywords) can solve the problem of duplicates by allowing you to assign an idea to different categories at the same time. Since they are tremendously useful and have more functionality, we will have a closer look at tags on the next page.

TAGGING/KEYWORDS

You can add an additional and flexible layer of structure by using tags (keywords). Tags allow you to use smart searches, e.g. a folder or view option that automatically displays all instances that are tagged with a specific keyword (or a combination of keywords). This can completely replace a fixed structure if the tags are on the right level (e.g. not too few, not too many tags).

Tags in physical collections

While tags are typically used in digital collections, they can also be used in physical collections. You can use icons on a page or index card. The icons should be easy to see, e.g. stars, @-signs or marks in different colors. You can also use (colored) paper clips or (colored) post-its. While tagging a whole physical collection takes a lot of effort and will not necessarily contribute to its clarity, tagging all entries that belong to the project you are currently implementing (see page 290) can be very helpful.

Tags in digital collections

In many programs tags are natively supported. For some programs, this functionality can be included via plugins (e.g. tag plugin in DokuWiki). If a program does not natively offer tags you can use your own notation to simulate the ability of tags. Simply use "@topic" ("topic" being the name of the tag you want to use) in a text file or document. You can search for "@topic" to find all entries or lines that are tagged with it. The @-sign is useful to differentiate it from all other entries where the name of the topic itself is used. If you use "@parties" as a tag, searching for "parties" would find all instances where you wrote "parties" but searching for "@parties" will only show you the times where you used "parties" as a tag-name.

Important aspects of tags

Structure of tags

Tags can be hierarchically ordered, e.g. you can tag ideas regarding: material, con-

Organizing the idea collection

tent, topic, place, event, product, usage, project, etc. with subcategories like paper, stone, textiles in case of material or gift, or prototype, present, commercial, etc. in case of usage. If you use the same subcategories for different tags it might be beneficial to refrain from a hierarchical structure and treat the subcategories as equal. For example, if you use “paper” as tag of “gift” and “material”, do not use “gift_paper” and “material_paper” as tag, but “gift”, “paper” and “material” — this way you avoid unnecessary tags and a search for “gift” + “paper” will deliver the same results as searching for “gift_paper”. Independent tags are simply more flexible.

Information value of tags

Tags (e.g. as *tag clouds*) can also give you an overview about the amount of ideas in different areas in your collection. They can be a mirror of your interests and point you to projects that have grown enough to be considered for realization.

Amount of tags

The amount of tags necessary depends on the amount of ideas you have. Tags allow you to find ideas, and the more ideas you have, the more specific tags you have to use to reduce the amount of hits when you search for particular ideas.

Searching for tags

The strength of tags is obvious if you search for them. You can search for one tag (e.g. all ideas tagged “parties”) and you can narrow down the search, e.g. searching for “parties AND children AND outdoor” to find ideas for outdoor parties with children. A good program can show you the hits including the title of the idea and the first lines of the entry, allowing you to quickly assess if you found what you were searching for (or something that will suffice).

Taglist

Make sure that you keep a list of tags available when you tag new ideas. It is easy to use tags slightly different than before (e.g. “party” instead of “parties” or “clock” instead of “watch”), preventing you from finding the ideas you search for. Store the taglist at the beginning of the document or collection to keep them in your mind and stick to it. Programs that allow you to predefine tags prevent this problem (e.g. you define the tags in a list and simply click on them to assign them). If you have accidentally given a synonym as a tag, decide which one you want to keep, search for all instances with the tag you do not want to keep and rename it.

Which Tags?

Which tags should you assign? This depends on the nature of your ideas. Personally I use tags that classify the following areas:

Project and idea vs. idea

All ideas are tagged as “idea” (see Idea Tag on page 201) but some ideas additionally get a “project” tag. This means that the idea is so large that I consider it as a project which will require other ideas. For example, an idea for a book I want to write is tagged as project. However, it is also tagged as idea because any project could serve as an idea in another project. A book in which every family member writes a chapter for further generations is a project, but this book could also appear in a story, so it is also an idea (why compromise?).

Organizing the idea collection

Area of Creativity (e.g. cat_artworks, cat_plot, cat_article, cat_dialogue)

For which kind of creativity is the idea? A picture? A story? A scientific article? Is it something specific like a dialogue or a character description? A technique? Some proposal for the improvement of an existing program?

Quality (e.g. quality_good, quality_excellent, quality_brilliant)

Normally, an idea does not receive a quality tag, but some ideas just seem so good and are assigned one of three categories: good, excellent and brilliant. It helps me to find ideas I want to focus on if I have finished the current project.

Usage (e.g. usage_none, usage_used)

To avoid (accidentally) using the same idea twice there are two tags: `usage_none` and `usage_used` (not “used” and “unused”, because a search for used your also show unused).

Media attachment (e.g. media_photo, media_sketch, media_graphic, ...)

If the idea gets a media attachment (e.g. image, sound file, video) it also gets a tag, allowing me to search for ideas that have this kind of attachment.

Idea Origin (e.g. idea_own_work, idea_based_on_existing_work)

To avoid plagiarism every idea that is not based on my thoughts gets tagged “based on existing works”. I also note the source in the idea description itself but the tag immediately shows me that I have to be careful with this idea.

Target Group (e.g. family)

Is the idea associated with a specific target group, e.g. children, or with a specific person, e.g. an idea for a birthday present for a friend of yours? Adding the group name or the name of the person is useful to find it again.

Purpose (e.g. gift, commercial, recreation)

If the idea is associated with a specific purpose, e.g. it is intended as a gift you can use this as tag. If you search for gift ideas you can combine it with the target group tag.

Time/Place (e.g. autumn, Tuebingen, apartment)

Is the idea associated with a specific time, e.g. an activity you can only do in autumn, or a specific place, e.g. something you want to do when you visit Iceland? Add those tags.

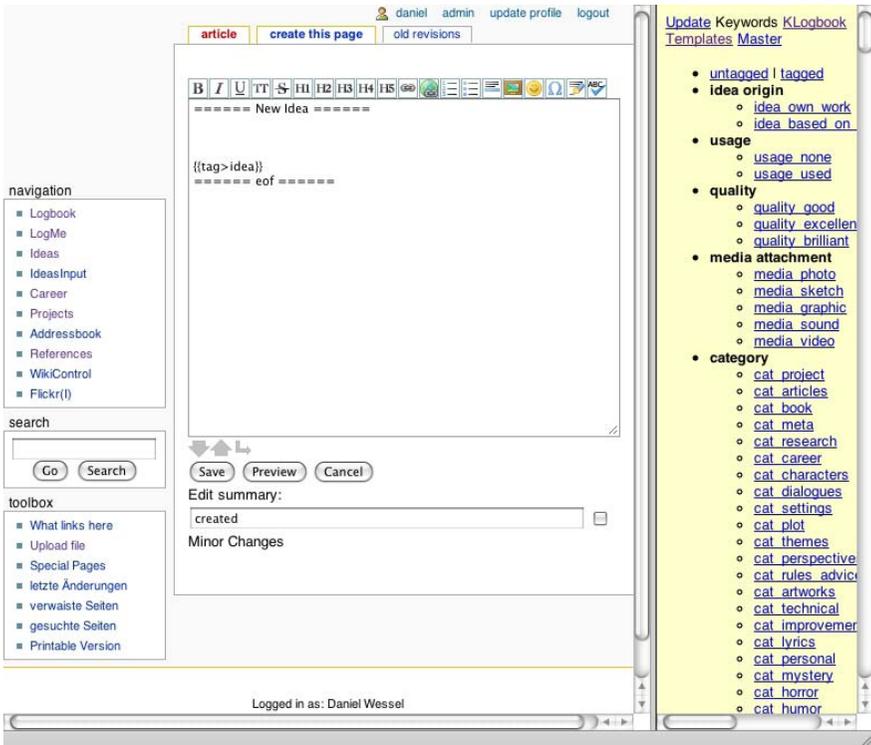
Task Information (e.g. task_input_needed)

You can use tags to indicate that an idea needs input from a specific person you want to contact, e.g. Ed from the marketing department. Any idea marked with this tag, e.g. “`task_input_needed`”, and the name of the person as tag, e.g. “`ed_collins`” as a separate tag, can be quickly found if the person is available. To help you keep an overview you can search for the “to-do’s” and look at the other tags (e.g. name of the person needed).

Specific Tags

Depending on the area you are working in you have to define other tags that will cut through your collection if you search for specific ideas.

Organizing the idea collection



My wiki, used as an idea collection. It is opened in a frame window (left side). On the right side another .html-file is opened that contains a taglist. A click on one of these tags will transfer the tag to the form field on the left side (essentially accessing the content of the field with JavaScript, searching for the tag information (here: {{tag> ...}}), adding the tag before the "}}", and replacing the content with the changed information). If you make assigning the tags as easy as this, the likelihood is not bad that you actually do it.

Auto-assigned Tags

Some tags that I use are automatically assigned when I enter an idea. Normally this would not make sense, since every idea is tagged with it the information value of the tag is zero. But there are two useful tags that are exceptions to this:

Tagged Status (e.g. *tagstatus_no*, *tagstatus_yes*)

Since I do not necessarily have the time to tag ideas when I enter them, they automatically get the tag: "tagstatus_no". It gets deleted after I have tagged the idea.

Idea Tag (e.g. *idea*)

Every idea gets a tag "idea". Since I use a wiki where I also store my address book, my diary, my archive for my scientific work in psychology, references and the archive of the collection) this tag identifies the ideas and lets me search only these entries.

Organizing the idea collection

STRUCTURE OF INDIVIDUAL ENTRIES

In structuring the individual entry of an idea collection, you can use templates or free form. However, independent of what you use, some information should be included in every entry.

Templates

A template is a predefined set of information and layout that appears on every single entry of the collection the moment you create it. Templates are fairly known from word processing documents. Most companies have predefined letters with a letter head, some standard information like the name and address of the person in the company, etc. If the program itself does not offer to create templates, you can often save a document that contains the information you want the entry to have. If you want to store a new entry, copy and paste the document under the name of the new entry and use it.

Free form

You can use your idea collection without any specific template. Simply use empty index cards, pages or create new documents or wiki pages. However, there is some information that any entry should contain.

Information every entry should have

No matter if you use templates or free form, the following information should appear in any entry of an idea in your collection:

Title

Give every entry a title you can refer to. This is needed anyway in most digital collections (as file or page name). Choose a title that brings the content to the point. If you search for a term and you get the titles as listing, it will help you to find the entry you search very quickly if you can deduce it from the title instead of having to open every entry.

Tags

They are just too useful not to use them. Even if you just mark the general category the idea belongs to, e.g. image, story, dialogue, plot, etc. it will help you find all ideas of a certain nature very quickly.

Unused/Used Marker

If you have used an idea that you have noted it in the collection. You can include where, why and for which project (or person) you have used the idea.

Keep the same structure over the entries

Even if you use a free form, you should make sure that the general structure of the entry remains the same. Writing title, index number (if used) and tags always in the

ADVANTAGES

Entries share a common structure

Entries share common information types

Easier than rewriting the same information over and over again

DISADVANTAGES

Some ideas might not fit in a predefined structure

In physical collections the areas for the information might be too small for some entries

ADVANTAGES

Fast

Tailored to the entry

DISADVANTAGES

Might omit important information

Different standards for entries make it hard to search for specific information

Organizing the idea collection

same place, will help you finding information and make sure that the key information is always entered. It will also make the collection easier on the eye, which is important if you work for a long time with it.

Keep the information always in the same place

In a physical collection you have to do the search yourself. This goes much faster, if you keep a certain layout. At least the key information that any entry should have should also be always in the same place of a page. This way you can flip through, e.g. the index cards, very quickly, fixating the same spot on the cards and yet see immediately if the title or tag is of interest. Since you can also flip through the entries of a digital collection the same rule should be used here too. Otherwise the entries will be too confusing, needlessly slowing you down.

Keep images of the general idea together

If you are attaching multiple images that are related to the idea in general and not to a specific line in the text, keep them together in the same place, e.g. at the end of the entry. This makes it easier to review them.

Organizing the idea collection

STRUCTURE OF THE IDEA COLLECTION

The collection itself can be sorted according to different principles: alphabetical, thematic, chronological and by index number. Not all sorting mechanisms can be used for all collection methods. One of the great advantages of a digital collection is that multiple principles can be used within the same collection.

Alphabetical Order

You can use an alphabetical order for your ideas. You give every entry a title and simply sort the entries in your collection according to the order of the alphabet (including the numbers 0 to 9). Some idea collections allow you to view your entries in an alphabetical order at any time, others require that the ideas are stored in this way from the beginning. If you want to switch to an alphabetical order with the later, you have to change the order manually.

Which title?

For an alphabetical order the title must be definite. Unfortunately, few ideas can be summarized under only one title. Synonyms or slightly different wording make it difficult to find the idea again. If you want to enlarge the idea and cannot find it, you might think that the idea does not exist in the collection and create a new instance under a different title. Information that should be in the same entry can end up in separate ones.

How many levels?

In the easiest case you simply sort according to the 26 letters of the (western) alphabet and the 10 digits. You can also use the same differentiation for the second letter of whatever you want to sort, and for the third, etc. If you use the file folders of a computer, you can create the same folder structure within each of the 36 folders again and again. This way "abbe.jpg" and "apple.jpg" would end up in different directories ("a\b\b\abbe.jpg" vs. "a\p\p\apple.jpg"). On the one hand this helps you to deal with huge amounts of files, but on the other hand you will not be able to see all the files at the same moment.

All in one directory or hierarchical order?

If you use more than one folder level, you can either keep the all on the same directory level (e.g. aa, ab, ac, ad, ...) or order them hierarchical (e.g. a with subfolders a, b, c, d, ... or aa, ab, ac, ad, ... depending if you want to repeat the first letter). Given that the directory listing gets very long if you have then all on the same level, a hierarchical order is recommended.

Thematic order

You can order your collection according to your own categories. This thematic order can be a simple "private projects" vs. "work projects" to countless different ordering schemes (e.g. "books: non fiction", "books: fiction", "paintings", "house", etc.). The problem with a thematic order is, that the order is subject to change over time, but it is hard to change the order of the items with it. A further problem is that one idea can belong to different thematic categories.

ADVANTAGES

Clear, logical and future proof sorting

DISADVANTAGES

Name usage must be consistent (e.g. synonyms are problematic)

No structural relations in the way the information is ordered

Organizing the idea collection

Which categories?

Using a thematic order requires you to create categories yourself. You have to assign your ideas to an individual category. This requires you to foresee somewhat where your creativity is going, which ideas you will have and to which categories they will belong. In most cases you can resort to the ideas later, but depending on your solution this takes considerable effort.

Flexible categories with tags

Using tagging/keywords (see page 198) you can assign the same idea to different categories. An idea that might be the basis for a good story and a good picture, can be tagged with “story” and “picture”. If you would use static categories you would have to decide whether this idea should be used for a story or a picture, or you would have to duplicate it (page 197).

Spontaneously creating complex categories by searching for combined tags

Tags also allow you to define complex categories later by searching for a combination of different tags. If you are searching for ideas of games you can play outdoors with children, you can search for “outdoor” + “game” + “children”. However, it depends on the tags you use if they actually allow you to do so.

Chronological order

The chronological order is useful if you want to document when you had a specific idea. Normally this order is used for diary entries and record keeping, not for ideas. However, if you record each idea with its date and time, you might use this information to find out times of the day (and places) when and where you are especially creative. But this would only work if your capturing tool would do this automatically or you would write it down every time you had an idea. I would not have included this order in this book if it were not for the fact that any fixed order idea collection uses it. If you write your ideas in a paper book, the ideas will likely be chronologically.

Introduce index numbers to vastly improve the organization of the collection

While a chronological order is not useful per se, you can easily make it more useful by adding index numbers to each entry. Simply give the entries a consecutive number (1, 2, 3, ...). See page 205 for more information.

Index number order

Index numbers are closely related to the chronological order. They are in essence a chronological order where the time information is reduced to the ordinal information: entries simply get consecutive numbers.

ADVANTAGES

Individual order

Links within thematic categories are easy to find

DISADVANTAGES

Difficult to create the thematic categories without knowing which ideas will (one day) be in the collection

Thematic categories can (but are hard to) change

One idea could belong to different categories

Links between different categories are harder to find

ADVANTAGES

Good for tracking the course of a project regarding its ideas

DISADVANTAGES

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

Organizing the idea collection

While this does not seem like a great ordering system, the strength of this system lies within the ease with which you can link entries.

With paper collections, index cards that are numbered consecutively allow you to make easy references to other cards, e.g. from card #43 to #23. Make sure that the number is easy to find, e.g. write it in a different color or circle it, and always write it in the same place. However, you cannot see the content from the number, meaning that you will have to make an external list where you write down the title of the card next to the number.

In digital collections, databases naturally use this way of ordering information. Each entry needs a unique index number and no two entries must have the same number. The numbers itself are only used by the program, as a user it is easier to search for the other fields, e.g. title or content. In other digital collections make sure that you can search for the index number. If you are using text files or anything without a dedicated field for the index number, add a symbol in front of (and behind) it, e.g. a "#". You can then search for "#23#" to find entry "23". The "#" in front of the number will prevent you from "finding" every single time you wrote "23" in the collection, and the "#" behind the number will prevent you from finding "230", "231", ..., "239" or "2301", "2302", etc.

ADVANTAGES

Each idea has a clear reference number

Easy to implement

Allows you to make reference lists regarding to topics even with chronological ordering

Easy to find information since the numbers are consecutive

DISADVANTAGES

Index number must be supported by lists (e.g. index number and title of the index card or entry)

Multiple Principles

With most idea collection methods, multiple ordering principles can be used. Wikis are among the most flexible systems and ideally suited to combine alphabetical, thematic and even chronological orders.

Use top down and bottom up strategy

If the collections allows it, use a top down (indexes and links) and a bottom up (tags/keywords) strategy simultaneously. Both ventures will cover much ground of the collection when you try to find ideas, and a search function will flush out anything that goes unmentioned in either index or tags.

ADVANTAGES

You get the best of multiple worlds. Sorting ideas is difficult and you should do whatever you can to facilitate it.

DISADVANTAGES

More effort — easy to omit one ordering principle

Prioritize Projects

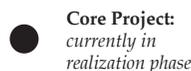
You may have a lot of ideas, but you might never realize even one idea unless you prioritize. Your time is limited, so you have to decide which idea you want to pursue. Which idea is valuable enough to become a project. A creative project that will take up much of your time to realize. Since you cannot realize a project when you still lack important details, prioritization should be done in the collection. The figure on the right shows a visual analogy for the different priorities ideas can have in the collection.

PRIORITIZATION OF THE IDEA COLLECTION

There are three levels of priority that should be used:

Core Project (one single project only)

There should only be one core project, e.g. a project that you are working heavily on to realize it. This is the black dot in the middle of the figure. It should be finished as soon as possible and be constantly on your mind. When you decide to realize a project, get it done (see page 208 and page 280).



Central Projects (a selected handful)

While you are working on a project there are often some other projects that you like *very much* to realize soon. Instead of trying to realize them at the same time, try to *keep them easily visible in your collection and in the back of your mind*. Take care that the number of central projects is not greater than *five to seven projects*, otherwise you will have trouble remembering them. You can set landmines (see page 210) to help you remember the central projects. This way you are likely to gain additional ideas that will help you to flesh out the central projects, so that one of them will be ready after you have realized the core project. You should also use the time to gather the necessary skills and techniques and make inquiries that take much time, so that everything that is needed is available when you have time to realize the project. Once you have completed the core project, it is time to choose the next project to realize from the central projects (see page 280) and skim the periphery projects to find a suitable one for a new central project.

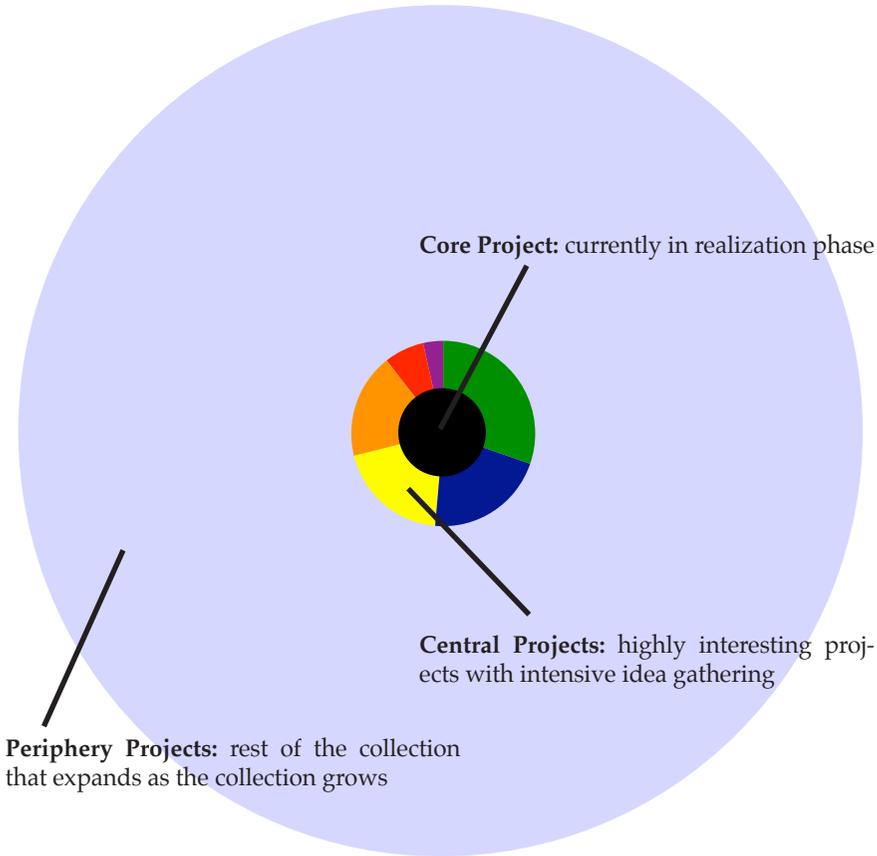


Periphery Projects (the rest)

If you have a lot of ideas, most of them will vanish somewhere in the collection. This is all right. The collection can take it and they are available if you search for another idea when you have no new ones. You will stumble upon them occasionally when you flip through the collection. Some of them might — after a while — appear in a favorite light and be selected as central projects, gain in ideas and be realized one day.



Prioritize Projects



Prioritization of projects the idea collection

HAVING TOO MANY INTERESTS

One of the greatest hazards for creative people is, that they have too many interests. Consequently, they are spreading themselves too thin.

A simple but hard solution

There is good and bad news for this problem. The good use is, that the solution for this problem is *simple*, the bad news it that the solution is also *hard*. As just written, you *need to set priorities*. It is that simple, but it is also very, very hard.

The idea collection makes it easier

Using an idea collection to first collect enough ideas and information on how to realize a project and *then* implementing it, makes it a little bit easier. You have a great idea for a project: great, capture it and transfer it in the collection, but *do not start to immediately realize it unless you can do so in five minutes or less*. Otherwise you start countless projects, but will never finish one. But if you have collected the idea you are free to continue working on the core project you are currently realizing, and

Prioritize Projects

you should, because this project has priority until it is realized (or cannot be realized, see page 350). Yes, it is hard to focus on one project, but it is necessary. The new idea for a different project you just had is safely tucked away in the collection, where it will remain, if necessary for a very long time. It cannot be forgotten and patiently waits until you have the time to develop it further and realize it.

Developing ideas vs. deciding to realize a project

Differentiating between developing an idea, which you can often do if you have some time no matter where you are (e.g. thinking what you could do, add, where you could research for information), and consciously deciding to realize a project *is crucial to help you to focus on a single project*. Yes, you will still have to bring up the mental strength to stay with the core project, but if you realize a project only if the project is complete in regard to the ideas and information necessary, it will be a work that probably will not leave you with large gaps where you do not know what to do. So it should be manageable for you to complete the project before the anxiety of starting a new project kicks in.

Focus on the variety within

If one subject is too monotone for you, consider that most subjects are *in itself very complex and consist of many sub-subjects that provide endless variety*. You can expand any subject to give you the necessary variety, e.g. if you are interested in photography and want to focus on it, you can expand the sub-topics by learning about classic art (composition), chemistry (developing analog film), computer science (automating post-processing) and technology (how the camera works). The advantage: no matter what you learn from the sub-subjects it will support and improve your prime project: in this case photography. It will probably make you a better photographer because of the relation of the sub-topics to photography.

CONTROL YOUR LIFE

Having too many interests is nothing special, most people say they are interested in almost anything if you ask them. What can make you special is the way you deal with these interests. Do they control you, or do you control your interests? Do you have the strength to set priorities, to focus on a single subject? Or is your attention like a butterfly, always attracted by the next flower, whatever it may be?

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 made something that most people would only do as hobby to her profession, merging her private and professional interest. I do not know whether she has other interests that one cannot publicly see, but the concentration, the focus of one subject and the synergy of her private and professional life made her extraordinary. She sometimes looks like she is playing a role, but it does not look like a mask anymore. It looks like she has transformed herself. Did she make sacrifices? Probably. But she did also gain tremendously and reached a level of expertise most other people never achieve.

This is not possible for everyone, nor should it be, but it illustrates what can be achieved if one really focusses on one subject.

Remembering Central Projects via Landmines

We all set land mines when we place the objects we want to take with us the next day in front of the door or make an entry in our calendar. You can use landmines to remember the central projects you want to keep thinking about. Place notes about them where you will find them in the future, e.g. in your calendar, in your sock drawer, in a book you want to read in the future, on a page in the middle of your notepad or where ever you can think of. However, keep in mind that land mines only work because they are noticeable, e.g. you do not normally expect them there. Writing them on the notepad in your car does not work beyond a few days if you do not change it occasionally. And make sure that the thing you use for remembering is not the only record of the project/idea. If you capture an idea, e.g. on a piece of paper or a whiteboard and immediately use it as a land mine, you are likely to loose or discard it yourself when you get used to it.

WAYS TO SET LANDMINES

(Random) Background Image

The background of your computer can be used for simple reminders. Beyond Active Desktop and its possibilities (and risks!) simply writing your reminder in a graphic editor or making a screenshot of your note in a word processor full page view (otherwise you might click on buttons that belong to the background image) will work. Set it as background image and you get a reminder when you look at your desktop (if you see it beyond your files). Some OS either natively or with the help of programs allow random background images. Keep a couple of different reminders as graphics in a directory with the settings forcing a change of background image every time you boot up (or every day if you keep your computer in sleep mode). The reminders should force themselves into consciousness for some time.

Digital alarms

One of the nice things about digital media is that computers have no notion of boredom. You can set an alarm 2 months ahead and the device will remember you on the correct day and at the correct time. A lot of digital devices allow calendar entries or alarms, e.g. digital wrist watches, cellphones and computers. Taking something that is always with you you can set repetitive alarms (e.g. once a week) to remind you of central projects. Make sure that you read the messages and change the times of the day when the alarm comes, otherwise you will get used to it and ignore it soon. It helps if you use a method that usually reminds you of your appointments. This way you will not ignore any alarm as disturbance. Make sure to keep backups of your calendar in case the data gets lost or you replace the device.

INTRODUCE CONTINUOUS CHANGE

Take a look at the decoration in your room — when was the last time you noticed it? When was the last time you actually looked at it? Probably when a visitor mentioned it (e.g. compliment or a “What’s that!?”) which might be the purpose of interior decoration. Remember that anything constant gets easily ignored so change it before you forget to change it.

SET LAND MINES

Kinds of land mines

Notes

Digital alarms

Quick-and-dirty prototypes

Inspirational Images/Photos/Quotes

Places for land mines

wallet

capturing tool

clothing cupboard

delayed eMail

car

Remembering Central Projects via Landmines

auto eMail

If you do a lot through eMail you can send yourself a delayed eMail. Services are available on the Internet (e.g. <http://www.futureme.org> or <http://futuremail.ben-sinclair.com>). You can also use two providers. Send your eMail to the first address (which you do not check) and instruct the second (your normal account) to pull the eMails from the first account every day (possible with some eMail providers). This way you receive an eMail sometime the next day.

Postcard

Mail is slow but it can be an advantage. Keep some postcards already addressed to yourself. If you have something you want to think about, write it on it and throw it in the next mailbox (if the information is not too private). You can also create a postcard and put it on the wall in front of your desk.

Pinboard

If you use a pinboard be sure to change the information on it at least every two days. You get used to it quite fast. It's main strength is the speed with which new information can be added and rearranged, so it is more suited for day-creativity. If you are currently "in flow" and have a lot of ideas you want to pursue, keep reminders of the on the pinboard. Once you have finished an idea, take it down and start with the next.

Magic Chart

Magic Charts look like Flipchart paper but are made of thin plastic. They can be used like a whiteboard but their "magic" characteristic is that they will stick on almost anything flat though static electricity. The glass of windows, bare stone walls, even wallpaper will work (for some time). They are good for restructuring (and mentioned there also) but they are equally usable to expand ideas. Transform the whole wall of your office into a large whiteboard, sketch your idea there (keeping prying eyes in mind). When you enter the office in the morning, have a look at the large "whiteboard" (e.g. while the computer boots up or you sip your coffee).

43 folders

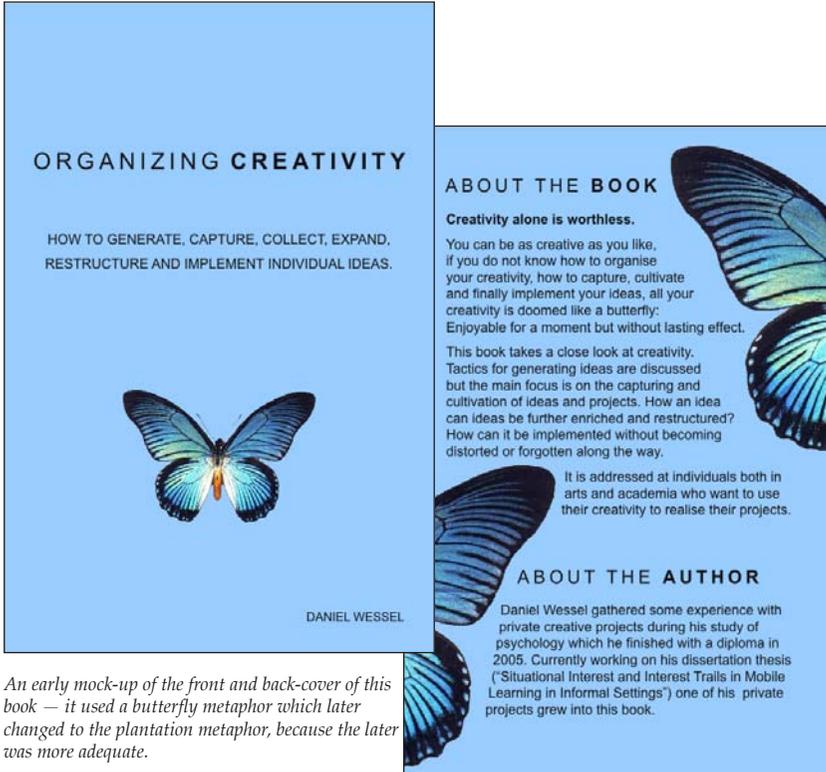
This system is normally used for managing tasks. It consists of 43 folders, 12 for each month and one for each day of one month (maximum: 31, resulting in a total of 43 folders, hence the name). It works by putting the information you need in a given month in the respective folder. If the appointment is in the current month, you put it in one of the 31 day-folders, otherwise in the month-folder when the appointment is. Each day you open the respective folder and take the information you need for the day. Using this system you can simply put reminders of the projects, e.g. in the folder 2 months ahead.

Create a Mock-Up

A mock-up is simply a visual study of the thing you want to implement. It does not work but it conveys the idea. For example, if you want to write a book, you can create a mock-up of the cover. This will remind you of the book you plan to write and stimulate you, because it looks *almost in reach*. But do not make the mistake of investing all your energy in creating it, after all, it is only a reminder. For this book I created a mock-up by designing an cover and printing it on photo paper. Pinned to

Remembering Central Projects via Landmines

the wall in two places of my apartment, is was a continuous reminder of the book I wanted to write. Of course, it vanished from consciousness after a few days when I got used to it, but every now and then I stumbled over it. The final cover looks different which is o.k., since the project evolved while developing it.



An early mock-up of the front and back-cover of this book — it used a butterfly metaphor which later changed to the plantation metaphor, because the later was more adequate.

Evaluating an Idea Collection

If you find a program (or non-digital solution) that you want to use for an idea collection, check the following attributes (roughly ordered in descending order of priority):

USABILITY FOR YOU

Will you use it continuously?

This is the main question that is influenced by the following attributes. But since the answer to this question is more psychology than math, you cannot simply add up the strengths and weaknesses to cognitively decide for a solution. You have to work with it, for a long time. Make sure you like the solution, like working with it and can do so without effort. Once you start using an idea collection, you likely will be stuck with it.

Ease of use

An idea collection should be easy for you to use, which usually comprises of the speed, ability to do easy backups and the look and feel of the collection.

Speed

While not as important as for capturing ideas in the first place, the speed with which the program reacts will influence if you will be using it. Slow programs waste seconds, which accumulate into minutes, hours and days. Some programs are fast at first but cannot handle large amounts of data (especially when saving), others are pretty fast all the way. Since subjective speed differs per individual, find out if you can comfortably work with the program. Be extremely weary of long start up times, e.g. more than five seconds. Even if you think you will use your collection only once a day, long start up times mean that you will not use it even that one time a day. Regarding the handling of the program, you should discard a powerful solution for a faster solution if you can do without the extra functionality. A colleague of mine tried out a powerful wiki engine that was based on Plone. Unfortunately, it handled like a school bus stuck in mud. After trying it for a while she discarded it for a not as powerful but extremely fast wiki engine.

Backups

Since regular backups are necessary (otherwise you are building a high tower that could crash any moment leaving you with nothing) make sure that you can do so easily. This is a major problem for paper based solutions. Do not neglect this! Only one copy of your ideas is a recipe for disaster.

Look and feel

As stated, you must like the software. Does the software puts you at ease? Does the folder feel good in your hand and do you like your handwriting? You will work often and for a long time with it, make sure you like it.

USE DIGITAL

A digital collection wont be accessible when the nukes hit and we are back in the stone age with 21st century bodies and problems, but unless you deal with survival in apocalyptic scenarios the demand for your ideas will be nonexistent anyway.

KEEP THE EFFORT LOW

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

"A fast, mobile, well equipped force beats a powerful but slow army any time."

Unknown

Evaluating an Idea Collection

Flexibility

In this case flexibility means the ease to change and shift content. Paper notoriously lacks this quality. You cannot add new information easily between existing information. Digital can, but even here programs differ regarding the ease with which they allow this.

Swallowing the relevant Media Files/Storages

Depending on the domain you are working in, the idea collection must be able to work with the media (files/storages) you are using. Since interest can change it pays to keep your options open, even if you would never work with audio, for example. Any good collection should be able to accept images, they are just too useful: An image (photograph, sketch) can bring an idea to the point.

So a good idea collection system should be able to swallow almost all data files or storage media. This normally leaves only one option: go digital.

EXPERIMENT

Try out different solutions for a handful of different ideas (e.g. some with pictures, audio, etc.) until you have found the collection method that works for you. If you already have some ideas try a heterogeneous batch of ideas and see how well the collection can handle the ideas.

If you think you have found the solution you like try it for a project. If you really use it over a longer time frame for idea accumulation, then start using it rigorously.

Stop after some time to see if you do actually use it for different project and whether they grow in parallel or not.

Availability

The collection must be available all the time, now, in the future, and at best anywhere you are for a longer time frame. Portability favors digital, one reason why I recommend digital solutions for idea collections.

Power

Digital requires constant power supply to access the information, either from battery or bus bar. Notebooks have their own power source for a few hours which will get you through short-time travel and power outages. However, devices that use power might not be allowed everywhere (e.g. on planes), on the other hand, you would probably not carry the equivalent of 50 paper notebooks in your hand luggage anyway, so this is no disadvantage for an idea collection, only for capturing ideas.

Additional Programs

What is necessary to access the collection? Just your eyes because it is written on paper? A pre-installed program (e.g. text editor)? One program that is available for every operating system (e.g. Java program)? A program that limits your further choice of operating system (e.g. available only for Mac or Windows)? A program that is costly (remember that new versions are necessary in the future if new hardware requires new operating systems that do not support the old programs)? Consider how easy the program makes the access, especially regarding proprietary file formats and data islands that tie your idea collection with the future of the company that wrote the program (It was a company or a strong community, right? Not a single gifted programmer who could die or lose interest?).

Accessibly of files on the move

Take a look if you are able to access your collection on the move, e.g. in a hotel or while staying with friends. Do you need your own notebook due to the programs

Evaluating an Idea Collection

involved? Can you access the files on any computer? Be careful if you use publicly available computers, e.g. in airports or hotel lobbies. They usually accumulate trojans and viruses.

Internet

Internet based solutions seem to allow access to data anytime and anywhere, however, net access is fragile. While the internet was originally developed to withstand a nuclear attack, daily access can be blocked by a number of factors: broken computer, no connection on your end, problem on theirs including necessary maintenance). There are also other problems like data control and backups, so be careful if you put your faith in internet based solutions: You will be in situations where you want to access your idea collection and you cannot.

Evaluating an Idea Collection

BIG FIVE

Check the solution regarding the five functions it should provide: remembering, generating, finding, enlarging and restructuring (see page 185). They can provide these functions only if the collection is used and available, thus they are coming at this point.

Remembering Ideas

A good idea collection should help you to remember your ideas. When you collect ideas for a lot of different projects (even if you have only one or two ideas for a project a year, they accumulate) it is easy to lose sight about the different ideas. The constant remembering that there are some things you had ideas for facilitate the growth of the project. More about remembering ideas on page 210.

Presence: Reminding you of the ideas

A good collection should have some kind of presence, i.e. reminding you of your ideas in general. Paper naturally builds up a very large and unwieldy presence the more ideas you have collected. With digital you can use table of contents (at best with direct links) to remind you of the vast resources that are growing to be realized. You can also make overview pages of projects that you would like to realize and order them, e.g. paintings, short stories, textbooks, etc.

Happy Accidents: Stumbling upon ideas

A collection should provide happy accidents, i.e. should allow you to stumble upon your stored ideas. This might happen if you flip through your paper notes from time to time or click through your wiki (or chose “random page”). Sometimes you might find an idea that you did not invest any effort in but now realize that it has high potential.

One of the advantages of being disorderly is that one is constantly making exciting discoveries.
A. A. Milne

Remembering the most important projects

A collection can help you to keep the most important projects in the back of your mind (the central projects, see page 207). This will help you to have ideas for these projects when you think about them in breaks, in different contexts or while working on the core project, even if the core project that you currently realize has nothing to with them.

Only change is noticeable

To have the central ideas in the back of your mind, they have to be constantly reminded. The problem with remembering something for a longer time frame is that we only notice something continually if the thing changes. If you put a poster up in your room, it will be very noticeable for you in the first days but very quickly you stop noticing it. It has no information value and you know it is there, so there is no need to notice it. This is a problem with all unchanging idea repositories. To continually notice your central projects their form must change and/or you must make a conscious effort to notice them, to be reminded of them. Otherwise they quickly fade from memory, resulting in fewer ideas for these projects. If you use a whiteboard to capture and collect ideas for a specific project (see page 150 and page 229) you can easily see this. You will likely notice it after you made major changes, because the shapes and forms on the wall are new and this attracts your attention. But

Evaluating an Idea Collection

if you enter a drought and make no more changes, you will likely cease to notice it, starting a vicious circle resulting in fewer and fewer ideas, your creativity for this project dries up. You can try to prevent this by erasing the information from time to time and starting anew while focusing on new key aspects you want to devote your attention to. One way to remind you of the central ideas is to use landmines. See page 210 for more information.

Generating Ideas

One function of the collection is the stimulation of new ideas. Placing all your ideas in one place can enable you to see the connections between different ideas and thereby creating new ideas. This requires you to open for connection to other topics and ideas and to see them when you use the collection. To help you to generate ideas the idea collection first need to grow for some time to reach what Luhmann calls “critical mass”, but this should be quickly reached if you collect your ideas regularly.

Finding Ideas

An idea collection is not a desk drawer (usually) — it has structure (more than four walls and a floor). To put an idea into the idea collection you have to find the place where you want to put it. Nothing wears you down as fast as an idea collection where you take ages to find the item you seek. It is highly aversive and you won't use it for long. More about finding ideas (in your collection) on page 260.

Expanding Ideas

Ideas can occur to all aspects of projects or previously stored ideas. It is like a mutation that can happen anywhere in the existing information and if you are not currently realizing the project it is highly welcomed. Usually, only digital data has the possibility to include data at any point. Even index cards cannot support growth that occurs to text in the middle of the card (of course, you could rewrite the card with the new information, but this takes time and is aversive). If you cannot enlarge (include, sometime delete) any part of the existing information you become serious problem with the structure and your idea collection becomes very confusing. More about Expanding Ideas on page 261.

Extensibility strongly favors digital

As mentioned only digital is completely flexible in the way existing information can be enlarged. As long as you do not use programs that limit the amount of information that can be stored (e.g. the amount of characters in a line of an Excel file) or use a layout that does not have an automatic page flow, you have nothing to worry about. There are solutions, e.g. for books or file folders (e.g. using different books for categories like “dialogues”, “scenes”, “characters”).

Restructuring Ideas

As the idea collection grows, you are likely to change the structure. At least when you try to realize the project, you have to find the central theme, the thread.

INFRASTRUCTURE

Aim for less than 10 seconds to find the place where you put an idea. If it takes longer it becomes more and more unlikely that you will use the collection.

Use additional helps like indexes or tags/keywords to help you find the information you seek.

The ease with which you find the information you seek gives you an information on how conscientious you were in putting them there in the first place.

Evaluating an Idea Collection

While this can be done outside of the idea collection, it helps to keep (or enable) at least some structure, for the whole collection itself and for subparts dealing with ideas for specific projects. Compare it with a book: you need some kind of table of content which order should make sense, and some kind of order for each chapter (project idea). Now consider that in difference to a book the collection gets written in different places at nearly the same time and the order changes continuously. A good collection should be able to support this, again favoring digital solutions. More about Restructuring Ideas on page 262.

Keep a structure between projects

A collection should have a clear way to separate different projects while allowing them to profit from each other. E.g. you have a file called “dialogues” and one called “scenes”, allowing you to store ideas at a clearly defined place. Reading in the one file will probably generate ideas for the other.

Keep a structure within projects

If you collect ideas to a specific project it will soon get unwieldy if you do not find a thread in which to order it. Ordering the ideas in a project file is like pruning a tree: It will give your project an inner structure, you will be able to see the structure more clearly and stimulate further growth.

Flexible Structure

The more abstract your ideas are, the easier it is to change the structure. If you have an outline, it is very easy to shift information to create a new thread of information. Once you have written a complete text, changing the structure becomes more difficult (you have, in essence, to destroy your own work). As mentioned before, digital makes restructuring much easier than paper, but even with digital, try to keep your ideas within a project abstract enough to enable restructuring.

WATCH THE CORE FUNCTION

An idea collection should help you to accumulate ideas. For this, you must use it, it must be available and the four usages (remembering, finding, enlarging, restructuring) must be supported and used by you.

Evaluating an Idea Collection

SECURITY

Given that ideas are rare and often cannot be reproduced, security should be a concern. It is not so important that others cannot access your ideas, but more that *you can still access them* in the time to come.

Future-proof

Be very careful which programs you trust. Even if it is perfectly written, hardware improves, which brings new operating systems, which will not support old programs. If it is not a major company with a widely accepted standard or a strong community, you will not be able to use this program for a long time. Some very good software was written by gifted programmers, unfortunately, when they die or quit, so does the support. This also means that you must be able to export your data in a file format that can be widely used. Even if you never want to use any other software there will come the time when you have to extract your data, *because you cannot use the software anymore*. For this reason, plain text export and export of media files as they were should be an option. It might cost you a lot of formatting but at least you have your ideas. Unfortunately some programs have proprietary formats that cannot be read by other programs and have limited export options. Do not go on that data island because you cannot take it with you when you have to leave.

Access control

Access control in most programs is a feel good measure. Programs to break encryption are widely available on the internet (trojans and viruses included). Unless you use a pretty good encryption (e.g. PGP) anyone who has access to the file or document can break it. Anyone who has a trojan on your computer will be able to do so also once *you* decrypt your data. While there are options to keep data relatively secure (i.e. complete isolation) and cases where this might be appropriate, in most cases a weak protection it is enough to keep the accidental snoops out. Personally I only use encryption I can break, because the more secure the access control, the more likely that *I lock myself out*. I once lost a file to PGP (forgot the password) and after that the balance between data security and data access has shifted significantly to data access.

See page 275 for more information about encryption.

Data security

Another aspect is the security of the data itself. Paper solutions are often unique, meaning there is no backup (or way to make easy backups). When the paper is lost, there are gone. Programs differ how stable they are and what happens to the data in case of a crash. Some are likely to take your data with them (e.g. Word), others store the data in multiple files reducing the risk of a total loss (e.g. some Wikis). Especially with online solutions, find out who is responsible for the data security and what happens in a crash (or cracker attack). You will still need to make backups but find out if they are doing the same.

See page 265 for more information about backups.

Data Control

Data control is not about legal ownership. It is the question of who can prevent you from accessing your data, legal or not. Who controls the access control itself? Even

Evaluating an Idea Collection

if you have the legal upper hand (Did you read the terms and conditions?) providers of internet services can prevent you from accessing it. Maintenance, change of terms (You did read the terms, did you?), bankruptcy (Remember the big dot-com crash?) — there are a lot of things that can prevent you from accessing your data and this will always be an issue if you do not physically have the data (e.g. the server in your room). Remember that this is not about legal right or entitlement to damages (if you would get any — Terms and Conditions?). Your ideas have value mainly for you and they cannot be replaced, nor will you get a “fair” amount of money for it.

Evaluating an Idea Collection

ADAPT IT TO YOUR NEEDS

Evaluating a collection is made more difficult by the fact that most solutions can be adapted. People are creative and the most creative adapt their tools to their liking, shape their infrastructure to suit their preferences. Idea collections are no exception. Most digital tools can be strongly enhanced, ranging from scripts to automate repetitive tasks to plug-ins that allow new functionality. For example, I use a wiki to collect my ideas but I found it tedious to create a new entry for each new idea (consisting of creating a new link, clicking on that link, creating the page, entering the default data, saving the page). After a while I wrote some .html/.php/JavaScript modification. Now my browser opens the wiki in a frame. The other frame consists of linked HTML-pages that allow me to create an entry by filling out a form. Another link rebuilds a whole index in my wiki, automatically finding any new entries. Tags are assigned by clicking on the tag in a taglist, JavaScript does the rest. Ppage 250 gives an overview of this solution. You do not need to write similar solutions. If you look at the help pages of the programs or at support groups on the net, you likely find plug-ins and hints to make the work with the tool much, much easier. A simple plug-in can often enhance your infrastructure tremendously, save you time and effort and make you to use your collection much more.

For paper solutions there are also a lot of useful modifications — look around on the net and ask others. Do not be satisfied with your collection until you like it and remember that one effortful change can greatly improve and simplify your work for months and even years to come.

If you want to divert a river, you do it once by changing its course as early as you can, not by building a continuous bucket-chain.

Unknown

Ways of Collecting

On the following pages different systems for collecting ideas are presented. While I strongly favor a digital solution (while explicitly warning about its drawbacks, see page 266), I also present paper based systems. However given the amount of different media and the sheer size a collection can grow at all ends and the changes in structure that can occur, at last for *collecting ideas* a digital solution is highly recommended. In contrast to capturing ideas, collecting it is not about speed but about flexibility of structure, size, ease of backups and finding information.

You can't shift ink.
Henry J. Wilcoxon-Ash

The following systems are presented:

Paper

Variable Order, e.g. index cards, file folders, loose leaf collections

Fixed Order, e.g. notebooks, diaries, calendars

Wall

Variable Order, e.g. Post-Its, Pinboard, Magnet Board

Fixed Order, e.g. Whiteboard, Blackboard, Magic Chart, Posters

Digital

Files and Folders

Text Files

Mind Maps & Concept Maps

Outliners

Digital Notebooks

Notes Management Systems

Wikis

Other programs for collecting ideas

Word processors (e.g. Microsoft Word, Apple Pages)

Databases (e.g. Microsoft Access, File Maker, SQL)

Spreadsheets (e.g. Excel, Numbers)

eMail-Programs (e.g. Thunderbird, Mail)

Blogs (private / personal entries)

Mental

Ways of Collecting

PAPER (VARIABLE ORDER)

If you want to use paper for collecting ideas, solutions that have a variable order are highly recommended. Index cards, file folders and loose-leaf books will at least allow you to change the order of pages. However, once your collection becomes larger they become unwieldy, they are difficult to backup and can hardly be enlarged on the page itself.

Tips for using this kind of collection

Use colored post its and dividers to mark pages that belong to the central projects.

Write only on the front side of the card to avoid turning it around when you sift through the collection.

Use a fixed order by number instead of a topical order to avoid inflexible structures. Write the number of the card in the top left corner and keep every card at its place.

If the card is full include a “link” to the card number when the next information is available. You can also include cards like 23, 23a, 23b, etc. to place them between the (now full) card 23 and the already written card 24.

Use links to make the connections explicit between related ideas (cards) by referring to their number.

Keep a continuously updated index register.

Organizing the collection

Structure of individual entries

Template: You can print the fields on the pages or index cards you use.

Free form: Blank paper.

Structure of the idea collection

Alphabetical order: Easily done via dividers (stronger paper, different color, slightly larger).

Thematic order: Easy to do by using dividers with thematic topics.

Chronological order: Simply add new entries behind the last ones.

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 whose color indicates the project they belong to)

Reference Material

Within the collection: Stick it on an index card or between the right pages.

ADVANTAGES

easy to stumble over your ideas due to physical presence

no power necessary

easy to restructure

DISADVANTAGES

backup extremely difficult (scan/photographs possible but not searchable)

manual search

audio/video difficult

takes up a lot of space

INFRASTRUCTURE

Digitalize it: Computer were made exactly for this kind of material.

WAYS

index cards in a box

file folder

loose-leaf books

Ways of Collecting

As different collection: Depends on reference collection method used.



Ways of Collecting

PAPER (FIXED ORDER)

The only real advantage of fixed order paper idea collection is the fixed *chronological order* the ideas are stored in. For artists it might be important to keep the original sketches, e.g. a sketch book taken on a vacation, because of the *emotional connection* or the quality of the sketches that cannot be preserved in digital form. For all other uses I (again) highly recommend digital. Even if you favor the look of a notebook, 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).

Tips for using this kind of collection

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. A silver liner works on a black back, so does writing on sticky labels (or non-black tape).

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.)

Organizing the collection

Structure of individual entries

Template: Difficult if you cannot remove the pages to print them. 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).

Free form: Use blank paper.

Structure of the idea collection

Alphabetical order: Difficult since you cannot add or move pages. You can reserve pages for entries beginning with a, b, c, etc. but this is difficult (to impossible) to plan and wasteful. One way is to use one book for each letter of the alphabet.

Thematic order: Hard to impossible to do. One book per topic is a possible solution.

Chronological order: Naturally in chronological order.

Order by index number: Assign consecutive numbers.

Order by multiple principles: not possible

ADVANTAGES

chronological order
no power necessary

DISADVANTAGES

backup difficult (possible to scan it but the scan is not searchable)
takes up a lot of space
difficult to enlarge
manual search
audio/video difficult

INFRASTRUCTURE

Keep a shelf free for the books. The chronological order is often your only clue and finding the books can be hard enough.

WAYS

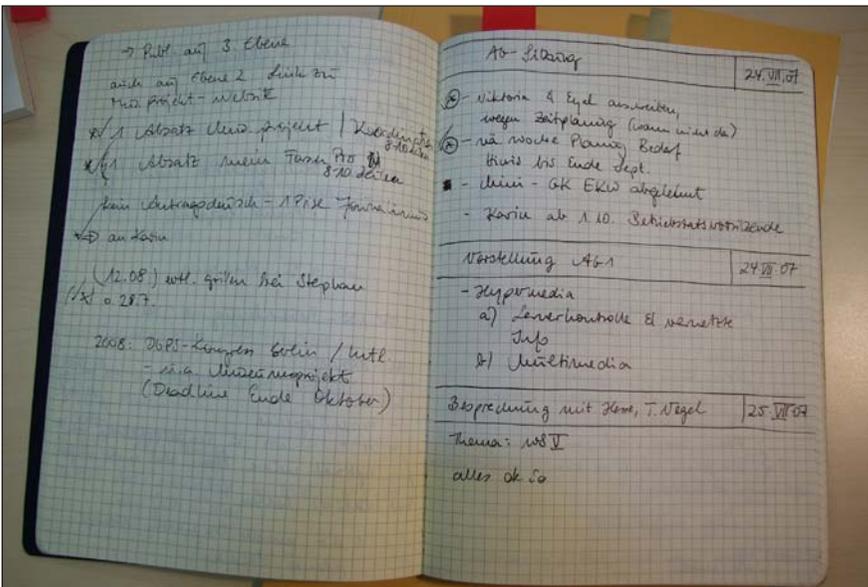
notebooks
diaries
calendars

Ways of Collecting

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.



Ways of Collecting

WALL (VARIABLE ORDER)

If you are working on a single project it might be a good idea to keep the information about that single project on a wall. 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 allows you to restructure the information from time to time.

However, make sure to use this only if you can finish the project within a short time. Given the unwieldy nature of a whole wall, the likelihood of survival over a few months is rather low. Remember that you can do backups with a good camera. Make sure that you can read the text on the photo — camera shake can easily provide you with a photo that shows you the information but prevents you from reading them.

Since anything that does not change fails to get noticed after a short time (see page 210), make sure that you use the flexibility of the wall to rearrange and continuously expand the information. Otherwise the wall becomes static and will quickly fade from your attention.

You can also use a SmartBoard for collecting ideas on a wall, which is essentially an extremely large touch screen that works via a projector. However, given that it consumes energy, the projector lamps are expensive and the fans to cool the projector are noisy, the actual use of the device is probably rather low (compare page 151).

Tips for using this kind of collection

Use it rather for one project that is currently realized.

To make a backup simply photograph it (you can take it with you or digitalize it without looking back).

You can use a virtual wall by using powerpoint , word, pages or keynote.

Organizing the collection

Structure of individual entries

Template: You can prewrite what you stick to the wall.

Free form: Use blank paper.

Structure of the idea collection

Alphabetical order: You can predefine areas for the different letters or move 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.

ADVANTAGES

easy to stumble over your ideas due to physical presence

no power necessary

easy to restructure

invites to enlarge ideas

DISADVANTAGES

physical space limited

backup difficult

manual search

no audio/video

takes up a lot of space

INFRASTRUCTURE

Use different smooth surfaces of your office for different aspects of the projects.

Enhance the information with print outs or post its.

WAYS

Post-Its

Pinboard

Magnet Board (including surface of fridge)

SmartBoards

Ways of Collecting

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.

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.

Ways of Collecting

WALL (FIXED ORDER)

Trying to collect ideas in a fixed order on the wall is only helpful for short projects or to get a firmer grasp on partial aspects of a program before the results are included again in the idea collection.

To solve problems or stimulate new ideas a wall “collection” can be extremely easy and helpful. You are confronted with it a lot of times during the day and you can add additional information and ideas. As such, they are collection as well as capturing tools, depending on the usage.

Even if you do not have the infrastructure necessary (i.e. black- or whiteboard), there are simple solutions you can use as long as you have a wall (or a window): Magic Chart is a foil that sticks to nearly all smooth surfaces by electrostatic attraction and transfers it into a whiteboard. You can also use large sheets of paper to write on or use Whiteboard Maker on mirrors, tiles or other smooth surfaces (make sure they can be erased after time without leaving a trace!).

Backups are possible with photo cameras.

Caution: Keep in mind that you can become adapted to anything on the wall that does not change. While you might pause and wonder about the information after you first wrote it down, if you do not change the information from time to time, you will ignore it after a week or so (see page 210). Transfer the information to another medium and start anew every few days while focussing on new key aspects you want to have ideas on.

Tips for using this kind of collection

Use it rather for one project that is currently realized.

You can make a backup by photographing it.

Very useful for timelines in/ for history(s).

Organizing the collection

Structure of individual entries

Template: You can prewrite the wall.

Free form: Use blank paper.

Structure of the idea collection

Alphabetical order: Difficult but possible via predefined areas or by erasing and re-writing the information.

Thematic order: Predefine areas for different topics. However, this way of collecting

ADVANTAGES

easy to stumble over your ideas due to physical presence

no power necessary

invites to enlarge ideas

DISADVANTAGES

physical space limited

enlargement difficult

restructuring difficult

backup difficult

manual search

no audio/video

takes up a lot of space

INFRASTRUCTURE

Even if you do not have a whiteboard, as long as you have a white wall you can use Magic Charts or posters to create your own.

Keep the markers ready in hand while you are looking at the notes during breaks.

Walk around in front of it.

WAYS

whiteboard

blackboard

Magic Chart

Poster (large paper to write on)

Whiteboard-Marker (mirror, cupboard surfaces, tilings)

Ways 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.

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.



Magic Charts in combination with print-outs for collecting ideas for a specific project

Ways of Collecting

FILES AND FOLDERS

The easiest way of collecting ideas is to use the basic file and folder system of your computer. Simply make a folder structure or copy all your documents (e.g. text files, .pdfs, .docs, etc.) into one directory or more directories (see page 204). However, while it is easy to create, its usability depends on your success to keep your collection organized. On Mac OS X, Spotlight can search the content of files, but it usually searches the whole hard disc. You can start a directory search in both Windows and Mac OS X, but this takes ages.

If you are very dependent on your file system, a better way is to use a .txt-based wiki. You can still use your file and folder structure (with some restrictions regarding file naming and placement), but you have a whole extremely powerful information structure above it. But only the filename and the ending (which cannot be freely chosen) allows to little in the way of organizing the collection.

Organizing the collection

Structure of individual entries

Template: Templates must be included in the programs you use, e.g. Word Templates, Excel Templates, etc.

Free form: Create a new page in the program you use.

Structure of the idea collection

Alphabetical order: Select the “order by name” view or use subfolders. Automatically for the contents of one directory, manually if subfolders are used.

Thematic order: Easily possible by using folders. Manually only unless you include topic tags in the file names.

Chronological order: Difficult if the operating system cannot sort the files by creation date. The order would change constantly if you sort by the last time you edited a file (but would provide you with easy access to the most recently used files). You could use the file name for date and time information and enter it manually, 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.

Reference Material

Within the collection: Either make a folder for the idea and put in it with the document containing the idea or change the filename of the reference to the name of the

ADVANTAGES

Very unlikely to crash

Accepts all file types

Wide variety of programs to store ideas in usable (e.g. documents, spreadsheets, etc.)

DISADVANTAGES

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)

INFRASTRUCTURE

If you really want to use files and folders, take a look at “Organizing the idea collection” on page 197 regarding the different ways to organize the contents.

WAYS

Simply make a folder and copy everything in it, you can use subfolders for further organization

Ways of Collecting

idea filename with “_ref1” to it. E.g. 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.

Ways of Collecting

TEXT FILES

While text files are great to capture ideas at the PC, their uses for collecting ideas are rather limited. If you collect the ideas in one file, you have a very long file that becomes confusing (30,000 lines are not unheard of). Finding the ideas you want to enlarge soon becomes hard to handle. If you use multiple files you need a clear structure that tells you where you information is. Searching for specific ideas becomes difficult, unless you use an text editor that can search all text files in a directory (e.g. TextWrangler for Mac). Multimedia files also become a problem and must be saved in an additional folder, which makes linking to the multimedia files difficult. An additional disadvantage of pure text files is the lack of automatic backup. Some text editors have this features (e.g. TextWrangler) and (if activated) make a copy whenever you save the file (incremental saving). If you do not use a text editor with this feature, you can kill you whole collection within two seconds. The combination of strg+a, followed by any key, followed by strg+s and strg+w will replace the whole text of your collection with the keystroke you did after strg+a and quit the file (preventing an undo-command). Sounds unlikely? If you work a lot with a computer, and especially with text files that you open in an instant, write something and save and close them, this can happen (and did to me with another file). Behavior can be highly automated and if these automatism get triggered the wrong way your whole collection can be destroyed in an instant.

On the positive side, text editors are always available and they are extremely robust. It is highly unlikely that a text file gets broken. Be careful however with the formatting of the text file. Text files come with different line breaks: Windows (Carriage Return and Line Feed), Macintosh (Carriage Return) and Unix (Line Feed). Opening the file with the wrong settings can screw your paragraphs. The way the letters are encoded also differs, e.g. Western (ISO Latin 1), Western (ISO Latin 9), Western (Mac OS Roman), Western (Windows Latin 1), Unicode with UTF-8, UTF-16, etc. So be careful, because *a text file is not a text file*. If you stay within the basic 26 letters of the western alphabet, this is not a problem, but once you use more exotic characters (e.g. German "Umlaute" like "ä", "ö", "ü") it becomes an issue if you open the file on a different computer. Good text editors ask which character set the file uses, others just open the text file with the default values (e.g. Notepad on Windows), which can screw your idea collection beyond recognition.

Use a good text editor

If you want to use text files, make sure to get a good text editor. Notepad (Windows) may be universally available, but you can make your work much easier if you invest in a good editor.

ADVANTAGES

- unlikely to crash
- future-proof
- extremely fast
- no additional programs available

DISADVANTAGES

- file size becomes unclear
- no inherent ordering
- limited ways to structure
- no audio/video/images (must be stored in a separate folder)

INFRASTRUCTURE

- on Mac: applications like Quicksilver are a great help in opening text files quickly
- use the taskbar (Win) or dock (Mac) to quickly access the text file

WAYS

- TextWrangler (Mac)
- Notepad++ (Win)

Ways of Collecting

On Apple Macintosh, TextWrangler is a very powerful text editor (BBEdit from the same company is more powerful but not free). The program even asks if you want to reopen the file with a different encoding if it detects that something might be wrong with the text file. On Windows, Notepad++ has some nice features.

The following functions are very useful for a text editor:

Backup

Some text editors offer to make an additional copy every time you save the file (e.g. “Make Backup before saving”). This will slowly take up space (but not so much, since text files are very small) but provide you with a nearly complete copy if you accidentally overwrite your collection file.

Incremental search

A good search function is a must and there is more than just typing the term and hit “find”. Incremental search starts the search 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”.

Support for different encodings and line breaks

You should decide in advance which line breaks and encoding you use (e.g. Unix line breaks and Unicode (UTF-8, no BOM) and stick to it. However, the editor should support different encodings. If you ever type something in a new text file on a different computer (e.g. via Notepad on Windows), you can open it with the editor, copy it and paste it in your collection.

Fold-In Function

Some text editors function like outliners (see page 240) allowing you to fold in a lot of lines under one header. If you can use a hierarchical order for your collection, this makes the text file more manageable.

Easy Installation

Some editors can be installed by copying the file into a directory on the hard disc (without administrator privileges or a long winded installation process). Others can be run from an USB stick. If you want your editor available wherever you are, try to use an editor that consists only of one file and can be used on every computer (of the same operating system family). This way you can access your collection even if you are not at your home computer.

Use a clear structure

Given that a text file normally has only one dimension (top to down, line after line, sideways *order* is difficult), it soon becomes difficult to manage. You can make your work much easier if you use a clearly defined structure within the text file.

Structure Through Tagging

To help you find your ideas, you can use tags (keywords) in text files (see page 198). Simply use an “@” in front of the keyword you want to use, e.g. @painting, @sculpting, etc. If you search for the place to store ideas regarding “painting” you search for “@painting”. No matter how often you have used the word “painting” in your collection it will only find the place where the “@” is in front of it.

Ways of Collecting

Use headers

If you divide your text file into different sections, e.g. ideas for your work, ideas for project a, b, c, d, etc., use clearly defined headers to quickly jump to the section your search for. You can use “#” for a header, e.g. “#Work”. Instead of searching for “work” which you will probably have written over and over in your collection, the search for “#Work” will only find the header with this name. If your editor allows you to fold in sections, find out how the sections are defined and use this syntax. You can then simply fold in all sections to quickly scroll to the section you search for.

Write your syntax at the beginning of the file

If you decide for a syntax, e.g. for tags and headers, make sure you write it at the beginning of the text file. Otherwise you might use a slightly different syntax over time which makes it impossible to use the collection correctly and efficiently.

Do not use the collection file for capturing ideas

If you are using a text file for your collection it can be very tempting to use it for capturing ideas too. After all, it can be opened quickly and almost everywhere. However, I strongly do not recommend this. First, you can quickly come in the situation, where you become unsure which version of your collection file is the current one. Imagine that you copy it to your USB stick and took it to work. Later at home you absent mindedly entered some information in the collection file on your home computer. Did you enter some ideas during work? If so, you have to find this information, otherwise you have two current versions with a huge overlap of information, which makes it very uncomfortable to work with. You could only move your collection from one device to the other, but that would mean that you could loose your collection due to a computer error while moving the file (e.g. you pull out the USB stick before the data is fully written). Of course, you could copy the file to your USB stick and rename the file to “old_collection” or better to “[current_time&date]_collection” on the PC, but that is a lot of work to do it every time. Follow the advice on page 140 and differentiate between capturing and collecting and use only one version of your collection at any time. Second, if you try to capture ideas in your collection you have to write the information to the right place. This takes time. It is easier and quicker to just write down the idea first and search for a place for it later.

Tips for using this kind of collection

Select Unix/UTF-8 as file format (text files can be coded for Windows, Mac and Unix and with different character codes).

Use an Editor that understands the codings for different OS and characters.

Use an editor that can fold text to enhance clarity.

Great for capturing but not so good for collecting ideas.

For backup secure only the text file not the media folders if you have not changed them — due to the small file size of .txt files this allows you to make a backup faster and more often.

Ways of Collecting

Organizing the collection

Structure of individual entries

Template: You can create a template and copy & paste it a few times or if you need it. Make sure that you keep at least one unused version of the template to copy and paste it.

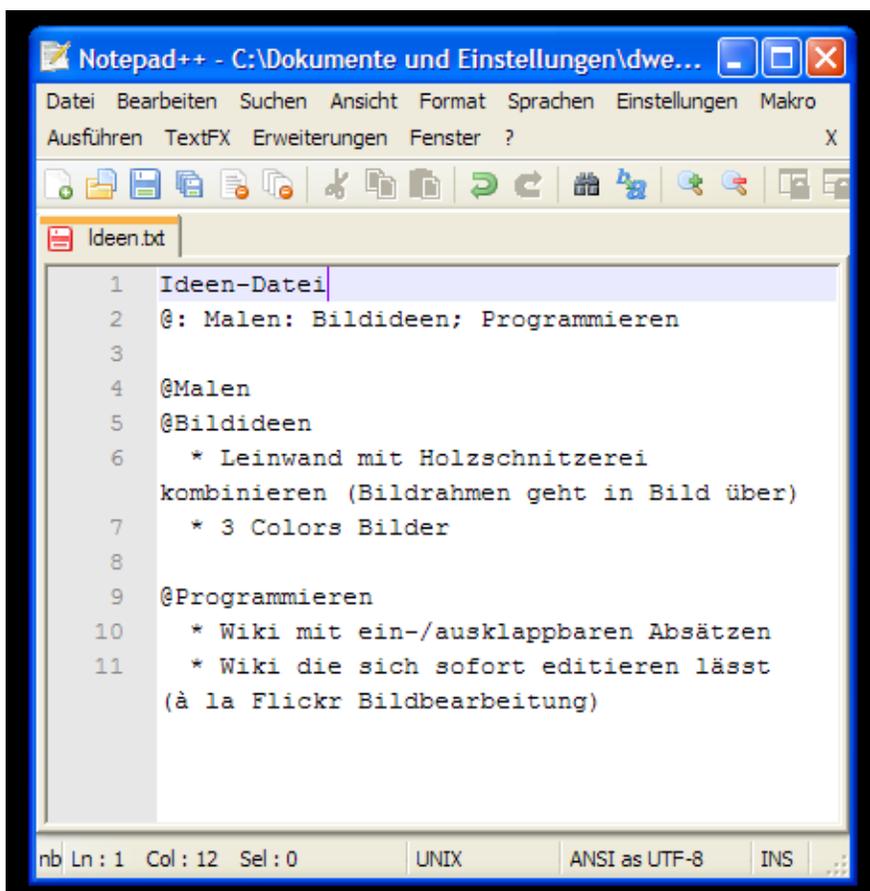
Free form: Simply write the idea in a text document.

Structure of the idea collection

Alphabetical order: Using headers that can be searched for (see page 235) 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 (see page 235) 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



Notepad++, one of the better text editors for Windows ... at least it knows different line break and character encodings (in this case: UNIX line breaks and UTF-8 character encodings).

Ways of Collecting

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.

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.

Quickly opening the collection inbox file via Quicksilver

Cmd+tab opens the Quicksilver Dialog (without modified preferences it's alt+tab) ...

... typing the three letters of the wanted text file displays it for selection ...

... and hitting enter opens it.

You can quickly access your "Collection Inbox" file (or any other file) without even using the mouse. It saves tremendous amounts of mouse movements and clicks, i.e. of time and effort.

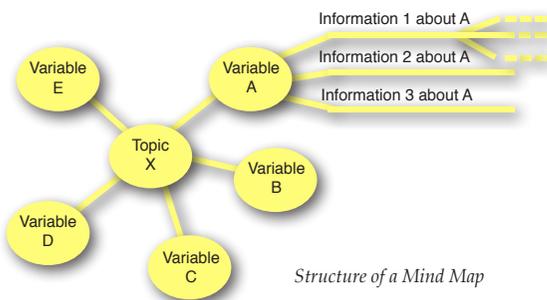
Ways of Collecting

MIND MAPS & CONCEPT MAPS

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. Besides using office programs (e.g. Word or Powerpoint), there are dedicated programs for Mind Maps (and Concept Maps) available. While they are good to visualize the information, these Maps are more useful if a project is in realization phase (see chapter 6).

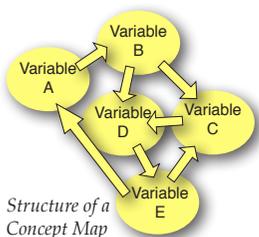
Mind Maps

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.



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 where the variables influence each other.



ADVANTAGES

excellent way to see the structure

DISADVANTAGES

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

WAYS

Non-Digital

Limited only by the size of the paper

Blackboards, Whiteboards, MagicCharts, etc.

Office/Presentation Software

Microsoft Office (Powerpoint is "better" than Word but still sucks)

Keynote

Mind Map Software

Cmap Tools - <http://cmap.ihmc.us/download/index.php?myPlat=Win>

Free Mind

MyMind

bubbl.us

Inspiration

Mindjet

NovaMind

Omni Graffle

Tips for using this kind of collection

Use one Mind Map for one project only.

Useful to restructure the material, get an overview, learn it and get new ideas.

Ways of Collecting

Useful when the project is in realization phase.

Organizing the collection

Structure of individual entries

Template: The maps itself can be stored with some information and used as a template.

Free form: Create new map.

Structure of the idea collection

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 each entry.

Order by multiple principles: Difficult to use more than one system, save when tags are used.

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.

Ways of Collecting

OUTLINERS

Normally an outline is a general plan, a structure or thread, similar to a table of contents. Something your teacher probably told you to do before you write a text. However, a good outliners does not only allow you to write the general structure of the text you want to write, *but to put all the information beneath the entries* (e.g. text, explanation, sources, ideas). You can make a hierarchical order of the information from the top-level headers to the smallest detail. Since you can fold in the information at every level 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 (e.g. top headers) and the tiniest detail (e.g. expand a header to the lowest level).

While they are normally used to make notes and plan writing, they can also be used to collect ideas. Since they are inherently hierarchical they require a corresponding order of ideas.

ADVANTAGES

excellent for hierarchical structuring

excellent for dealing with complex information

DISADVANTAGES

strong focus on structure

rather for one project

additional program needed

WAYS

Omni Outliner

Outline View of Word

Circus Ponies Notebook

Tips for using this kind of collection

An outliner is good for one project and excellent for note keeping, planning and restructuring information.

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 additional information to a header.

Organizing the collection

Structure of individual entries

Template: Saving an outline with predefined information will work, as will copy and paste inside the outliner.

Free form: Create new document or a new line.

Structure of the idea collection

Alphabetical order: Easily done by indenting the entries under a line containing their first letter. Manually only.

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

Ways of Collecting

are used.

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.

- An example for an outliner
- ▼ You can write any information in it, as much as you like to, like in a normal text
 - ▼ You can also indent information -- this line is part of the previous line
 - ▼ this line is even further indented ...
 - and so on
- ▶ You can fold in the content at any level, e.g. this line has information folded in (see the orientation of the triangle)
- This allows you to concentrate on specific parts of your text while ignoring the (folded) rest

An example for an outline from a Circus Ponies Notebook page.

Ways of Collecting

DIGITAL NOTEBOOKS

Early computer programs often used typical office terms as metaphors, with the files and folders metaphor as the most salient example (beside the trash-bin). Since paper notebooks are well known and highly loved ways of storing ideas and information (compare the Moleskine Movement), some 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 and an excellent search function).

If you prefer the look and feel of a notebook, but do not want to use it due to its disadvantages (e.g. you cannot add text in an existing paragraph), take a look at the digital versions. You can do the same things you can do with traditional notebooks, from making notes in different colors, fonts, highlight in different colors, include pictures, sound files, etc. pp. The outliner is ideally suited for making notes and planning projects. You even have checkboxes and you can set dates for action items.

Since digital notebooks have an inherent structure (hierarchical: chapter, page, paragraph) they are better suited for an individual project than as an whole idea collection. Although tags (keywords) can be supported, it is easier to use a collection that places less emphasize on a hierarchical structure.

Good as a final step before realizing ideas

While a notebook is fun to work with, it is best used to collect and 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.

Tips for using this kind of collection

A digital notebook is very good for one project. It gives the project structure and keeps all information easily accessible in one place.

Organizing the collection

Structure of individual entries

Template: Copy and paste will work inside the notebook.

Free form: Create a new page, divider or entry.

Structure of the idea collection

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. Manu-

ADVANTAGES

familiar metaphor
like a highly flexible paper notebook
supports multimedia
excellent outliner

DISADVANTAGES

often proprietary format
additional program needed

INFRASTRUCTURE

Make sure the collection is opened automatically when you boot the computer.

WAYS

Circus Ponies Notebook
(Mac OS X)
AquaMinds NoteTaker

Ways of Collecting

ally 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.

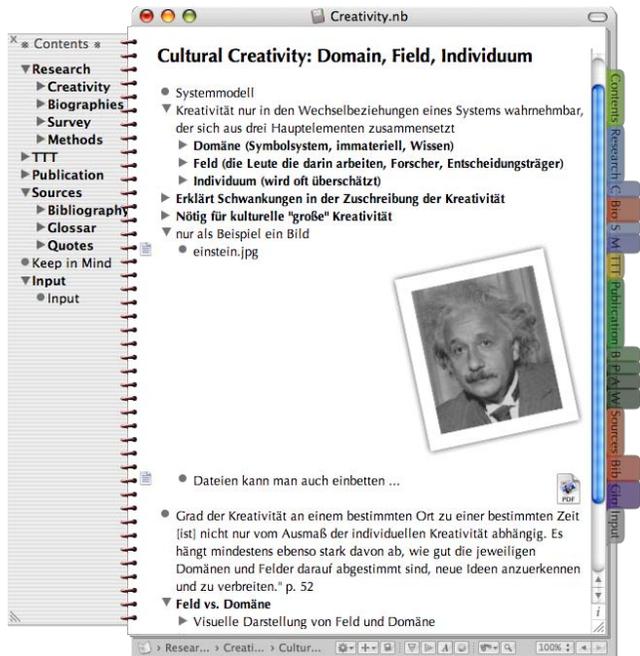
Reference Material

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.

One page of my Circus Ponies Notebook regarding creativity.

Note that the page is an outliner and can easily handle images and other media files.



Ways of Collecting

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. They use different metaphors, some highly visual (e.g. Tinderbox), others place more emphasize on folders and text. Often these programs offer a trial version that allows you to test them. While I prefer a more open source and future-proof solution (i.e. a text-based wiki) I strongly recommend you to take a look at the software. If you find that it agrees with your working style, then by all means, use it.

Do not over-organize

While hearing a presentation at a conference, I had the opportunity to watch the person in front of me using a notes management system. It was incredible — the person was constantly hitting shortcuts, entering information, using visual metaphors to relate information to each other. Thinking back about it, it also seemed like an incredible waste of time and activity. Sure, it would be nice to have the information in this structured and developed form, with the presenter being a part of the group “City xyz” (the presenter was currently employed), with his position as part of the instance “People I have met”, etc. pp. But isn’t this a slight overkill? While this person did not use the note management software for ideas (which would at least be more stable over time than positions and locations), there was a lot of clicking and typing involved to store this information. Essentially his goal seemed to be to allow the notes management system to function as his second brain (due to the stored semantic information), not as an additional memory. This can be done and there might be instances where this is helpful, but consider the ease of use with which you can enter information and automate it as much as you can.

Tips for using this kind of collection

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!

Organizing the collection

Structure of individual entries

Template: Copy and paste will work.

ADVANTAGES

often highly integrated with the operating system and other programs

powerful functions

DISADVANTAGES

difficult to change to another solution if used for a while

often commercial software

often high focus on structure (many actions necessary to enter/deal with content)

INFRASTRUCTURE

Make sure the collection is opened automatically when you boot the computer.

WAYS

DevonNote (folder and text based)

DevonThink (folder and text based)

Tinderbox (visual metaphor)

Ways of Collecting

Free form: Enter new information.

Structure of the idea collection

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.

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.

Ways of Collecting

WIKIS

Wikis became famous with the free online encyclopedia Wikipedia. They are essentially webpages that can be edited very fast and simple via the web browser. Most Wiki engines (the program that displays the pages and allow the editing of the content) require at least a web server (e.g. Apache) and a programming language (e.g. PHP). Some wiki engines use a database to store the text and media data, which means that they also require an installed database (e.g. SQL). Just because they use a webservice does not mean that they have to be online. Webservice can also be installed locally on a computer, which means that a wiki can also be available offline and only for the single user of that computer. What first looks like a misuse of a collaboration software, makes sense if you look at the functions a wiki can provide, which make them ideally suited as the basis of a private idea collection.

Functions of Wikis

To give you an idea about the strength of wikis for collecting ideas, here a short overview about the functions (and strengths) of wikis. Keep in mind that wiki engines differ in their functionality and not all might support these features.

Free Structure

Wikis can have any structure you want them to have. While this requires strong discipline of the user, it makes it easy to adapt a Wiki to your needs. 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. On the other hand, you can also (or additionally) tag your entries with keywords and create indices on the fly depending on the search terms you enter.

Version Control

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 redo changes and have a look how an idea progressed over time.

Tagging

Most wikis allow the usage of tags. Make sure you use this conscientiously. Use a list of keywords and stick to it.

Skins

While the wiki engine works in the background, most allow wide customization of

ADVANTAGES

flexible structure

.txt-Wikis: fast access outside of browser via normal editors (adjust file permissions)

.txt-Wikis: all advantages of .txt-files (e.g. future-proof)

integration of media files possible without changing their data format

DISADVANTAGES

installation somewhat difficult

structure must be provided by the user

INFRASTRUCTURE

Wikipedia has a good overview of available Wiki Engines

Use a .txt-based wiki due to speed of access and future-proof

Adapt the wiki to your liking (e.g. skin, functions, etc.)

WAYS

MediaWiki (Wikipedia, PHP+SQL)

DokuWiki (PHP+ .txt)

Ways of Collecting



Wiki-Syntax (DokuWiki)

On the left side a cut from a browser screenshot. The wiki page is displayed like a normal web page. A click on edit and the information on the page can be edited (right side). "==== ... =====" is the syntax for a second-level header, " * " for an unsorted list. Links are specified by "[[directory:pagename|Displayed Name]]". Directories are optional.

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).

Text gets enhanced but remains intact

Wikis offer an easy way of formatting text, e.g. if you want to write a text in bold letters a lot of syntaxes use ****text****, if you want to underline a text you write __text__. This formatting leaves the text itself intact and still readable as a text file. You can still use the text for other purposes even if the wiki engine does not work anymore.

Multimedia files remain unchanged

Many 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). 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.

Many plugins available

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 or even word clouds (the most often used tags are displayed while the font size corresponds to the frequency of usage), or advanced search capabilities.

Ways of Collecting

HTML and PHP can be used

Most web-server based wikis (can) allow the use of HTML and PHP. This allows you to provide additional functionality to a wiki page. E.g. 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 provide DATE/TIME functionality.

How to get a wiki

If you want to use a wiki for your idea collection, you have to choose. First between one of many different wiki engines, and then whether you want to install the wiki on your own computer (recommended) or if you want to use a wiki on an online webserver.

Which Wiki Engine is for you?

There are a lot of different Wiki Engines (software) like MediaWiki (Wikipedia's wiki engine), DokuWiki, Zope, etc. with different requirements and abilities. Their look and feel and functions differ widely, so try a few until you find the one you like. Wikipedia has a good overview of different Wiki Engines (see page 382). 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. It is also available as "DokuWiki on a stick", which makes it very easy to install, albeit slower in usage compared to a normal installation.

Local or Online?

You do not need to install the wiki on a webserver on the internet but you can (and should) install it on your own computer. This usually means installing a webserver and PHP on your computer (depending on the wiki engine you want to use). If you use an Apple Macintosh with OS X, you are lucky, as a Webserver and PHP is already included in the operating system. Most wiki engines have adequate help files available that tell you how to install a web server and often, easy installation packages are also available. However, keep in mind that you are essentially transforming your computer into a webserver while doing so, which means that you should (must) *consider the security implications* of doing this. Make sure you follow the instructions to secure your system when you install a webserver. Otherwise you open your system to all kinds of attacks and the theft of your ideas will be the least problem you will have.

.txt-file based wikis vs. database based wikis

Wikis differ how they store the information. Some wiki engines use databases, e.g. Media-Wiki uses an SQL database, while others use simple text files. At first glance it might seem like a database is more advantageous, e.g. regarding the speed of usage. However, I can strongly recommend .txt-based wikis for most idea collections, since they have the following advantages:

Future proof

Text files are extremely future proof. Even if the wiki itself is not supported anymore, the data in the text file can still be accessed and the information is still avail-

ANALOG PREDECESSOR OF
MODERN WIKIS: LUHMANN'S
"ZETTELKASTEN"

Wikis might have gotten famous during the turn of the 20th to 21st century, but the idea is actually older than that. Luhmann describes with his "Zettelkasten" a non-digital predecessor to the wiki, which shares most of its characteristics. People have tried to store their ideas no matter what they had available to them. Modern technology makes it much easier but the need remains the same.

Ways of Collecting

able for future use.

Easier installation and administration

No SQL-database must be installed and administrated, saving time and effort.

Easier backups

Backups can be easily made by compressing the data folder and saving it to an external medium. No database export function is needed to do so.

Files are directly accessible with an external editor

The files with the data are directly accessible via an external editor, e.g. a normal text editor. While changes via an external editor have their downsides (e.g. the changes are not stored in the version control of the wiki, the search function will probably not find the changes until it has updated its index, and you may have to change the file permissions for the wiki), it is an extremely fast way of adding information when you do not want to use your browser. On a Mac you can use Quicksilver to quickly access the files of the wiki, open them, enter information via a text editor and save them (see page 237).

Enhanced Wiki

Frames and JavaScript

One way in which you can make your work easier while using a browser based wiki is by enhancing the wiki via frames and JavaScript. You can open any webpage in a frame, allowing you to display your wiki page on the left side of the browser window and another page on the right side. Using JavaScript-functions in the right side frame, you can access the content that is currently displayed in the text area of the wiki on the left side frame (i.e. when you are currently editing an entry, the text is displayed in a text area, allowing you to change it). JavaScript can be used to insert templates (e.g. if an entry for an idea usually consists of a header, a list of keywords and an end-of-file text, you can copy this text into the text area via a simple click) or any other information. You can also quickly insert tags, e.g. from a tag-list on a html-page (see page 250).

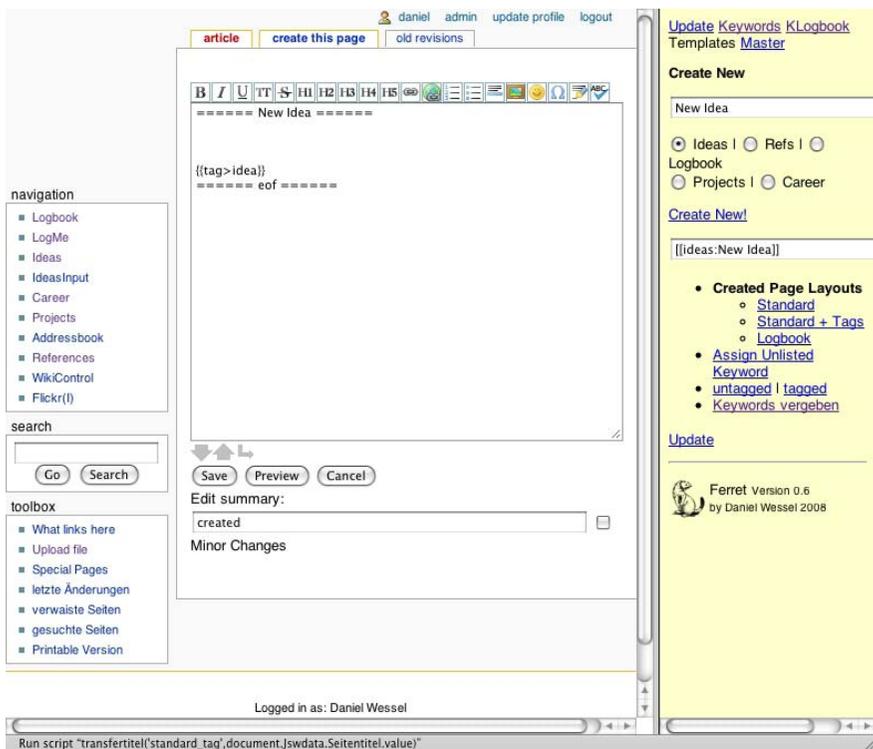
Frames also allow you to open and compare multiple pages of your wiki at the same time. They can also be used for a navigation menu. Since any (unmodified) link opens the page in the same frame, you can use complex menu structure in the one frame, and display your wiki in the other.

While the options of using frames to access and edit the content of a wiki are extremely powerful, few wiki engines so far have included this. Regarding DokuWiki I have included some information on the webpage of this book (www.ipsych.org or www.organizingcreativity.com).

PHP (not as part of the wiki)

If you can write php-scripts, you can use it to automatically generate index pages of all your entries. Use a function that searches for all entries and then creates a file with links to these entries in the syntax of the wiki engine. If you have a lot of entries it pays to create one page for every letter of the alphabet to divide the content into manageable parts. Even if the wiki engine did not offer these functions there is no reason why you cannot add additional functionality. However, be very careful that you do not interfere with the function of the engine. Creating additional pages

Ways of Collecting



My wiki works with frames to create pages. The wiki is opened in a frame (left side). On the right side another .html-file is loaded. Since links in a frame will open the linked file in the same frame (if not otherwise specified) it is easy to use different .html-files for different purposes. Besides tagging (see page 198) there is a .html-file that helps to create new wiki pages. Entering the page name in the form (below the first "Create New", here "New Idea" and choosing in which directory the page should be created (ideas, reference, logbook (diary), projects or career) and clicking on "Create New" will open a link in the left side frame, forcing DokuWiki to open the page with this name in the specified directory. Since it does not exist, DokuWiki offers to create it.

With "Created Page Layouts" it is possible to transfer the layout into the wiki text area (saves a lot of repetitive typing).

The content can be cut and pasted directly from the Collection Inbox (see page 187) into the wiki. A click on "Keywords" in the right side frame will open a .html-file that displays the taglist (see page 201).

Since the created page is orphaned (there are no links leading to it), the link syntax that is automatically generated (here: [[ideas:New Idea]]) can be copied and inserted at the right place. Alternatively there is a PHP script (behind the "Master"-Link) that will automatically create an index of all existing text files in the idea directory of the wiki on a specified page. Since I have over 3500 entries at the moment, it is automatically divided alphabetically (creating 26 pages, one for all entries starting with "a", the next one for "b", etc.). Since I search the ideas via tags or the search field of the wiki, this is sufficient to browse the idea list when I want to.

Developing this solution for the wiki was like igniting the afterburner of a jet. It made entering new ideas in the wiki, which was previously laborious and slow, very, very fast.

You find more information about this solution (including sample scripts) on www.ipsych.org or www.organizingcreativity.com.

works fine with text-based wikis, but I would not recommend this for database-based wikis.

There are many ways to adapt a wiki to your liking. Make sure to have a look at the help pages and the forums to find out, how you can make your work easier.

Ways of Collecting

Mobile Access to Wikis

You might want to access your wiki-based idea collection on the move. There are four possible ways to do so: notebook, text file wiki, webserver on a stick, and online.

Notebook

The easiest way to access your wiki-based idea collection on the move is to use a notebook. Installing a webserver locally on the notebook allows you to access the collection anytime and anywhere you have your notebook with you, independent of network access.

text file wiki

If the wiki uses text files for data storage you can simply access those (e.g. on an usb-stick) where ever you are. However, keep in mind that edits might not be recognized by the wiki engine's search function until it updates the search index. This can be done manually in some wiki engines.

Webserver on a stick

If you use a browser based wiki you will need a webserver. This program does not need to be installed on the harddisc of your computer. There are mobile webservers that can be installed on an USB-stick (e.g. XAMPP, Server2Go). This allows you to take your wiki wherever you go. However, this solution is often much slower than installing a webserver on the harddisc of your computer.

Online

If you install your wiki on a online webserver and not locally on your computer, it allows you to access the collection wherever you have internet access (providing the server is not down). However, keep in mind the disadvantages of this solution (page 219).

Wikis and Data Security

While concerns about data security are sometimes understandably exaggerated, Wikis are made for collective access. To protect your Wiki you have to prevent it to be used in the way it was originally intended (albeit most wikis can restrict access). Most web server, SQL database and wiki installations have information about ways to protect the program from unauthorized access, e.g. by allowing only local access or using a password protection. Be careful if you change the file permissions for a text based wiki to access them with a normal text editor. This is something that was not intended by the programmers and might leave your computer open to unauthorized access. When you have secured your wiki, test it from a different computer. I was surprise (or rather shocked) to see that while my firewall settings told me that they would block any access to my wiki that was not done from the computer itself (it was a wiki that was installed as localhost), but it was nevertheless possible to access the wiki via the internet. So even if you use a wiki only on your own computer, and you have made sure that the access is only possible from your own computer and not remotely, it pays to use an additional layer of security and require a password to access the wiki. Your browser can store the password (since only you use it) but anyone who accidently finds your wiki while you are connected to the internet will have an additional hurdle to overcome. Keep in mind that for most dedicated hackers this hurdle will be rather easy to overcome.

Ways of Collecting

Text Data Backup vs. Media Data Backup

If the Wiki stores the text data in a separate directory than the media data (e.g. files you uploaded like .doc-documents, .xls-spreadsheets, .pdf-files), you can easily make backups by compressing the text data folder. While compressing is not recommended for long time storage, it makes the handling of the several hundred text files more easy (and considerably faster). You need to backup the (probably large) media folder only when you have changed it, which is probably less often than the text folder.

Tips for using this kind of collection

Keep a clear structure. A wiki has no inherent structure and it is easily possible that the wiki gets very confusing very fast.

Modify it to suit your needs (e.g. by making it more appealing by introducing HTML-Imagemaps to the Wiki).

Organizing the collection

Structure of individual entries

Template: You can define a template in some wiki engines, use copy and paste for a new page (e.g. from a “template page” you have easily accessible in your wiki) or use frames and copy the template information via JavaScript (see page 250).

Free form: Create new page.

Structure of the idea collection

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. Index number ordering is not necessary since the page name must be unique and can be used as reference.

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.

Ways of Collecting

OTHER PROGRAMS FOR COLLECTING IDEAS

There are of course additional ways to collect ideas. People usually find their own ways of collecting ideas and what matters is that you find a way which suits you. Besides the previously presented solutions the following programs are also used:

Word processors (e.g. Microsoft Word, Apple Pages)

Word processors like Microsoft's Word or Apple's Pages seem like enhanced text files with formatting and media support and thus superior to pure text files. Additionally, "everyone" has Word, so why not use it? Unfortunately, they *have serve disadvantages* for idea collection: they become to unwieldy if they get large (earlier versions of Word liked to crash beyond 100 pages), the formatting options are tempting to use but unnecessary for an idea collection, the file format is still proprietary and it is hard to extract media files once they were imported. They are also slow.

Not recommended, not even for one project.

Databases (e.g. Microsoft Access, File Maker, SQL)

A database seems like the natural choice for collecting ideas, after all, it is the digital version of index cards. While they have some advantages (e.g. excellent search function depending on the data structure and speed of access) I would not recommend them. The file format is often proprietary or the data is hard to export, they are difficult to handle and they need a clear, predetermined and unchanging structure. However, structure is something that changes over time and a database is very resistance to these changes in structure. How can you include ideas regarding characters for a book with ideas for pictures and ideas for artworks and scientific studies? The data fields are either so generic that you do not need to use a database for it or too specific to accommodate these different types of ideas. My first idea collection was an Access database and the difficulty to change the structure killed it (that, and my move to Apple where Access is not supported).

Not recommended unless you have only ideas of one type which always follow the same structure.

Spreadsheets (e.g. Excel, Numbers)

Some people like to use spreadsheets for ideas, using it like a mixture of a database (single table) and text file (text input). However, while the structure seems nice, the amount of text a spreadsheet 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.

Not recommended beyond making a list to keep track of the current status of projects.

eMail-Programs (e.g. Thunderbird, Mail)

Someone once said that every program grows until it supports eMail. On the other hand, some people like to use eMails as an idea collection. Input is certainly easy: as long as you have net access, simply send yourself an eMail. 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. There is also too much clutter (like meaningless information in the eMail header) attached to this kind of solution. Finally, the

Ways of Collecting

data is often on external servers and not under your direct control.

Not recommended except for capturing ideas.

Blogs (private/personal entries)

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. 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 that is physically accessible to you (overkill for most people), someone else controls the access to your data.

Not recommended.

Ways of Collecting

MENTAL

I include this section only for completeness without recommending it: using your mind as an idea collection. If it is difficult enough to remember single ideas, remembering huge amounts of ideas and complete projects is nearly impossible. 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?), but it is not recommended.

Remembering all your ideas has the advantage that you have them available every time, if you can access them, but it has huge disadvantages: you probably cannot access the ideas on demand, it is hard to see the connections between different ideas (compared to spreading the ideas 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.

Stories about memory palaces are great, but mostly they are only that: stories. Not everyone is Hannibal Lector — thankfully.

ADVANTAGES

always available
very secure against theft
(unless you talk in your sleep)

DISADVANTAGES

highly unreliable, especially for details

“But for such a work you must have needed books — had you any?”
“I had nearly five thousand volumes in my library at Rome; but after reading them over many times, I found out that with one hundred and fifty well-chosen books a man possesses, if not a complete summary of all human knowledge, at least all that a man need really know. I devoted three years of my life to reading and studying these one hundred and fifty volumes, till I knew them nearly by heart; so that since I have been in prison, a very slight effort of memory has enabled me to recall their contents as readily as though the pages were open before me. I could recite you the whole of Thucydides, Xenophon, Plutarch, Titus Livius, Tacitus, Strada, Jordanes, Dante, Montaigne, Shakespeare, Spinoza, Machiavelli, and Bossuet. I name only the most important.”

Dantes and the Abbe in “The Count of Monte Cristo” by Alexandre Dumas

Some Issues regarding the ways of collecting ideas

There are some issues you should consider when thinking about collecting ideas:

BUT I LOVE PAPER ...

Some people *love paper*. The need it to be creative. However, to collect ideas paper has disadvantages. So, what can you do? Find out if you really need the paper beyond generating the ideas. If you love your Moleskine or your sketching paper but can live with a digital representation after you have had the ideas, nothing hinders you to use paper to capture the idea (even very delicately and very beautifully) and then transfer the information to a digital collection. You can even photograph and scan the page as media attachment to supplement the (searchable!) text entry with the original capture. 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 the the digital collection and expand this collection — otherwise it becomes confusing.

MIND THE STRUCTURE

Some people write down every idea they have, but they omit the structure that is necessary to have a good collection. They simply store each sheet or scrap of paper or keep a lot of (unordered) files. While the ideas are potentially “there”, it is impossible to access them with a justifiable amount of work (and time). Just capturing your ideas lacks the necessary structure and clarity. You do not know what you have (but can always imagine that you have some brilliant 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 ... well, an idea.

GO PUBLIC?

You might want to collect your ideas in a way that is accessible to the public, e.g. in a blog, but I would not recommend it. It is unlikely that other people will contribute to your ideas, in the worst case, someone will “be inspired” by one of your ideas and use it faster than you can. Even if you want to have public feedback the timing for feedback must be right (see page 312): your idea must be clear enough for others to understand it. While formulating an idea or a whole project clear enough for others to understand it may help you in getting a grip on your idea, it is probably too much for all the ideas that are floating around in your collection.

Starting an Idea Collection

If you want to begin collecting your ideas, it is recommended to follow the steps described below:

STEPS TO START AN IDEA COLLECTION

1. Test different kinds of idea collections

Make sure you find one that you can and will use. See page 213 for more information how to evaluate an idea collection. Be extremely careful regarding the speed of usage. If you think that it takes long to use it but you “don’t mind”, choose something else, because soon you will (see page 213). Make sure you know how to do backups and that you are willing to do it regularly (see page 265).

2. Start by entering new ideas to the collection

It is important that you begin using the collection at once for new ideas until this becomes a habit. If you start chronologically with ideas from an old collection or your notes, you try to catch up with your new ideas, running to a goal line that advances further and further away the more ideas you have. Simply make a cut and start entering your new ideas into the new collection and enter the old ones when you have the time (e.g. you have no new ideas). This way you avoid piling up new ideas and decrease the pile of old ideas at the same time. The idea collection should not be a competition for new ideas, this means that the transfer of ideas from any old collection (e.g. notebooks or that file drawer) is second to transferring new ideas to the collection.

3. During draughts transfer ideas from old collection(s) to the new idea collection

The time to transfer all the ideas from other collection is during draughts when you have no new ideas. The transfer process might stimulate new ones, especially if you see the ideas in the context of the collection for the first time. If you have new ideas, simply write them into the collection (or capture them as you would usually do if you are occupied with something else).

AFTER STARTING TO COLLECT IDEAS

Transfer the ideas as fast as possible into the new collection

Make sure that once you have made a decision for an idea collection and it is working, that you transfer the ideas as fast as possible. Do not store ideas in more than one collection but concentrate them in a single collection that you use all the time (see page 190).

Salt it

This will happen automatically in most cases but it helps if you start your collection by immediately entering some ideas in it (e.g. some ideas you had floating around

START WITHOUT CONFLICT

The beginning idea collection must not be a source of conflict for new ideas.

Start transferring your new ideas into the collection and transfer the old ideas from the previous collection in an idea drought. You won't interfere with your idea generation and transferring old ideas might stimulate new ones.

If you want to switch make sure you have all your ideas concentrated in one collection. Different idea collections (e.g. starting with a desk drawer, beginning to transfer the ideas to an outliner and then starting a wiki) are very confusing and hard to work with.

Starting an Idea Collection

in your mind or on old notes). Bringing your formerly unordered, unstructured ideas in a collection can stimulate seeing links between the entries and the entered ideas work like crystallization points for new ideas.

Give it structure

If the collection has a flexible degree of structure, do not wait to long to decide for 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.

Digitalizing Information

If you are using a paper based solution for capturing ideas and a digital one for collecting them, you need a way to digitalize the information.

HOW TO DIGITALIZE INFORMATION

The following points might be helpful regarding the digitalization of information:

Keep the quality adequate

While it might be nice to have a vector graphic picture or a completely noise free recording of a tune you hummed, the aim of a collection is to remind you of your ideas, not be an art repository. It is about collecting ideas, not realizing them. After all, you might not use it at all or heavily changed. Remembering the idea is sufficient. A photograph with a cheap cellphone camera or from a webcam is extremely fast and often enough to get a sketch on the computer. Sufficiency means: fast, integrated in the collection (e.g. by being searchable) and small in size.

Keep the digitalized information accessible (i.e. searchable)

While making a quick snapshot of a text note might seem the fastest way to include the idea in the collection, you should always include notes as text in the collection because otherwise it is not searchable. In most cases this means that you cannot use OCR (optical character recognition, e.g. transferring a scan of a handwriting into a normal text) but have to type the text in the collection itself. If you have not learned 10-finger-writing do so. If you cannot search for an idea you had, you will not find it in a digital collection once you have a few hundred ideas. It will take too much time and effort, scanning the images with your eyes, trying to decipher your handwriting. And you will not do it. *Period.* Regarding other media, digitalized sketches, sound or video files are notoriously difficult to search. Use tags or a short textual description to find the file when you search for it.

Keep the Infrastructure ready

Make sure you have the infrastructure to digitalize the information ready at all times. If you have to put up the scanner first, it is unlikely that you will digitalize sketches often. Often you have alternatives: you can use the camera of your cellphone or the webcam of your computer (provided that you have one). There are programs that allow your webcam to take snapshots (e.g. Photobooth on Mac OS X): simply start the countdown and hold the piece of paper with the sketch in front of the webcam. It will not have the same quality as a scanner, but in most cases it will be good enough, have the right file size and be much, much faster. If your notebook has a webcam you can also use this on the move to digitalize your sketches when you have the time.

DIGITALIZING TEXT

OCR (Optical Character Recognition) for typed text

Retype it with the keyboard if handwriting (scanned/photographed text is not searchable and takes too much space!)

DIGITALIZING THINGS

Webcam

Cellphone-Camera

Compact Camera

Scanner

Finding Ideas

As mentioned, you must be able to quickly find an idea when you search it (e.g. for expanding it), otherwise you will not use your collection. Longer time frames than 10 seconds will become unbearable with repeated use.

WAYS TO FIND IDEAS

You can facilitate finding ideas with the following strategies:

Explicitly consider an ordering system

The page 204 gives an overview of the ordering systems. Take care to select (the) one(s) that are suitable for your collection. If possible, use a “top down and bottom up strategy” (page 206).

Skim the collection occasionally

Know your collection like the back of your hand by using it often. Just skimming through the entries so you get a feeling for it. This will probably come automatically with time.

Tags/TagClouds

Tags (see page 198) and TagClouds (see page 247) can cut through your collection with ease, especially if you search for multiple tags at the same time.

Table of Contents/Indexes

Take care to keep a table of content and/or an index. *Any* paper and digital collection allows this (e.g. numbering index cards and writing it on a sheet).

Create Shortcuts

If you use particular ideas frequently (e.g. you regularly have a lot of new ideas to expand them), create a shortcut to find the entry immediately, e.g. a link on the start page of your wiki or a post-it on the index card saves time.

Search Function

Most digital solutions have search functions. When you search for an idea, it is sometimes best not to search for a word of the title if this word is very common, but for a word that you know only the entry has. You can support this by explicitly writing rare words in an entry you expect to use often (if you ever wrote in a large text document “XXXXXXX” to quickly find the place again when you next open it by searching for “XXXXXXX”, you know what I mean).

Expanding Ideas

Initial ideas often need to be fleshed out and expanded and the collection allows you to do so at your leisure.

STRATEGIES TO EXPAND IDEAS

The following strategies might be helpful to expand ideas:

Flesh it out

Most notes regarding ideas are rather short. Make the entry complete, be clear about the idea — this might make it more inflexible and concrete, but on the other side it might lead to new ideas. Especially when you just had the idea this might be very helpful to quickly address (and solve) issues with realization that you might have overlooked and which would force you to discard the idea later when you evaluate it. If you are in a creative mood and no new ideas come pouring in, then by all means, flesh out the ones you just had.

Remind yourself of the idea you want to expand

Often you will have additional ideas over time if you keep getting reminded of the project. Make it a central project (see page 207) and use landmines to remind you of it (see page 210).

Browse the collection when you are in a creative mood

If you are in a mood where you feel very creative, e.g. you are quick with associations (maybe because you tried), browse your collection. It might be hard to find something to add to a particular idea, but if you browse enough ideas, you might find one that just matches your current state and where you immediately have an additional idea. This is one of the main advantages of an idea collection that you are not forced to work on the idea that you currently remember — you can quickly flick through a lot of idea until you find the one you can work with (i.e. expand, not realize, realization comes later).

It is easy to appear bright if you subtly limit the conversations to the subjects you are intimately familiar with.

Unknown

Use a generating strategy to generate ideas

In chapter 3 we have reviewed some strategies to generate ideas. You can try to use one of them (or many sequentially) to generate ideas how you could flesh out the current entry. The following strategies are especially useful:

Research

If you have already a basis for an idea, gathering more information about it usually leads to a more differentiated idea. The internet is brilliant for this kind of work.

Look at it from a different perspective

Look at the meaning of the words you used (e.g. use a dictionary) or use Wikipedia or Google to find different interpretations. This might lead you to new ideas.

Restructuring Ideas

Since the collection is likely to grow wildly, from time to time it is necessary or useful to restructure the information in the collection. The restructuring can include individual entries or the relation of the entries to each other.

RESTRUCTURING THE INDIVIDUAL ENTRIES

The following measures might be useful to restructure the individual entries:

(Re-)structure the information in the (a) logical order

Even if you put the information always in the right place, it is unlikely that the individual entries will contain the correct structure if you expand them over and over again (especially since the ideal structure changes during the growth). This can involve changing the order in a chronological or topical order. It is highly recommended to do this with fast growing entries, otherwise you are likely to become confused regarding the content and will not see where you can expand it.

Include higher-order-information

After you have included a lot of information in an entry, it can be beneficial to summarize the information on a higher level. A few sentences at the beginning of the entry that tell you, 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.

RESTRUCTURING THE RELATION OF THE ENTRIES TO EACH OTHER

This is easiest if you use a collection that uses small instances (e.g. entries or text pages) to hold individual ideas (with a single text file, a lot of copy and paste is involved). The following measures might be helpful for restructuring:

Link

If you browse through your collection, you might see ideas that belong together. You can copy them in a single entry, but often it is better to include links on each entry to the other one. Via these links it is easier to gather the mass to realize the project and both entries remain small enough so that they can grow easily.

Create higher order entries

You can also make new entries that include links to entries that belong together, e.g. you have multiple character traits mapped out and make an entry of a specific character who should share these traits. Tags are very good for this if the collection supports smart searches: You create a new entry and enter a search term, e.g. all entries that you have tagged with a certain project tag (e.g. "WTG"). The page then contains all entries you need for this specific project, making it easy to see the larger picture.

Update structural information

This is necessary if the information you use to structure the collection changes over time, e.g. you have new keywords or want to assign the idea to a certain project. If you have introduced new keywords that are a subgroup of existing keywords (e.g. you have differentiated the keyword "party" to the age of the participants), it is easiest to search for the main keyword ("party") and then access and update every

Restructuring Ideas

entry you find.

Split entries

Some entries will probably have grown to unwieldy proportions that they can benefit from splitting them up and making two separate entries out of them. They are easier to handle then you can expand them more easily. You can still connect them via links if you want to keep the relationship between them.

Removing Ideas

Besides entering information into the collection there is the issue of removing information. Every orchard must be pruned regularly. Even if you restructure the information regularly, if you only enter information, the collection soon becomes unwieldy.

WHEN INFORMATION MIGHT BE REMOVED

There are two different cases when you might want to remove information: when an idea is realized (used) and when an idea seems so bad that you think that you will not (want to) use it.

Used (realized) ideas

If you have used an idea for a project, you might want to remove it from the collection to prevent you from using it again (after all, it is spend, isn't it?). However, if the idea was good enough to be used once, it might be good enough to be used twice. This is not necessary copying from oneself, as you might use the idea in a different context or a different medium or in a very different way. Previous ideas can stimulate later, even better ideas, so be careful when you want to remove an idea. If the collection can handle large amounts of entries, you can simply mark the idea as used (e.g. via tags, see page 198) or put it in a different place (with flexible order paper collections). Keeping realized ideas also helps you to identify your style, when you look back at the ideas you have realized so far, or to start a series of connected projects that share common ideas (e.g. themes, characters, etc.).

However, you might want to expand the entry of the main idea (e.g. a book that you have now realized) with the information that the idea was realized and make a link to the entry in the archive (see chapter 7).

Un-realized or -realizable ideas

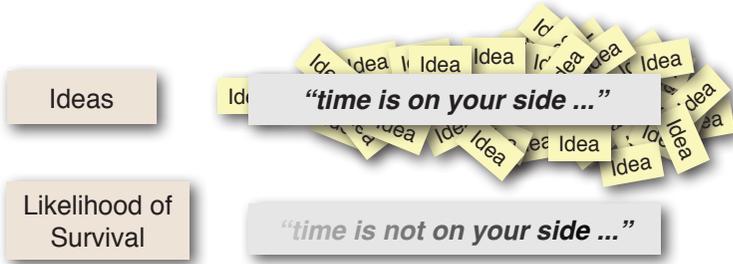
Ideas can be unrealizable because you cannot or do not want to realize them. So you could simply discard them and save you the embarrassment (in the case of truly abysmal ideas). On the other hand, as said, bad ideas can be the basis for better ideas and even if you cannot realize an idea, it might become possible later even if it is in a different form (see page 350). What is more, you will probably remember some time in the future, that you had an idea that you have discarded, but you cannot remember the exact details (that you now need to know). If the collection can handle it, better leave them in the collection. Since I (am trying to) write stories, I keep bad ideas. I just use a special breed of characters in my stories to sprout them ... in this form, they are not so bad after all.

Protecting your Idea Collection

When collecting ideas, time is on your side. Over the time your collection will grow and grow and you have more and more ideas. However, the probability that these ideas survive will decrease with time.

BACKUP

Backup, Backup, Backup,
Backup, Backup, Backup,
Backup, Backup, Backup!



GENERAL DANGERS

There are general dangers to your collection, one being the limited lifetime of any storage media and the other being incalculable accidents.

Limited Lifetime

The physical *lifetime of any medium is limited*. It is *not a question of if but when* 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.

Rejuvenate it

Remember: What you now use will not survive. Regardless what you 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. CDs get damaged and drives malfunction. It is a slow process, but it happens. To prevent this, 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.

See also digital data loss on page 273.

Accidents

It is not only fire or water (general) or lightning (digital media) that can kill an idea collection. A lost packing case, a too thorough spring cleaning, a phase of temporary insanity, a misunderstanding in a shared

NEVER PUT ALL OF YOUR EGGS IN
ONE CASKET

Accidents happen and when it does, it will all be gone. Keep the data in a variety of places and on a variety of systems.

Protecting your Idea Collection

household, there are many dangers that can completely erase all ideas.

Dealing with accidents

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.

SPECIFIC DANGER FOR PAPER: ONLY ONE COPY

The *right* acid free paper written with the *right* ink stored in the right conditions can last for a long, long time, but unfortunately, there often exists *only one copy*. This means that 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.*

SPECIFIC DANGER FOR DIGITAL: USER ERROR

Computers were build to handle things faster than the corresponding paper version: Retrieve data, sort data, find data, and *delete data*. It does not slow down when you are deleting the work of months or years, but does it as fast as it can. While there are often ways to restore accidentally deleted data (the trash bin was invented for this), some things can kill an idea collection in an instant, e.g. some delete commands, formating a hard disc, or computer virus. You will probably notice when you move 2000 pages of paper into the trash bin but you can easily do so on the computer without noticing it until it is too late.

Securing against user errors

Computers already have some protection against user errors like the undo function and the trash bin. However, you still can kill your data. To prevent this, make regular, independent backups. If you wipe your system you can still access your ideas if they are safely stored on a DVD or an external hard disc somewhere.

DIVERSE STORAGE

Never store data only on one medium. If it crashes, the data is gone.

Store data outside of the place you are living and/or working in. If the place burns down, the data is gone.

Digital data can be easily copied and stored on different media, including CDs/DVDs, USB-sticks, different hard discs and server farms. Use this functionality.

I get nervous when all backups are in close proximity.

Daniel Wessel

Guillermo del Toro is famous for compiling books full of notes and drawings about his ideas before turning them into films, something he regards as essential to the process. He left years worth of notes for this film in the back of a cab, and when he discovered them missing, he thought it was the end of the project. However, the cab driver found them and, realizing their importance, tracked him down and returned them at great personal difficulty and expense. Del Toro was convinced that this was a blessing and it made him ever more determined to complete the film.

Trivia for "El Laberinto del Fauno" (2006) on www.imdb.com

"Ooops."

Common computer technicians oh-shit-moment prelude

Protecting your Idea Collection

SPECIFIC DANGER FOR DIGITAL: LOSS OF ACCESS

User can lose the access to their data without their fault when either the data medium or the file format become obsolete.

Obsolete data medium

Do you remember the 5¼ inch floppy disk? Or the 3½ inch version? They were widely used. Digital media changes very quickly. A page written in 1920 can still be read today, but in less time than that, digital media has passed punchcards, magnet tapes and several types of floppy disks. It is only a matter of time when CDs, DVDs and USB-sticks will follow suit.

The inaccessibility of data media is a problem if you store your collection for a long time or if you use a specific medium for an archive. If you use a computer most of the time you will probably update your data media each time a new standard is introduced and the old one fades out. But imagine if you had written a few stories a decade ago, stored on 3½ inch floppy discs. You would have a hard time finding a computer with a floppy drive today, providing of course, that the data medium would still work. Keep in mind that storage media also differs how well data can be extracted in the case of an error. Be sure to know the limitations of the storage media you use.

Obsolete data format

Even if you can read the files, you might not be able to use them. While programs still in use can usually read their predecessor versions, whole program families are sometimes not supported any longer. If this happens the next version of your operating system (OS) that does not support the old program or the next computer that does not support the old OS will prevent you from accessing your data.

SPECIFIC DANGER FOR DIGITAL: DATA LOSS

Digital data is especially vulnerable for loss. Besides the already mentioned user error and the loss of access due to obsolete media and data format, the “virtual” nature of the data and the high density with which they are stored make them very fragile. A short circuit, a lightning, even a drop from the wrong height can kill a drive. Digital is great but also pretty ephemeral.

WATCH CHANGES IN THE FAVORED STORAGE MEDIA

If you keep in touch with the digital world you will probably notice when a storage media will soon become obsolete (e.g. new computers come without this drive). Make sure you transfer your data to the current storage media soon before you have to buy a computer that does not have the capability to read your data media.

BEWARE OF DATA ISLANDS

Normally you can export data in different formats so that you can switch to a different program if the current one is no longer supported. Unfortunately, some programs do not offer this function, or this function is not good enough to really use the data with a different program. Make sure before you start using a program that you can export your data in a useful format, if you need to. If not, the fate of your idea collection is linked to the fate of the company. If they die, your collection will follow soon.

“As a fairish mechanic, an amateur electron pusher, and as a bloke who has herded unlikely junk through the sky, I never worry about theory as long as machinery does what it is supposed to do. I worry when a machine turns and bites me. That’s why I specialize in fail-safes and backups and triple redundancy. I try never to get a machine sore at me. There’s no theory for that but every engineer knows it.”

Zeb Carter in “The Number of the Beast” by Robert A. Heinlein

Protecting your Idea Collection

The best solution against a loss of digital data is to store it in different places on different storage media in different file formats, again and again and again. However, this is not practical if you often make changes in your idea collection (which you should).

It is not practical in the sense that it takes too much effort to do it regularly which will leave you with an old backup in case of data loss, which might be helpful but probably only further illustrate the amount of work you have lost.

However, the following strategies can be helpful for making regular digital backups:

Digital: Fast and easy from the cradle to the grave.
Unknown

THE RULES OF DATA SECURITY

If you are working with one digital file for a longer time (e.g. working on an important document), keep the four rules of data security in mind:

RULES OF DATA SECURITY

- Save early
- Save often
- Save incrementally
- Save externally

1. Save early

You cannot save too early. Ideally, you save a file immediately after creating it, which allows you to quick-save it via the Ctrl + S shortcut (works with most programs), which is the prerequisite for rule number two.

2. Save Often

You cannot save too often. If the file size is not too unwieldy for the computer, saving takes only an instant. Pressing Ctrl + S can be done while typing without interrupting the work flow (actually it can become a habit that you hardly realize you do it). Remember that all your data is gone up until the moment you (or the program) last saved it, so when the Blue Screen of Death or the “You have to restart your computer” message comes, the unsaved work is gone. 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, the program simply counts down seconds.

3. Save incrementally

It is rare but it can happen: an error or crash while saving your file (esp. if you work with Microsoft Word). In the worst case, it destroys your file. If you only have this file, no matter how religiously you have saved your work before, *it is all gone*. Yup. Scary, isn't it? To prevent this, save incrementally. This means that you work with a given base file name, e.g. ProjectXYZ_071005 for a file of project XYZ on the 5th of October 2007, and increase the number at the end of the file name every time you save: ProjectXYZ_071005_1, ProjectXYZ_071005_2, ProjectXYZ_071005_3, and so on. Some programs can do it automatically (e.g. most Wikis via Version Control, TextWrangler), if not, you have to do it manually. It takes longer for you to save your file, since you have to enter something, and I would not do this each time I save (via Ctrl + S). But the moment I think I have written something that I could not rewrite from memory (e.g. finished a paragraph) the file gets saved under the next number. You can make saving incrementally easier if you display the folder listing of the save dialog as a list and order it according to the file date, with the newest file on top. This way you always see the last saved file and its number (e.g. “_3”, “_4”) when you enter the new incremental number.

Protecting your Idea Collection

Saving incrementally prevents you from losing your work to a rare but very real and extremely volatile error.

Remark: I probably would do this only when I realize a project (e.g. write a story) and trust my daily backup in case this would happen with my collection, were it not for my Wiki which does this automatically via version control. But since this is a serious issue (esp. with word) I have included this as extra point.

4. Save Externally

As said before, when a storage media crashes your data is gone, no matter how many versions you have (had) on the drive. Same when the movement company made a mistake in delivering or the thief thought the moment was just too good not to take your notebook. An external storage saves your day: When the media goes, the data remains (somewhere else).

Saving externally does not only mean to save it on a different media but also storing the media in a different place. From time to time you see posters hanging in the city like “Laptop stolen? Keep the laptop, but please return the CD labeled diploma thesis to ...” (see page 154). A backup is useless if it is stored with the original data.



The third time I lost a hard disc drive, that time with my Powerbook. In the upper right corner of the photo is my external hard disc which contained a full, up-to-date backup of all my data. Lost files: 0, third time in a row.

OTHER ISSUES REGARDING BACKUPS

The following issues should also be considered:

Use off-site storage

It is rare but it can happen: an event that kills every digital media in your house or apartment. Lightning can do it. Fire can do it. A very thorough thief can do it. And a very ugly end of an relationship can also do it (a friend of mine had her vacation photos stored on the hard disc of her ex-partner — given the kind of the end the relationship had it was nothing she could ask for).

Make sure you have at least one off-site storage of your backups. This usually means that you will have considerable effort to do this (meaning: preventing you from doing it regularly). However, there are some ways to facilitate this:

Online Storage

The easiest way to store data off-site is to use an online storage, e.g. some cheap (but password protected) storage space on a server in another country. You can easily transfer your data, even automatically with scripts on a given day.

Safe-deposit box

If you have a safe-deposit box in a bank, you can storage backup DVDs of your data there. You can also use external drives, ideally two. You use one for your backup during the month, and at the end of the month, you switch it with the one in the bank. Then you use this one for backups. Switching the drives at the bank prevents you from having all your backup drives in your home at the same time.

Protecting your Idea Collection

Automate your backups

Automate your backups not only with a program (e.g. Time Machine for OS X or drobo (<http://www.drobo.com>) for Windows and Mac OS X) but by developing the habit to do it regularly every evening (or whenever you have the time to do it regularly). It must become normal for you to make a backup. You come home, you plug the external drive into your computer, it makes a backup, you disconnect and unplug it (including from the power circuit). Be careful to check the backups from time to time. You are delegating some of your work to a program and if anything goes wrong you will only think that you have backups when in fact you have nothing.

Careful with Sync

Synching means making sure that different devices contain the same data. If you ever used a calendar on your computer and the calendar on your cellphone to keep track of your appointments, a sync application is usually used to make sure that both devices contain the same information. You enter an appointment on the calendar on your computer and this information is transferred to your cellphone, and vice versa, because the newest version is transferred.

Synching is the new backup. Spread stuff as widely as possible — that way the nuke won't get it all.

*Notes about Danny O'Briens
Life Hack presentation*

Some solutions exist that offer synching capabilities for data, e.g. Apple's "Mobile Me" allows you to sync your data from one computer with all other computers you own. While synching seems like a great way to make sure that you still have your data in case you lost it, make sure that you still have regular backups. Otherwise any mistake you make with your data (e.g. accidentally deleting your collection) will be synched to your other devices, repeating it there. A computer program cannot differentiate between accidents and deliberate deletions and will do what it was designed to do: sync your collections away.

Backups must not be used (unless they must be used)

If you make a backup and continue working on the file you immediately have two different versions: current one and the backup. This means that you have to keep track which one is the current work file and which one is the backup, or you lose data when you work with the backup the next time. The easiest way is to add the date and time after the name of the backup file. If the program you use offers a "Save Copy" function, use this function because then you can change the name for the saved file (i.e. add date_time) but keep working with the version that has no date and time behind the name. Keep in mind that backups are not to be used, not for a quick access of the collection when you have only your backup available, and especially not to enter new ideas. A backup should be made regularly, tested 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.

"I made a backup of a million files yesterday. A million. From my private computer. Have we gone this far now, that there are millions of files?"

Daniel Wessel

Check the backups

Data usually gets verified during or after copying or burning. Nevertheless, try it

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on a different computer from time to time. Especially if the drive you use acted funny, the data copied might not be intact. In the beginning of CD-ROMs, there were sometimes calibration errors that made the CD-ROM unreadable with other drives.

Watch and Listen

While crashes often come with a surprise, there are often little indicators that something is not right: the drive reacts slower than usual, a faint clicking noise, more 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. The three times I lost my hard discs, there *were* subtle indicators (which is why I made backups repeatedly).

Make sure you have an replacement system

Checking the files on another computer also helps you to make sure that you have a working version of all the programs you use on that other computer or at least the installation programs at hand (and not on the now crashed computer). Make sure you keep the installation CDs/DVDs readily available (if your backup does not include the programs and configurations), because while data is the major thing, it is useless if you do not have the programs to read it.

Print it (if you want)

Paper has its uses. However, once you got something on paper, there is not much you can do with it. Printouts can help you to take a different view on the text, help you find mistakes you would have overlooked on screen. If you produce a written work, you can have a peak how the final product will look like. If you use paper to correct or expand it, you must do the same with the digital version, limiting its usefulness. And you can print out your idea collection for the moment when all computers stop working. But be honest, I think we will have other problems if or when this happens (but at least it can keep you warm).

If you want to make a time capsule, a printed version of your collection will probably be more useful in the future than a digital storage device. But for all other uses printing takes ages, wastes paper and you create a data island in the sense that you cannot do anything with it (except read it). Even if lightning strikes after you print it and only your print-out survives, would your really want to type it all again?

Obsolete backups

If you use one-time storage media like non-rewritable DVDs, the backups soon begin to accumulate. You can store old backups in case the newer ones cannot be read, but after some months or years, you will probably want to discard the old ones. While there are shredders for DVDs to prevent others from reading the data, using a steel nail or a knife and scratching the writing surface and then breaking them in the middle works just as well. Wrap the DVD in some kind of cloth before you break it, however, some DVDs splitter.

Be very careful with selling your old hard discs. Even if you have deleted the data and formatted the drive, programs exist that can reconstruct it. Some people buy old hard discs on ebay with the sole purpose of reconstructing the data, sometimes for (their) fun, sometimes for malicious purposes (if you cannot imagine why, think of account numbers and private photographs). There are programs that can wipe existing data by overwriting it again and again with random data.

Protecting your Idea Collection

Why you should take these rules to your heart

Loosing data not only is a serve blow to the motivation to be creative. Often, lost data cannot be restored. It is not as if you are writing your tax returns (unless they involve a lot of creativity) but you a creating things that were not there before. The ideas, the written text, it will all be gone and not come back. People who wrote stories usually say that after a crash, the restored work was of lesser quality than before.

One personal remark regarding backups

We probably all agree how important backups are, and we are probably all guilty of neglecting them. While writing this section on the 11th of August, 2008, at about 18:30, the program I used for writing crashed, unexpectedly of course. After watching the rotating colorful ball of OS X for about five minutes, and realizing that not only was this application not responding but any other I tried to switch to, I had to do a reset of my MacBook. It took me about five minutes until the system had restarted and I could try to open my file, and another minute until it was opened. I have high confidence in the program I used (it wasn't MS Word), but watching the application trying to open a file which last backup was a day old was gut-wrenching. A day might not seem like much, but I have revised two whole chapters that day. I had taken a few days of vacation to work on it. In the end, it looks like (I have not checked the whole file yet) that it survived the crash without any data loss. But it could have ended differently.

It was "only" the project I was working on, not my whole collection, but it was a very serious reminder to practice what I preach here. It could have ended differently, and it could have ended to book (or at least given it a serious blow). Now I have a copy of the current version on my USB-stick and I make a backup after every major step. I hope.

Protecting your Idea Collection

DEALING WITH DIGITAL FAILURE

When the hard disc dies down with a whirling noise and the last backup was done ages ago — after the gut-wrenching “Oh Shit!” moment is over, what do you do?

Ways to restore your files

Fortunately, there are still some things you can do to get your idea collection back.

Try it again later

Without wanting to inspire false hope, but in some cases when a hard disc does not start again, it will do so after some time. One of my crashed hard discs seemed to have a problem connected to the temperature: If the device was cool it would start, allowing me to access the data for a few minutes, until the notebook got warmer. At about room temperature it stopped working. Switching it off, waiting for about half an hour and it worked again, for a few minutes. Enough to get some (thousand) critical files.

Use external help

Some programs can restore lost data, in the case of extremely valuable data some extremely expensive companies can do so. You find more information on the net.

When the collection is truly gone

Regardless if the house burned down or the computer is deep fried, it is all 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. It takes time, it will look different, and it takes a lot to overcome the anger and the desperation after the loss, but it can be done. And given the amount of ideas you had, the ground will probably very fertile.

Get some distance

If you are out of your mind for the loss of the ideas, first get your emotions under control. Take a walk. Scream. Go running. Deal with the anger. There is nothing you can do, which is frustrating, so go and vent the emotions.

What do you want to salvage?

Think about the ideas and projects that are gone now. There is nothing that ties you to them, the effort you invested has not significance any more, except that you might rebuild them faster. So this is a good moment to think — free of these past investments — which ideas and projects mean a lot to you that you want to restart them again. You are really free in what you want to do: rebuilding has

“The difference between a vast database of ideas and an oversized paper weight is one lightning.”

Henry J. Wilcoxon-Ash

People once believed that when someone dies, a crow carries their soul to the land of the dead. But sometimes, something so bad happens that a terrible sadness is carried with it; and the soul can't rest. Then sometimes, just sometimes, the crow can bring that soul back — to put the wrong things right.

Sarah's Journal in "The Crow"

“The file is fucking gone!”

Hunter Cressall in an Apple spot spoof regarding the ability to restore data on a Mac

Now cracks a noble drive.

Good-night, sweet prince;

And flights of angels

sing thee to thy rest.

Horatio in "Hamlet" by William Shakespeare (modified)

“I lost everything.”

Danny O'Brien at his life-hacks presentation about a user who, well, lost everything due to a crash

Protecting your Idea Collection

the advantage that you know where you can or want to go, but the disadvantage of redoing work you already did. So there is no advantage if you do it or not. Decide freely.

Rebuild what you want and can

Depending on your memory, you might be able to rebuild some projects by remembering the ideas. However, keep in mind that you will also remember that you had more ideas, probably even regarding the projects you are trying to resurrect. This is going to be painful.

Change the idea collection

If you wanted to use another system, now is the chance. You do not need to transfer any old data. You can use any system you want.

Lightning can strike twice

Find out what went wrong, how this could happen and prevent it in the future. Be careful about major changes (e.g. switching from digital to paper) since you lose your expertise. Usually small modifications are sufficient.

Backups

Take a critical look why you did not have any backups of your data. Was it too much effort? Invest in an automatic solution. Did the event also kill the backups (e.g. a lightning that also fried the external drive, a fire that killed anything in the building)? Make sure that you prevent this in the future (e.g. by using online, off-site storage or by storing backup DVDs somewhere else — and for crying out loud, get a smoke detector!).

“The things you own end up owning you. It’s only after you lose everything that you’re free to do anything.”

“Fight Club”, based on the novel by Chuck Palahniuk

Protecting your Idea Collection

ENCRYPTION AND COMPRESSING

The best security to prevent data loss is to store the data in a variety of places in a variety of file formats. This usually raises the following question:

But what about idea theft?

What about it? Granted, the more copies you have, the more places your ideas are stored, the more likely it is that someone else stumbles upon your ideas. The ideas are worth a lot to you, someone might steal them. But is this a likely scenario? For a nearly finished project, perhaps, but who besides you understands an idea in its infancy well enough to actually realize it? And who is willing to invest the hard work that is necessary to do so? Theft is easy, unless it is a highly desperate individual working in the same domain with an equal skill set but searching for a creative idea, you have little to fear. The worst that could happen is that this person makes the data available for a large number of people. The more people, the higher the likelihood that someone says “Oh, that’s a great idea, and I can use it ...”.

Don't worry about people stealing your ideas. If your ideas are any good, you'll have to ram them down people's throats.
Howard Aiken

Encryption

Encryption might seem like a solution to prevent idea theft, however, encryption must find a balance between ease of access (you want to work with it) and security (you do not want other to work with it). The tighter the security is, the less likely will you work with it. If you always disconnect your computer from the internet and have to enter a 16-number/letter password to access your files, you will not use it often. But even if you are extremely careful and always encrypt your files, the actual security might be lower than you think. Most build in encryptions are pretty easy to crack. If you take a Microsoft Office file, or an older Microsoft Access database, you can download programs freely from the internet that will crack them in less than a second. External encryption programs (e.g. PGP) are theoretically unbreakable at the moment — if no one has implemented a back door in the program. Or had a trojan on your computer that not only registered your keystrokes (while you entered the password) but also copied your private key. You might want to use a very secure external program to encrypt your data (e.g. PGP) and never connect your computer to the internet, but what will happen if you lose the key? You will not have access to your data. You will see the file on the screen, but you cannot use it.

EXCEPT IN SPECIAL CASES DO NOT
USE HEAVY ENCRYPTION

Encryption

- makes it harder to work with the files
- makes the file inaccessible once you lose/forget the password
- is a further risk that the file becomes inaccessible when the program/format is no longer supported
- is unlikely to be used correctly (e.g. computer still vulnerable to trojans), encryption algorithm too weak (e.g. MS Access password can be cracked in the blink of an eye)
- is mostly unnecessary because it is unlikely that someone would steal your data

So, before you decide to use an encryption, make sure you know what you want. Prevent the accidental snooper? A simple, easily crackable encryption is enough (if you lose the key, at least you can break the door). Complete security? Then use a

Protecting your Idea Collection

dedicated computer for your idea collection, make sure it is never ever connected to the internet and that no one ever has physical access to it and that you store your backups in an equally secure place and use a heavy PGP encryption and pray that you never lose your key. But even then it is possible for someone else to gain access to it.

There is no perfect security. Live with it.

Compressing files

Compressing files would be helpful if storage space would not be so cheap. But given the cost of a gigabyte, it has more disadvantages than advantages: it makes the access uncomfortable, requires a further program and format that must be supported and has the risk of bugs. The only time compressing files is recommended is if your collection consists of hundreds or thousands of files. It is much easier and faster to compress and then copy one file than thousands of individual files.

The only system which is truly secure is one which is switched off and unplugged, locked in a titanium lined safe, buried in a concrete bunker, and is surrounded by nerve gas and very highly paid armed guards. Even then, I wouldn't stake my life on it.

Gene Spafford, Director, Computer Operations, Audit, and Security Technology (COAST) Project, Purdue University

LIGHT ENCRYPTION CAN PREVENT CURIOUS GLANCES

I often use encryption I know I can break with another program (that I have stored somewhere else). Someone who is just curious will not be able to open my files if I leave him alone with my computer and that is all I need. Since I do not let anyone else use my computer, I use only the ScreenSaver with password protection when I leave my computer. It is sufficient and lets me concentrate on my work. I could not stop anyone with knowledge and creativity who is determined to get my data anyway.

Realizing Ideas

After generating ideas, capturing them and collecting them until they accumulate and reach critical mass, the last and crucial step is the realization of ideas. Every one has ideas, what differs between creatives and the lonely nut is that creatives actually realize their ideas (which also means that the ideas are good enough that they can be realized).

This chapter takes a look how ideas get realized and after deciding which idea to realize (page 280), it will repeat two aspects that were already mentioned during the generation of ideas: creativity, and especially realizing ideas takes hard work (page 285) and a lot of time (page 288). Afterwards, we look at the ways how to realize ideas (page 290), organizational helps (page 297) and the problems that happen when you realize an idea (page 299). Finally we come to feedback (page 305) and the communication of ideas (page 328), before we look at the worst (page 341) and best cases (page 359) that can happen in creative work: failure(s) and success.

Harvest!

If you have a lot of ideas, these ideas accumulate in your collection. You may have ideas that belong together, which, over time, form a specific project. The clearer the project becomes, the more ideas you will probably have. Finally, you look through your idea collection, you might notice that the project seems ripe. After thinking about it for some time and adding idea after idea, you now have the impression that the project is complete in the sense that it can be realized.

It is finally time to realize a project.

LORD, WHAT CAN THE
HARVEST HOPE FOR, IF
NOT THE CARE OF THE
REAPER MAN?

*Death in "Reaper Man" by
Terry Pratchett*



Harvest — when you have collected sufficient ideas for a project to realize it.

How to decide which idea to realize

If you have more than one area of interest, you will likely have more than one idea in storage that seems ripe to be realized. This raises the question which idea to realize.

PRIORITIZE

You will only be able to realize a limited number of ideas in your lifetime and for most people, it is highly unlikely that others will continue their work after their death (see page 353). This means you have to prioritize.

One Project Rule

Unless you feel extremely comfortable working on multiple projects at the same time and finishing them in time, you should focus only on one project at a given time and start no other projects until you have completed it. This does not mean that you cannot enlarge and restructure the projects of the inner circle at the same time, but the focus should be on the core project in the center spot. Projects can inspire each other and if the work on one project provides you with ideas for another, all the better, but do not start the second project until you have finished the first one. Realizing even a single project will draw a lot of resources and it should be done without distractions. Otherwise you will start a lot but finish nothing.

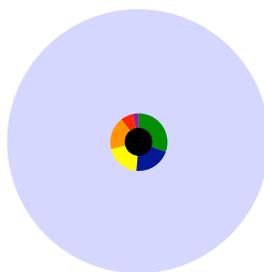
See page 207 for more detailed information about prioritizing ideas in the context of collecting ideas.

Avoid identifying yourself with one idea

While realizing only one idea at a time is important, take care that you do not associate yourself completely with only one idea. If you think that only this one idea is good (or the best you ever had or will have), you risk losing your self-esteem and even your motivation to be creative, if this idea fails. If you focus too much on one idea, you might also lose your objectivity and will probably bore everyone soon, because you repeat it over and over again (e.g. in conversations, publications, projects). You need to be determined to realize an idea, but be flexible enough to adapt or even discard it (and move to new projects) if it becomes necessary (e.g. the idea is not good enough or suitable at all or any more).

SELECTING SUITABLE PROJECTS FROM THE INNER CIRCLE

If you have no project that you are currently trying to realize and you are free in your choice which project to realize, go over the projects in the inner circle of the



Core Project:
currently in realization phase



Central Projects:
highly interesting projects
intensive idea gathering



Periphery Projects:
rest of the collection
expands as collection grows

When you have many ideas, selection and quality become a problem.

When you have few ideas, selection and quality become a problem.

"He made endless monologues about his concept, repeating its name over, and over, and over and again and again and again."

Course participant about a time-management workshop

How to decide which idea to realize

idea collection. Look for the projects that are ripe, i.e. that could be realized because you have all the necessary ideas to do so. Projects will change during realization, but it should at least be possible to complete the project until its end, so you will not get stuck during the realization phase because some important and necessary step is missing.

Evaluating which project is best to realize

If you have multiple projects that are complete enough that they can be realized, the following criteria might help you decide which one to choose.

Individual dimension: Skills and Motivation

- Skills, talents and knowledge available for the project.
- Sufficient resources (time, money, information) available for project completion.
- High motivation for the project.
- Project Important for further career.

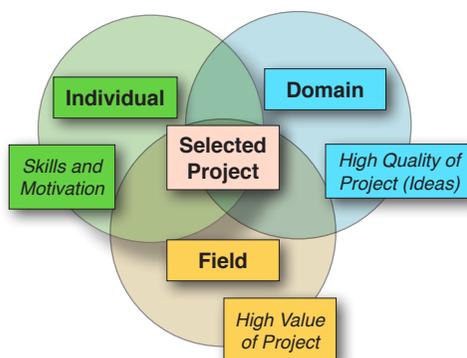
Field dimension: High Value of Project

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

Domain dimension: High Quality of Project (Ideas)

- Idea is really new.
- Idea is powerful (i.e. simple, elegant).
- High likelihood that the idea will work.
- Project in general is complete (no loose ends or missing steps).

You should select the idea that is high on all three dimensions. However, your individual priorities (e.g. choosing one project that can be completed in a short time because your time is short) might shift the balance between the three dimensions.



IDEA EVALUATION

Make a prototype (e.g. simplified version, rough draft, sketches) to see if the idea will likely work or not

Do a specific phase of research to find out if the project as you would like to realize it, is really new.

Is the idea simple and elegant or is it so complex that it is likely that it will be replaced by a more simple idea soon?

If you have a partner for different projects argue for each project but switch roles frequently (see page 117).

Get an expert opinion.

Why are your stories better than my daydreams? Do they make me care? Are they surprising yet believable? Are they well thought out?

Unknown

How to decide which idea to realize

Other helpful strategies to decide which project to realize

If you cannot decide: Argue

Even if you follow these criteria you might not be able to decide which project to realize. If you are uncomfortable by deciding the lot, argue (see page 117). If you have a partner or a good friend, tell him about the different projects you could realize. It does not matter as much what your partner tells you to do but what might help you is spelling out the different options, telling them to someone else. You might even tell them to your teddy bear or your chair. If it is a really important decision, e.g. R&D in a company, you should argue with a capable colleague who is in the same team. Use the method of the Wright Brothers and switch the sides during the argument, e.g. first you argue for project A and your colleague for project B, then you switch sides and you argue for B and your colleague for A. This prevents your from getting emotionally attached to one project and helps you to keep your objectivity.

Keep a Meta-List

Keep a list of ideas or projects that you really want to realize soon. This way you keep them in mind, helping them to grow and you have something to refer to when you search for a project. In the simplest case it is just a list of, e.g. book titles of books you want to write. You can also include additional information, e.g. what is missing to realize the idea, the importance of the project for you, etc.

Tag projects according to the evaluation criteria

If you generate a lot of ideas you can tag your ideas according to the different evaluation criteria, e.g. “skills:available”, “skills:partly”, “skills:lacking”, etc. This might help you to sift through your collection faster when you search for an idea to realize. However, keep in mind that evaluations change over time and the projects might not always be up-to-date. While a false alarm (project is found that you would not realize) is a short distraction, projects that slip through your fingers because they were tagged with evaluations that are too low, can hurt when someone realizes it because he had the idea too and you begin to think: “I did think of this too, why didn’t I realize it sooner?”

Make sure the world is ready for your idea

While you might be eager to realize an idea, make sure that the timing is right. Even with the unknown competition probably only a footstep away from realizing your idea (or rather: the idea you also had), do not start the realization of an idea if you do not have the time, skills or other resources available you need to complete it. If you cannot reasonably get the

Every idea I get I have to deny, that’s my way of testing it.

Alain, Histoire de mes pensées

ESTIMATING THE TIME YOU NEED TO REALIZE A PROJECT

If you try to decide whether you have the time to realize a certain project or not, make and estimate and then try to remember your estimates for previous projects. Were they off? By how much?

Even if things are different now and you expect smooth sailing to the completion of the project, your past behavior and experience — even if not very self-serving — is the best predictor. And you need the best predictor to decide, not some oil for your ego.

So be sure to modify your estimate for the current project by the amount of time you are usually off.

The early bird gets the worm,
but the second mouse gets the cheese.

Unknown

How to decide which idea to realize

resources while realizing it, you are essentially hurting your creative work. Keep in mind that it is not always the one who first realizes something, who wins. In business there have been countless examples of projects that failed but succeeded at a later time (e.g. when the conditions were right). Virtual 3D environments on the internet did not succeed in the early days of the internet because the average bandwidth was too low. A few companies tried it anyway and they failed. A few years later the conditions were right and Second Life, World of Warcraft, etc. became very successful.

While it is devastating to be beaten to the punch make sure that the timing is right (enough) before you start to realize an idea.

DEALING WITH THE ANXIETY OF THE UNCHOSEN PROJECT

Deciding for a project to realize leaves you with others that you did not choose — and often a certain anxiety. Did I make the right choice? What if the other project is better? What if someone else realizes it while I am wasting my time on this crappy project?

“Kill him, not me!”
“Actually, it’s not really a matter of ‘either-or’ but more of a ‘who comes first and who comes second’.”
Unknown movie quotation

It is a trite saying that the grass is always greener on the other side, and during the hard work of realizing the idea you will often think so. The other project would have been more fun. The other project would have been easier. The other project would have been more successful.

Perhaps these doubts are right, but in most cases, they are only signs that you have to work hard to realize an idea, that it takes time, and that you wished it would be much easier to realize the project. Unfortunately, most projects take a lot of effort and time to realize. Or one should rather say, fortunately. If it would be that easy to realize a creative project, everyone could (and probably would) do it. The effort you have to show, the anxiety of projects that seem simpler or “better” in hindsight is just a sign that creative work is not easy. It is not suppose to. To be creative you have to do things that are not fun, otherwise you would be a daydreamer, waiting for the moment a creative project descends from the sky into your lap.

Do not be concerned by an unspecific anxiety that other projects might be better. If you seriously think so, try the other project. But if you have the same thoughts while realizing that project (perhaps there is a third one which now looks a tiny bit better) you know that it is not doubt regarding the quality of the projects but your aversion of the work involved, probably due to a bad work strategy. If this is the case, work on your motivation (see page 300) and keep going, but do not change the project just because the going gets tough.

How to decide which idea to realize

HOW TO AVOID PAPER SOLUTIONS

When you decide for an idea keep whether the idea is really realizable or not. Many ideas only look good on paper (compare page 29) because important conditions, prerequisites, consequences or facts were not available. Check the idea first before you invest heavily in it.

Ways to avoid paper solutions

Get the numbers

If your 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 as a first check, but especially if you want to convince others, make sure that the numbers are right.

Define the terms

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?

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 ways 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, but if they can tell you reasons why the idea will not work, consider them carefully. 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 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 the project is finished, what would happen next?

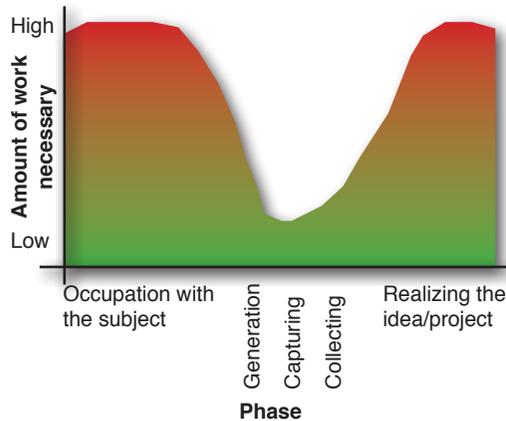
Often we neglect that creating a solution to a problem or need changes the situation and has (unintended or neglected) consequences. What would happen if your project is finished? Would its consequences really be beneficial for you? Or would you open a can of worms? There is a saying in companies that achieving the impossible will only make the impossible part of your normal work schedule. Think beyond the project before you decide to realize it.

Accomplishing the impossible means only that the boss will add it to your regular duties.

Doug Larson

A case for hard work (Part II)

The man who invented the first industrial research lab and employed engineers to do the systematic research for him said it best: “Genius is one per cent inspiration, ninety-nine per cent perspiration.” (Thomas Alva Edison, Harper’s Monthly, 1932). Learning the knowledge and skills is hard work, getting ideas mostly demands discipline in capturing and collecting them but realizing an idea is hard work again. Even if you can delegate the actual implementation you need to supervise the realization and revise your ideas once they leave imagination and encounter reality.



There is no substitute for the hard work you have to do to realize a project. Having an idea or even a lot of ideas is very simple, almost anyone has them, because not much is needed for a poorly defined idea. For example, it is easy to dream up a learning system that gives individual feedback and mirrors the progress. But to actually invest a lot of time and effort in realizing such a project is rare. You have to realize every step to make it work. You must actually understand the material and use it in a new context. This takes commitment, motivation, effort and this is — hard work.

TWO PITFALLS: WORKING TOO LITTLE AND TOO MUCH

There are two different pitfalls when trying to realize projects:

Pitfall: Avoiding the hard work by switching to other projects

The hard work needed to realize an idea is also the reason why only one project should be realized at any given time. Besides draining resources, it is otherwise just too easy to switch to another project when the current project gets tough. Making a commitment to see a project through, to realize it before you start another one, should prevent you from starting a lot of projects that all abruptly end at the same point: when they become difficult.

Pitfall: Escalating commitment

On the other hand, while trying to realize an idea you might come to the conclusion that your idea will

The great composer does not set to work because he is inspired, but becomes inspired because he is working. Beethoven, Wagner, Bach and Mozart settled down day after day to the job in hand with as much regularity as an accountant settles down each day to his figures. They didn't waste time waiting for inspiration.

Ernest Newman

A case for hard work (Part II)

not work out after all. Perhaps you realize that there is no *perpetual mobile* (yet), that perhaps your exciting collection of short stories with only be exciting for people with serve sleep disorders, or that your taste for colors is only applauded by seals (who are cone monochromats). The danger with investing a lot of work in an idea is that people can loose their perspective. They show escalating commitment. They follow their idea no matter if it is successful or not.

Sometimes this might pay off, sometimes it is only the phase before someone gets good enough to be successful. But at other times, it would have been much better to change the project, sometimes only slightly, because everything else is a waste of time, energy and resources. If you are not sure whether to continue with an idea or not, try to think about it without considering the hours you have invested in it. Would you want to continue this project if you had inherited it from your predecessor in a company? Or would you abort it? Or change it?

There is nothing sadder than the person who spends his life trying to chase the end of the rainbow. Know when you should draw the line, when something is not just difficult but downright impossible to do.

Impossible projects

Which projects are impossible to realize? Given that even experts can be wrong, sometimes famously so, this question is not easy to answer. Creativity is finding a new solution, something that is new, unexpected and often considered impossible to do so. In some disciplines you have clear indications of what is possible and what is not, e.g. if it violates the laws of physics like a *perpetual mobile* would. Sometimes the tools are lacking to produce a certain effect, and until you produce the tool you will not be able to complete your project. Of course, if you develop your own tools, you at least are creative in this regard. Other projects simply demand more time than you can invest, and unless you streamline your work method you will not be able to finish it. Other demand knowledge you do not have, and unless you can learn it (depending on time, effort and intelligence) or get a partner who has this knowledge you will be stranded. Some projects are just too large in size. No-one can change the world in a day (at least not in a positive way), but you can reduce the scope of the project and improve your town or even your street (or your house, or your room). Some projects depend on the cooperation of powerful institutions or individuals, e.g. if you want to use specific equipment that is not widely available. If you cannot get their agreement and you cannot sidestep them, your project might also be impossible (for you). Of course, you can still promote your idea and hope that others realize it (and attribute the idea to you).

In the end, if you are willing to modify your project, probably no project is impossible. Some great ideas were first described in stories by people who had the imagination but not the means (resources, education, knowledge) necessary to realize

Your company has invested \$23.000.000 in a plane. You are about to invest \$2.000.000 to finish the project when you realize that a rival company has already build a plane that is superior on every possible aspect, making it impossible that you will ever sell a single plane if you would produce it. Would you invest the final \$2.000.000?

Unknown, based on a typical scenario of escalating commitment — the scenario is artificial (nothing is ever so clear cut and there is always marketing), but few people are able to cut their loses and simply let a project die at this point. Even with the best argument in this scenario, the 2 million would essentially be burned.

One of the symptoms of an approaching nervous breakdown is the belief that one's work is terribly important.
Bertrand Russell

A case for hard work (Part II)

them in the real world. Some works existed as sketches for a long time until the time (and materials) was right (or available) to build them. If you cannot realize a project, be creative in the way you make sure that others can — and will.

A case for time (Part II)

Like getting the necessary knowledge and skill for generating ideas, realizing ideas takes a lot of time. Often you, well, realize that you do not have all the information necessary to continue with the project, or that certain skills or materials are missing. Then more often than not, not everything works out the way it was supposed to be (this is creative work, after all). Dead ends, detours, even running in circles will happen more frequently than not. Deciding to realize a certain project should be carefully considered because it will take a lot of your time and your time is (naturally) limited. While learning the necessary knowledge and skills needs large bits of uninterrupted time and generating ideas needs odd bits of time over the day, realizing ideas often needs huge amounts of uninterrupted time again. Given that you probably have a normal day job, this leaves part of the evenings and the weekends.

WHERE DO YOU GET THE TIME?

Using Weekdays

Given that you probably work during the week, you can still try to use the weekday evenings for creative projects. If you need a lot of equipment for your creative work (e.g. sculpturing or painting), it helps to have a dedicated room where you can leave this equipment readily available. While a tidied up workroom looks nice, it takes too much time to return all tools and take them out the next day. On the other hand, keep your tools in pristine condition, especially if you are working with brushes or anything else that won't work properly if not treated right.

If you have a partner and/or a family, keep an eye on a healthy balance between your creative projects and your partner/family. Restrict your work on your creative projects to one or two evenings and spend the rest of the week (save Saturdays) with your partner/family. It helps if your partner/family is creative also.

Take Saturday off

Reserve this day for your creative projects. 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. You could use Sunday instead, but this day is spoiled by the building work-week starting the very next day, and you cannot prolong your work if you want (or have) to. If you are inspired and your creative projects are developing extraordinarily, you can continue to work into Sunday. You can do a night-shift and work the whole night! Undisturbed.

"Here's a red letter date in the history of science, November 5th, 1955. Yes, of course, November 5th, 1955."

"I don't get it, what happened?"

"That was the day I invented time travel. I remember it vividly, I was standing on the edge of my toilet hanging a clock, the porcelain was wet, I slipped, hit my head on the edge of the sink, and when I came to I had a revelation, a vision, a picture in my head. A picture of this. This is what makes time travel possible. The flux capacitor."

"The flux capacitor?"

"It's taken me almost 30 years and my entire family fortune to realize the vision of that day. My god has it been that long."

Doc Brown and Marty McFly in "Back to the Future"

"the only thing that a writer's room needs is 'a door which you are willing to shut'"

Stephen King cited in "How to Write a Lot" by P. J. Silvia

"Just because I'm home doesn't mean I'm available."

Henry J. Wilcoxon-Ash

A case for time (Part II)

Does this make you a loner? Perhaps, but you have to work-week for social occasions. After work parties are common (at least in the cities), leaving you with enough opportunities to keep a healthy social life. If you feel like it, if you are burned out, you can still do something with your friends on Saturday evening. But save yourself one day, one day in the week, where you can focus on your creative projects.

One whole day that is dedicated to your creative projects.

Ditch the TV

As exemplified in the quotes on page 92, one of the greatest time-wasters in the TV. It is very hard to get rid of the habit to watch TV, no matter if its while you are doing something else (how well?) or at every evening after work. Also, other people are probably expecting you to watch to keep “up-to-date”, know the latest shows, series and movies. What else could mediocre minds talk about? However, decide for yourself what you want to do with your time.

“... never allowing time for viewers to have their own thoughts. Unfilled time on the broadcast stations is thought to be non-productive time. Why, the viewers might have their own ideas! Horrid thought. Worse, the viewers might get bored and do something else.”

*“Things That Make Us Smart”
by Donald A. Norman*

A personal comment on watching TV

I gave up on TV a few years ago due to three reasons: the commercials spoiled every suspense curve the story could hope to establish, the synchronization was really, really bad (I live in Germany and unfortunately, the people who write the synchronizations *try* to be creative instead of honing their craft), and the lack of end titles (the “snip! and now a teaser and some commercials” spoiled it). Some of my acquaintances have invested huge amounts of money in home entertainment to watch DVDs, personally, I rather visit the cinema. Living without a TV leaves me with a huge amount of time for my own thoughts, time to realize projects (e.g. write books), in short: do create something instead of consuming like a cow.

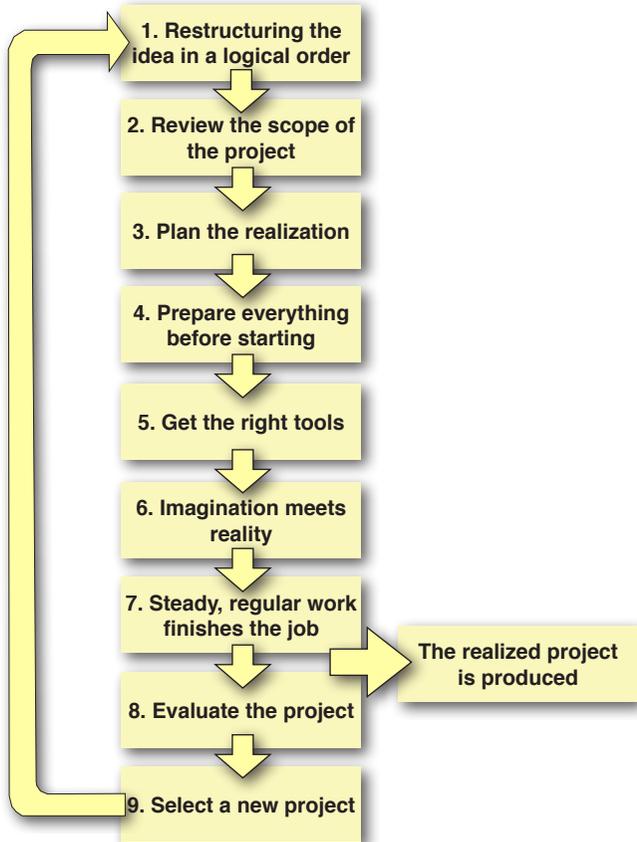
Restrict your online activities

The internet has much to offer: you find information you never searched for, unfortunately, that is also a huge problem. A lot of people browse the internet as some kind of replacement-TV. They want to be entertained (which is easy on the net with YouTube and other sites), but in doing this, they are burning time. 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?

How to realize ideas

If you have decided to realize a specific idea or project (see page 281) and you have made sure that you have the necessary time to complete it, you should plan how you realize it. This means restructuring the idea in a logical order, getting an idea of the scope of the project, preparing everything before you start and documenting the process. You can also use organizational helps, e.g. project management software, to help you realize the project.

The following diagram shows the steps while realizing a project:



1. RESTRUCTURING THE IDEA IN A LOGICAL ORDER

Given that you probably have a lot of individual ideas for a project you want to realize, you must first bring these ideas in a logical order. This might sound trivial but you will bitterly regret it if you do not explicitly do this before you start. Often we want to start right away and omit this step. We are eager to begin and just start. If you write a book, for example, and you think you know the plot but you have forgotten on important detail, you can rewrite whole sections if you find it later on and feel that you *must* include it. Make sure you read all the ideas you have written for this project and order them in a logical fashion. This order can be chronological, it can be thematic, it can be related to different aspects of the project, etc. What matters is that you get a handle on the project, a thread you can follow when you realize it.

How to realize ideas

You can restructure your project with different methods, e.g. writing the ideas on index cards and order them on a corkboard, using a MindMap application, or Outliner. Use whatever you think will help you transfer the different ideas of a project into a manageable order.

For larger writing projects use a master outline

If you are working on a larger writing project, e.g. a book or a scientific work, you can use a master outline. Use this outline to include a complete version of your story or research with all the facts and details. This outline can be kept in the background to derive the different publications (e.g. books or papers) from it. The books and papers will differ in aim and scope, i.e. the selection of material, the amount of details, the kind of analysis that is included and the conclusions that are drawn from it (in scientific papers). Even if you have written a novel or published a paper you can still develop the master outline if you have specific ideas for it. You might use it for other novels with the same content but different names (some world famous authors seem to do this), you might use the content for a prequel or sequel, you might use it to explain the behavior of your characters to your fans. If you are drawing, you might want to start a series of paintings with similar (but developing topics). If you use a master outline you should include some way to mark if you have used it. A checkbox or timestamp can do this that is often provided by the outliner program.

Main points, not complete sentences

It is important that you keep your outline in main points style only, not complete sentences. Not only are they easier to expand, it also makes it easier to write texts that may be based on a common structure but with different emphasize. If you ever read a scientific paper and thought "Either I have a déjà vu or I've already read this." you know what I mean. Repeating ones sentences is boring. If you want to keep your favorite sentences or paragraphs, do it, but keep them either separate from the outline or folded so that they do not influence you when you are writing a new paper or book.

Add meta information

Understanding ones notes can be difficult after some time. Keep meta information about the main points that are important. What is important here? Where did critics get your idea wrong? What are common mistakes when you try to write this part down? Mark the in colors so that you can easily spot them as meta information.

2. REVIEW THE SCOPE OF THE PROJECT

When you have ordered your ideas you can have a look at the scope of the project. It is realistic in size? In demand of resources? In time necessary to complete it? Often we plan to large, want to realize too much in a single project. Take a hard look if you really want to realize all ideas in this project. You can always use them for other projects or for future work. In science there is an extra section in most theses called "future work" where the researcher writes what is still necessary to be done but what he could not do due to the constraints of his work. And there always is something that is left to do and there is nothing wrong in leaving others some ideas for them to realize.

How to realize ideas

3. PLAN THE REALIZATION

After the scope is settled you can plan the realization of the project. When do you do what? What do you need? Make a list of the things you need, including the knowledge and skills. The plan will be preliminary until you try to realize it and get a better picture of what is needed, but plan as far as you can.

“Requested:
One Mark V ECM unit,
1000 km of Fullerene cable,
one low-yield nuclear
warhead.
Purpose:
Surprise party for foreign
dignitary.”
*Argosy Special Operations
Requisition Form, CY 9512 in
“Andromeda”*

4. PREPARE “EVERYTHING” BEFORE STARTING

You have restructured the ideas, you have checked the scope of the project and planned the realization, now it is time to prepare everything for you to realize it. It is very frustrating to start realizing a project and having to stop the realization every now and then because important materials, critical information, skills or tools are missing. Make sure you have “everything” (i.e., as far as possible) you need to realize the project available before you start. This can take some time, especially if critical skills are missing. Perhaps you can start with a smaller project to train the skills first, before you try to realize a large project with untested skills.

5. GET THE RIGHT TOOLS

Like I said at the beginning of this book, it is a golden age to be creative. The technology to make a book comes with every computer, the prices for canvasses and colors are cheap enough for drawing to become a spare-time hobby, what could not be done with half a building of dedicated workers can now be done on a single computer in an evening. And the tools are evolving and becoming better and better.

If you have eight hours to cut down a tree, it is best to spend six hours sharpening your axe and then two hours cutting down the tree.
*Anonymous, on the benefits of
having good tools*

Before you start a new project is the time to have a look if something new was developed since your last project in that area. Perhaps there are new tools that make your work easier? In a lot of domains there are different tools available and different ways to do the creative work (e.g. different photo editing programs). Make sure that you get an overview about the strength and weaknesses of each tool before you start a creative project. Changing tools halfway through the project can be a nuisance, especially with software. The internet has a lot of information regarding different ways to realize projects, e.g. different software, including detailed tests and customer reviews. There are often forums or blogs where the quality of tools is discussed. You can also ask the experts what kind of tools they use and more importantly why (did they reflect upon it or test it or did they just randomly choose one tool and stuck with it). There are often specialized tools for specific areas that might not be commonly known, e.g. there are various kinds of writing software available that are specifically designed for writing books and offer a much more comfortable working environment than the standard word processors like Word. You are likely to stumble upon this when you search for it, so make sure you have looked around for a specialized tool that what you usually would use.

LIST OF TOOLS

For a list of (digital) tools see the appendix on page 377.

How to realize ideas

If there are different tools (e.g. photo editing program) available, make sure you test them, either in a store or (in case of the programs) via test versions which are often available for 30 days.

Get the best tool ... for you

No matter what others say or use, you must find a tool that works for you. If you do not feel at ease while using a Canon (camera!), for whatever reasons, then it is not for you. If you like writing stories by longhand and cannot even begin to be creative in front of a keyboard, then whatever functions a writing environment can provide, it is not for you (to publish your stories you will have to type them, but this is not creative work and can be done by someone else, if they can read your handwriting). Whatever you do, try it, see if it work out for you. You often hear stories about this artist using only this tool (e.g. only certain colors or products of a certain company), and sometimes famous people seem to use tools of inferior quality. Some still use mechanical typewriters or write longhand. If this works for you, fine. But do not try to follow some artist. Just because a person you admire uses a certain tool, does not mean that you will be more creative (or creative at all) with that tool. Some artists would have gladly used modern tools, Mark Twain for example was always eager to use anything that would make his work as a writer more easy (that is why he used the typewriter). Try out and use what works for you.

COMPARE PRICES

Trivial but true: prices vary. You might get great materials second hand, on ebay or even in a normal store on the internet.

Dangers of Tools

Be careful which tools you use. Tools have some inherent dangers to creativity:

Tools can intimidate

Tools can intimidate. Because they have a lot of power, because you know that the material or tools cannot be used as an excuse, they can stop you from working creatively. There is no way to make the inadequacy of the tools responsible if you are playing a Stradivari and your music sucks. They can also demand a skill you do not have at the moment and will not develop with it. They can paralyze you with their options. A camera with a hundred settings might overburden the beginner, leading him to focus too much on technology instead of the pictures. If you have a hundred colored pencils, which one will you choose to begin? The more options the unhappier you will become if the option you want is not available. If you have only red, yellow, blue, white and black you will be used to mixing your colors yourself. If you have over 100 different pre-mixed colors but you do not find the kind of white you want, you will probably become unhappy and start cursing the tools instead of mixing it yourself.

"What are you gonna write, worthy of me?"

J.J. Abrams about being intimidated by his Apple Powerbook

START WITH CHEAP MATERIALS

Cheap (or rather: affordable) materials have a number of advantages:

you can experiment without risking much

you can see if the idea works before using valuable materials

while working you might get other ideas your final work might profit from

if you start the hobby you have not invested much and can easily drop it if it is not to your liking

How to realize ideas

Tools are no substitute for knowledge, training or experience

Tools offer a lot of functions that seem to substitute knowledge or skills: spellcheckers for writing, themes for web design, auto-corrections in photography. And yes, they make realizing an idea easier. But they will not provide you with ideas and they will not give you intelligent feedback. You can write sentences that only a spell checker will find correct or calculate an average with nominal data with SPSS, which makes no sense statistically. Tools are blind and they need a creative and educated mind behind it. They are like numbers in multiplication where the last number is your creativity. If you are not creative (creativity = 0), no matter what you multiply it with, you remain at zero creativity.

Tools have affordances

If you have an idea and start using a certain tool to realize this idea, you become influenced by the affordances of that tool. A tool has certain functions, that (sometimes subtly) direct the user to use it in a certain way. It is not only the available functions it provides that can be used whether they make sense or not, as seen with the early abominations of web pages or power points presentations with machine gun sound effects, but also the look and feel. Sometimes it is possible to see which tools were used and sometimes this influences the appreciation of the work (in art and science). This also applied to the available materials, e.g. that colors that were used in a painting because they look impressive not because they are suited for the task at hand. Watch out how the tools influence you, e.g. when you do or use something because it is available and not because it makes sense.

High Quality Tools can be hard to replace

You might have access to great tools but only temporarily. Perhaps you have some money left at the moment, perhaps you work at a place where you can use some equipment in your spare time, or you find

a free copy of an otherwise extremely expensive program that you can use on your current operating system. While great tools are fun to work with and can help you to produce work above your current level in less time, they can also be traps. If you lose the access to the tool (e.g. switch jobs, it gets broken and you do not have that amount of money or you get a new operating system and the old copy does not work anymore) you cannot continue the work on the project with the same quality or at all. Tools can trap your work if you cannot replace them.

Tools can blind you by their image

Some companies produce great quality tools but sometimes the image they have created over the time overshadows the quality of their current products. Take a hard look at the quality of the tool, not at the image, not at the legend, not at whoever has used this or similar tools, but at how well you can work with it. Separate the image from the tool. The image will perhaps make you feel better, but not magically improve your creativity. And it will undermine your creativity if you cannot work with it.

6. IMAGINATION MEETS REALITY

Normally this would be the time where you could

“Tools, of course, can be the subtlest of traps. One day, I know, I must smash the emerald.”

Sandman by Neil Gaiman

Realization: When abstract ideas become physical form and angels and monsters are born.

Unknown

How to realize ideas

just realize your project. You have everything, don't you? You ordered the ideas, the scope is right, you made a plan to realize it and prepared everything — now you just need to push through, don't you?

Unfortunately, you will likely have to push through again and again, because most creative projects will run into unforeseen obstacles. Once you start realizing an idea or a project, bringing it out of the imagination into reality, you will probably notice that there is a gap between your imagination and the way it works in reality. You will begin to see the areas where the ideas are not as thought out as they should be, where something does not work as it should. Only when you will realize a project you will see which ideas will hold and which won't, where you have to generate new, better ideas.

Two kinds of modifications

Minor errors, gaps and problems

Often modifications are needed in this stage but unless it was a major conceptual error, this is mostly a minor problem. If you focus on one project at a time and you encounter an unforeseen problem in the realization of the project, you have clearly defined problem to solve. This is usually easier than coming up with a creative project in the first place. If the solution will not come over the next few days or weeks, or you find that while you are knowledgeable in the area in general but not on this specific subject (which probably was the cause of the problem), you can ask an expert on this clear cut problem. This might be a frustrating experience but it is a part of the creative process. The key is not to be deterred by it. Mostly the problem is solvable if you invest some time and effort in it, make modifications and adjust your project to reality. Keep in mind that in most cases you do not have to dump your project.

The difference between theory and practice is that in theory there is no difference between theory and practice, but in practice there is.

Unknown

Every creator painfully experiences the chasm between his inner vision and its ultimate expression. The chasm is never completely bridged. We all have the conviction, perhaps illusory, that we have much more to say than appears on the paper.

Isaac Bashevis Singer

Major errors, gaps and conceptual errors

Unfortunately there are problems that occur during the realization phase which cannot be fixed easily. Missing an important principle, facing difficulties in getting materials or study subjects with the required attributes, contradictions in the model — there are a lot of reasons a project cannot be finished. If you are absolutely sure that the project cannot be realized (i.e. you know what the problem is and that there is no way around) you probably have to cancel the project. However, do not delete it. Even if your emotions would want you to trash the material or burn it on a stake, keep the project in the idea collection and write what you encountered while realizing it and what the problem was. Not only may part of the ideas be usable for other project but you might slap your head in a week or month or even year because

[Dr. Bashir has tried in vain to find a medicine for a plague (the Blight) that an aggressive alien empire (the Dominion) spread on a planet]

Bashir: "There's no cure for the Blight. The Dominion made sure of that. And I was so arrogant I thought I could cure it in a week."

Dax: "Maybe that was arrogant. But it's even more arrogant to say that there is no cure, just because you couldn't find it."

Star Trek DS9

How to realize ideas

you have overlooked some detail with which your project will work. Or the domain or field changes and the problem disappears and your first try to realize the project was just too early. In that case you can look in the collection and continue where you started.

7. STEADY, REGULAR WORK FINISHES THE JOB

While you might want to finish the project in one burst of action, usually the work turns out to be better if you work regularly, and in small steps. Most projects are too large to be finished in one session and the quality of your work will deteriorate if you continue to work for too long. Take care to set aside some regular hours during the week, one or two evenings and the saturday, for working on your project and stick to it. If you want to work more, do it. But work at least these selected hours. Doing this regularly 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. Then you need a regularity and consistency of work to continue with your project because your enthusiasm has quit three failures ago.

Pitfall: Actionism

I suppose every creative knows the manic feeling when an idea is so motivating, that they work on it, day and night. While this motivation is intoxicating and can lead to incredible advances within short amounts of time, there is also a danger that this manic feeling leads to blind actionism. Just because you work a lot, does not mean that the project itself advances. Like with eating, binge work is rarely good. Be careful to plan ahead what you want to do. If you have a high-spirited episode and just want to work on it, go for it, but keep an eye on your plan what you should do. If you have a great idea, there is nothing wrong to follow it. But once you have lost that manic feeling, revise your work, go back if necessary and then continue to work steadily and regularly. While great advances can be made in manic episodes, creative projects usually get finished because people do their jobs even when they are not inspired.

8. EVALUATE THE PROJECT

When you are finished the great moment comes where you can compare the project with the project as it existed in your imagination. You can evaluate the project regarding its quality. You can also ask others for feedback, now that it is finished. The great advantage of getting feedback of a finished project is that you can show it to a lot of different people, since you do not need to explain any missing parts. The disadvantage is, that you can hardly change the project after the completion. See page 305 for information on feedback.

9. SELECT A NEW PROJECT

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.

Organizational Helps

For larger projects you might want to use some help. First there is the need for a good documentation. If you have difficulties managing the project, there is some good project management software available that lets you plan the realization of your project and divide it in manageable steps. There are also systems that help you with managing your work life that can be beneficial if you want to realize larger creative projects.

WAYS TO HELP YOU REALIZE YOUR PROJECT

The following ways should be considered:

Documentation

There is one important aspect of the realization of an idea that often gets neglected and warrants its own header here: documentation. It is frustrating to wonder how you did a certain technique a year ago, why something that worked last summer does not work now. In art it means that you cannot continue with a series because the new artwork looks too dissimilar to the old one. Perhaps the colors are not right, because you have forgotten which colors you used and in which proportion you did mix them. Perhaps you forgot which tools you used to get a certain effect. A trifle, but noticeable none the less. In science a clear, accurate and detailed documentation is extremely important, because experiments must be replicated by other scientists. If you omit an important detail, others will not be able to replicate it and your work will be put in question. It is likely that you omit an important detail? Yes, unfortunately it is. Given that you have spend a lot of time within your domain, some things will appear absolutely natural to you do to in a specific way. So natural, that you will not mention them. Only when others will try to follow your directions will you notice which steps you have omitted that are crucial for the experiment. 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. In engineering a good documentation is equally important, especially for patents. Unless the process is clearly described it will not be possible to get a patent for it. Take care to note the date and time when you did something. In some patent disputes these recordings proved crucial to decide which inventor was first (if not the file-first approach of patents is used where the first one to actually file a patent is rewarded with the patent).

Project Management Software

Different software exists to help you plan the realization of a project, make and manage checklists of things to do, set deadlines and milestones, plan the work of different people or project groups, etc. Some software is even freely available. However, make sure that planning the project does not become more important than realizing it, even if planning is more enjoyable. Project management software is there to help you realize a project, not to become a substitute and feel-good-measure for it.

SOFTWARE LINKS

For links see the appendix on page 377.

Organizational Helps

Getting Things Done and other systems

Getting Things Done (GTD) by David Allen is a popular system to keep track of tasks and manage the work life. Take a look at it if you have problems keeping up with your work and separating the wheat from the shaft. It has a huge following on the internet with tools available to help you organize your GTD-system.

Problems during the realization phase

If you encounter problems during the realization phase of the project, try to diagnose what the specific problem is and where it is situated. Most problems are either at the individual, the domain or the field level.

PROBLEMS ON THE INDIVIDUAL LEVEL

On the individual level blocks, doubts, demotivation and the fear of finishing a project are common problems during the realization phase.

Blocks

Sometimes people have good ideas, but they cannot implement them. They do not know where to start. Often the thread is missing, making them stumble along the way like a man lost in a dark cave. If this is the case, have a look at the following questions:

Can you outline the process?

Problems are often easier if you separate them into smaller chunks. Writing a dissertation is a monstrous project, but the individual steps (reading about the domain, finding a thesis, planning and conducting studies, etc.) and sub-steps (e.g. asking the counsellor about open questions, conducting a literature review, reviewing the methods, etc.) are actually quite manageable. Making an outline of the process can help you tackle difficult problems.

Can you outline the product?

Some works have a clear structure which you have to fill. To take the dissertation example again, it is roughly divided into theoretical background, research questions, empirical studies and results and discussion. If you use this structure as an outline, you can start to fill it with the needed information. This will give you something to see how far you are and where you are still missing information.

Can you work your way backwards?

You might not know how you can reach your goal, but you might know where you want to end up. Sometimes this can be used as a starting point to work your way backwards. Which step must you reach immediately prior to your goal, which lies before that. Often it is like solving a labyrinth puzzle: easier to start at the endpoint than at the beginning.

Doubts

We all know the phases when we doubt our own abilities: What if I am not good enough? What if it all fails? What if I am wrong? This doubt can paralyze our work on a project. Doubt can be a warning but listen carefully: what do you doubt? Your idea or yourself? While doubt about the own work is beneficial if it leads to the improvement of it, you should

not doubt your own abilities. If you doubt that your idea works, try to find out why. If there is a reasonable concern, you have found something you must improve. But whatever you do, try to realize your project, that is the only way to make sure whether it works or not. If you doubt your own abilities, realize your project nonetheless, that is also the only way to find out whether you can do it or not.

"Alright, I'll give it a try."
"No! Try not. Do ... or do not. There is no try."
Luke Skywalker and Yoda in
"Star Wars IV: The Empire
Strikes Back"

Problems during the realization phase

Demotivation

There are humps during almost all creative projects. Times when you (want to) throw everything in the trash and discard it. Sometimes you fall in a demotivated period that takes a little bit too long. You wonder if it will ever end. If this happens try to analyze the problem: Are you exhausted on a general level or do you spend too much time with the project that you need a break? Did the project get too large to handle because you can no longer see the individual steps? Do you think that your project will be a failure anyhow? Try to find out the specific reason why you lost your motivation.

:-(
www.despair.com

Post-manic start phase

If time of high motivation, especially when you start a project, when you are really “in the flow”, you can easily work for weeks or even months on one project. Everything else become secondary — sleep, partner, regular work, even regular meals and sex. You can get used to this and get demotivated once the flow wears off and fatigue sets in. You ask yourself: “What is wrong with me, I can get hardly anything done!”. In truth, you are just exhausted from the hard work you did. You need a break, some time to restock your energy and to sleep. Sometimes the flow period wears down without full exhaustion but slowly glides into normal workflow. You may get disappointed by your work when in reality you just settled into your normal work mode.

Change what you are doing

If it is a specific aspect of the project that you just cannot do at the moment, try to work on some other, related aspect. If you are trying to write a book and you cannot find the mood to write a new chapter, try copyediting the existing ones, update the character descriptions or tidy up some dialogues. If you cannot analyze your data anymore, order the results you have obtained so far, sort your literature or format the tables. Try not to discard your project but stay with it, just on a different aspect.

Problems starting the project the next day

Sometimes you work fine as long as you do it, but you find it difficult to start working on it the next time (e.g. the next day). If this happens, make sure that you have a clear overview and list about your to-dos. Lack of structure makes resuming difficult. You can also “park on a downhill slope”, i.e. stop working not after you finish a part (e.g. a chapter) but in the middle of the work (e.g. in the middle of a sentence or a paragraph). This will make continuing the work easier the next day since you have a clearly defined task to do.

Lack of positive feedback

You may be working for a long time but do not think that you get positive results. Often positive feedback is lacking. While others could give you this positive feedback, you can make sure that you also receive it from your work. Switch between small aspects of the work and overall planning. This will help you to keep the big picture in mind but still experience small successes whenever you complete an aspect.

“Lacking the time” to continue working

Suddenly you do not seem to “find the time” to work on the project. While it is always possible that a shift in your schedule has occurred, check how you spend

Problems during the realization phase

your time and how you define your priorities: Do you really need to spend time on the things outside of the project? Do you have more than one project running at the same time? Do you lose yourself in little actions (e.g. answering eMails) the whole day? Set strict priorities. Books on organization techniques (e.g. "Getting Things Done" or "Zen To Done") might help. Review if you keep your allocated time for the project. Sometimes other activities slipped in that are highly reinforcing but are unrelated to your project. You might have to defend the time for your project, against others and your own laziness (see page 50, page 91 and page 288). Sometimes you have to sacrifice other (pleasurable) activities and distractions to finish the project.

Complete lack of motivation

Sometimes you cannot see the project anymore, you cannot work on it, not even for a minute, not even on some other aspect. If this happens, which is expected if you worked for a long, continuous time on it, make a break and do something different for a while (unless you are on a deadline, then you have to slug it out). If you had a lot of failures try to take a step back and analyze why the failures occurred instead of investing effort doing it again. Is knowledge lacking? Skill? Did you lose the thread? Review the structure and find out what you have to do next. Often it helps to remember why you are doing the project, what you want to achieve and *gain* from it. Imagine that the work is finished and you got your presentation, your publication, your gift or on whatever you are currently working. Even if you imagine too much, e.g. too positive reactions, it can help you to focus and motivate you to finish the project.

The fear of finishing a project

Sometimes people hesitate immediately before they finish a project. All they have to do is one final, easy step, yet they won't do it. They find excuses. They wait another day, and another.

If you are nearly finished and you hesitate, there are often two reasons for this: fear of the final result and fear of the emptiness after the completion of a project.

Fear of the final result

With a finished project comes the final evaluation of the project: Does it work? Is it really good? Will it be accepted? Is it really good enough?

You have invested a lot of time, energy, resources and a lot of yourself into this project, and now comes the moment of truth. Needless to say, this can be daunting. This is why people often try to avoid it. "No, it is not finished.", "Come back tomorrow.", "I just have to edit the last chapter." or "It is almost done." Sometimes they work endlessly on a project that is already finished, trying to improve tiny bits and pieces in an endless effort to achieve perfection. Everything but letting their project stand on its own, letting others see and evaluate it.

You cannot protect your work forever and you can only really improve it if you find out what others think of it.

Fear of the emptiness after the completion of a project

Some people fear the completion of a project due to the emptiness it leaves behind. As long as they are working on the project, they have something to do, a goal, even a purpose. They identify with the proj-

"This is when I become suicidal."
Unknown

Problems during the realization phase

ect, with their idea. But once the idea is realized and the project is completed, this purpose is gone. What is left is a sense of emptiness. Depending on the person, this emptiness ranges from slightly aversive to highly suicidal.

If you feel empty and downcast after the completion of a project, try to find something else than creative projects that give 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 when you are close to finish the current project so that you can seamlessly follow up another project.

PROBLEMS ON THE DOMAIN LEVEL

On the domain level there are two common causes for problems: uncertainty how to proceed and ideas that do not seem to work.

Uncertainty how to proceed

If this problem happens you often have a lot of ideas but do not know what to do next. Mostly this is a problem of finding the structure, the thread. Try to find common aspects, move the data on a more abstract level. If you have a thread how you want to present your work the rest follows immediately.

Idea does not seem to work

Creativity is like that: Although you were so sure that it would work, it does not. If this happens carefully check if you have realized the idea as you planned. Is everything correct including the details? Do you have an explanation why it does not work or do you just observe that it does not work. Unless you have

an explanation (and even then you may be wrong) you cannot be sure that the idea really does not work (perhaps you have just neglected some minor part). If you have an explanation find out if you can modify your idea so that it will work. You have a clear problem to beat, consider it your new center project for a while, learn about it and see if you develop ideas. To get an answer why it is not working you can try to break it down into details or small blocks and compare them with the big picture. See page 98 for additional information.

The great tragedy of Science – the slaying of a beautiful hypothesis by an ugly fact.
Thomas Henry Huxley

PROBLEMS ON THE FIELD LEVEL

On the field level common problems are that someone beat you and that the anticipated reactions of the field get worse.

Someone beat you

In creativity there is always the possibility that someone beats you, even during the last stages of a project. A publication with similar content gets published or an artist becomes famous with similar project. This does not mean that everything is lost, however. Few creative works are exactly similar, often there are differences, e.g. in the focus of the work. Given that someone has published his work before you did, you have to make changes by stressing the dissimilarities. 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.

Problems during the realization phase

See page 341 on parallel creativity for more information.

Anticipated reaction of the field gets worse

When your work gets more and more concrete and you begin to see it clearly, you might change your evaluation of what the field will have to say about it. And sometimes, you might not think that anyone will like your “trivial artwork” or “little research findings”. However, is it really the work itself that is ‘trivial’ or are you just getting expertise and the project is trivial only to you. A lot of research findings seem trivial with the benefit of hindsight (and if you neglect the amount of work that was needed to do them). Ask some people who are in a similar position as you were when you started the project and who 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.

Problems during the realization phase

DEALING WITH MISTAKES

Missing: Publication organ for mistakes

Unfortunately mistakes are rarely made ... widely known, which means that others will repeat them. In art they are often discarded, in science, studies that fail are not published, in business there is a cult of copying the "best practice" of other companies instead of getting to know the worst practices to prevent them from repeating. While everyone has to learn from his mistakes, having a look at things of others that did not work could speed up the process. What is missing is a publication organ that can spread the worst realizations, even if they are personally embarrassing and one would like to hide them from the world.

Get input

Even if the mistake is embarrassing, if you cannot solve the problem, getting the input of the field might help you to find a solution.

Remind you of your mistakes

We like to discard our mistakes, but keep them, archive them, remind you of the occasionally. Seeing your worst mistakes once in a while will take the power from new mistakes. You know that you have survived mistakes in the past, you will do so with the current ones.

A Physician can bury his mistakes, an architect can only advise his clients to plant vines.

Frank Lloyd Wright

Feedback

Good feedback is extremely hard to get. It must not necessarily be nice, friends will provide this kind of support, it must not expose all your open questions, undefined aspects and errors in implementation, in a harsh manner, your enemies (or anyone who has a bad day) will do that.

BUT WHAT IS GOOD FEEDBACK?

There is one and only one goal of feedback:

The improvement of your work.

Feedback and critic is not about you, not directly. What is in focus, and often gets forgotten by creatives, is that feedback is solely about the quality of your work. No yourself, not your worth as a scientist or artist (or even as an human being), but the work you are doing. Feedback might tell you how you have fared, if you have improved or not since your last work (although improvement is never a straight line but there are sudden peaks and valleys along the road). But it is not about you. So do not take it personally, even if the critics are devouring “your baby”. It is very hard but if you really want your work to succeed and you have good critics, you have to remove your ego and listen to them, because they help you and your work to become better.

This means that good feedback is “good”, not in the sense of “favorable” or “nice”, but of “useful”, especially if you learn from it for future works. Favorable feedback might be completely useless beside being motivating if it does not tell you why the work is good or where or even how you could improve it.

MAKE FEEDBACK A PLANNED, CONSCIOUS DECISION

Learn How To Communicate Ideas First

See page 328 for information how to communicate ideas.

Consciously Decide Based On Relevance Not Liking Whom You Ask For Feedback

You need feedback that is accurate, valuable and non-destructive which only a few people can provide.

Watch Out For People Who Like To Clip Wings

A few people will feel threatened by your idea or dislike it (or you) for some reasons. Their feedback will be aimed to destroy you(r creative work).

Comments are the life blood of any amateur writer, the currency in which they are paid. It only takes a few minutes to send off a few lines, which is little to ask for in exchange for hours spent creating a story. So be sure to take those few minutes, it can only result in more and better stories in the future.

Author of an a.s.s.m. story

Feedback

WHAT IS NOT GOOD FEEDBACK?

There are some misconceptions regarding feedback. Some people confuse feedback with support, assistance, they mix personal feedback with public feedback, see it as advertisement or power play. Again: The role of feedback in a creative process is to improve your work. Depending on the time of the feedback (see page 305), to allow you to make better use of your time by choosing the right project (feedback before start the work), to improve the work while you are creating it (feedback during the work), or to tell you how well you did your job so you can learn for future projects (after the work).

The following cases of bad feedback are common:

Support

If you need emotional support or complete devotion, get a dog. Soothing voices are a great balsam for the soul and they might help you to finish your work. But as feedback they are useless for the improvement of your work unless they give you the strength and the motivation to have a really critical look at it. You might need friends who urge you on, provide you with the faith and support to continue working on your project, but if you want real criticism, search it elsewhere. Otherwise you might finish your work, but it won't necessarily be good.

"It is better to be good than nice."

SwamiWebanada

If you need a friend, get a dog.

Gordon Gekko in "Wallstreet"

Outsourcing the hard work

A colleague once said about his critics "If all they do is to find the problems but do not provide me with the solutions to them, then they better shut up." Luckily he did not plan to stay in research because he shows an utter lack of understanding regarding critics: they are not there to do your work. A good critic might have suggestions for improvement, but even the best critic will probably let you work out the details yourself. It is your work after all, and you should realize it. Otherwise you do not have a critic but an (equal) partner who shares your (equal) credit for realization of the creative work. And besides, who else but you knows that much about the project? There often is no one else but you to find the solutions to address the critique.

"If they do not know how to solve the problem, why did they tell me about it?"

Former colleague regarding to a criticism of an aspect of his project

Critic for the field

We often think of critic as someone who tears down (or praises) works in a newspaper or journal. But the audience of the kind of critic meant here is not the field in general but you personally. *And only you*. Regard it as a kind of Roman-Catholic confession. It is and should be absolutely private, otherwise few (good) critics would be willing to address the ugly parts and you would spend too much time and energy to defend yourself since you were criticized publicly. This means that you have to personally choose someone who will criticize your work and give you the feedback. A reviewer of a journal in science comes close but they write their criticism not for you but (primarily) for the editor of that journal (accept, demand a revision, reject). But with the kind of critic meant in this section, you are the ad-

Feedback

dressee, no one else. His aim is to improve the work, not to make its strengths and weaknesses known to the public.

Public presentation

You can do public presentations of your work in hope of feedback, but have a look at the criteria of a good critic on page 308: most people in the audience will neither understand it well enough or invest the necessary amount of effort to do so, nor will they have the time to formulate good feedback. Public presentations are mood tests, advertisement, getting your name out, and pointing colleagues or the public to your work. It might show you obvious weaknesses or misunderstandings, but it does not provide high quality feedback. It is (at best) high quantity but often low quality.

Power play

While criticism should improve the work, it is unfortunately used by some people, often in or between high-competitive workgroups of companies or institutes, as a way to undermine the work of disliked colleagues. At best, this use of “feedback” is a waste of time, but even if you know that the criticism is not due to your work but solely due to the fact that you are competing for the same resources, it can still hurt. And, it can put you in a disadvantage, if this kind of “criticism” sounds believable to the head of the department or institute. Unfortunately, there is not much you can do. If you are new in the company and shocked by the lack of cooperation, you are not in the position to change anything, and if you stay there long enough, you will probably have good reasons (retaliation) to participate in this kind of criticism. If you can, try not to participate in this group hatred but keep your integrity. If you stay long enough, you might contribute to a calming down of the climate. But do not bet on it. No matter what you do, look at the consequences of your behavior for the realization of your projects. And if you find some better workplace, remember that you always have the power to leave.

“This wasn’t feedback, that was fuckback.”

Anonymous employee, about the criticism he received from a member of a disliked department

Feedback

WHAT MAKES A GOOD CRITIC?

If you look at a good critic, which attributes must a good critic have? Following the differentiation of creativity (page 15), we will take a look at the individual, the field and the domain level.

Critic as an Individual

Takes Time

A good critic takes the time to have a close look at your work. No matter if the work is complex or (seemingly) simple, he takes the time to understand a work and be able to give feedback. Unless you are aiming for an “o.k.” by someone you like (or need to get in the boat to proceed), good criticism takes more than just showing your work to someone and getting an answer within the next two seconds.

What you can do to support this? Find a time frame that suits your critic, e.g. make an appointment. Do not just drop in and quickly ask him if he like your work or thinks it is any good. Tell him in advance how much time you (and he) will need and why his criticism is important for you.

Aims to Understand

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 and asks questions about it. Unless the person is very good and knows you and your work very well, you can see from the questions he asks if he is a good critic or not. We often think of a critic as someone who tells us something about our work, but first we must tell him, what our work is.

“You’re listening to me, but you’re not understanding me.”

“No, I’m disagreeing with you. That doesn’t mean I’m not listening to you, or understanding what you’re saying. I’m doing all three at the same time.”

Josh and Toby in “The West Wing”

On the other hand, if you experience difficulties getting your message across because no one understands it without help, you probably should aim to make your work easier to understand. Take it as your first and most important piece of feedback: you will not succeed in creativity if no one understands your work. Not even in modern art (they must at least think they understand it).

What you can do to support this? Invest a lot of effort to communicate your idea clearly (see page 328). Give them enough time beforehand to get to know your idea themselves and be available for questions. Instead of giving your critic a presentation you can give him some information beforehand, e.g. an article you prepare or pictures of your work. Give him time to get to know your work on his terms, before you present your work to him and ask for feedback.

Wants you to succeed

This is a hard one: Not only must the person be qualified for giving criticism, he must want to help you succeed. He must literally work for your success. This usually excludes the competition working on the same project, even if they are (technically) highly qualified. You can search for colleagues who work in the same general domain (e.g. social psychology)

“I’m not trying to get my father to like me.”

“Good. ‘Cause it’s never, never gonna happen.”

President Bartlet and psychiatrist Stanley in The West Wing: “Night Five”

Feedback

but in a different sub-domain or with a different group of people (e.g. you work in social psychology on aggression in infants and he works on aggression in school). The difference might stimulate comparison between your works, which might provide additional ideas. 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 he has acquired over the years. While age does not necessarily bring wisdom (sometimes age comes alone), seniors of the profession are often more flexible than their reputation and might provide an invaluable help.

What you can do to support this? There is little you can do besides finding the right person and be a person others would want to succeed (by the quality of their works, not only their general liking). 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.

Critic and the Field

A critic must know the field even if he may not be a part of it. Publishing editors do this for authors, making predictions if a book will be liked by the audience. He must be able to tell you what is currently important in the domain, how your idea fits in and how the field will react to it. This might sound like popularism, but this is important even in science: the best theory or experiments are without consequence if they get not accepted by the field, e.g. published in the relevant, high-impact journals. As Seth Godin said: “ideas that spread win”. You need the field for a successful idea or you have to create your own field.

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

Sometimes the hardest feedback is that your idea is brilliant but you will have to wait for recognition until the current generation of scientists or artists have faded away. This happens in research when a new theory is rejected by the current generation of professors, but — due to its strengths — will be accepted by the next (see Thomas Kuhn regarding “paradigm change”).

This also means you have to discard some people as critics because you might like them or value their opinion but they simply 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.

What you can do to support this? Find people close enough to your work to know the field intimately, but who are not threatened by your ideas.

Critic and the domain

To understand the work and see the limitations, weak points, fuzzy bits and fringes a critic must have the relevant domain knowledge. This is especially important if your work is not for the general audience but for a group of specialists working in a complicated domain, when it is not about general liking but the artistic quality or the scientific value of your work. Understanding a domain takes a lot of time (see page 91). If your idea is really new, you probably still have to explain the general idea, the differences to

Regarding your parents, don't hope for constructive feedback. Hope for interest and support, if you get this you are lucky enough.

Unknown

Feedback

previous ideas, and the way you do or plan to do what you are aiming at. But you should and cannot not start at the beginning.

You may like your parents or friends, but if they cannot judge the value of your idea, because they do not possess the necessary knowledge, their opinion is useless for the judgement and improvement of your work.

What you can do to support this? 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.

THE FIELD ITSELF IS THE BEST CRITIC

Sometimes success and failure depends on things that are beyond the scope of critics (e.g. advertisement, competition, changes of taste, zeitgeist, transformative events, etc.), especially if the critics are only a small part of the field. In this case only the publication will tell how well your project will fare. There have been many work that were considered brilliant but that failed to appeal to the audience, and works that were rejected time and time again but became bestsellers. While criticism is important, keep in mind that only the field itself can say whether your project is creative and has merit or not (or how much).

I didn't know it was impossible when I did it.
Unknown

Feedback

WHICH KIND OF FEEDBACK DO YOU WANT?

There are three kinds of feedback that are possible for your work: ex-ante, formative and summative evaluation of your project idea.

Ex-ante evaluation of your project idea

It is possible to get feedback before you do anything to realize the idea. In this early stage you have the advantage of minimal invested effort, meaning you are very likely to be able to modify or even (gasp!) 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). You can try to make mock ups (a lot of business presentations consist of nothing else), tell a story of things that would be possible with your idea or put it in context to existing realized ideas.

Formative evaluation of your project idea

This kind of feedback aims to improve your work while you are realizing it. If you are currently working on the project and 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. If you are working with deadlines for the different stages of 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.

Formative evaluation is usually done while a project is running. In creative projects you present the relevant stages of your work to (the same or the best suited) critics from time to time when you need their input for that step. Make sure you give them an overview first of what you aim at, that they understand the big picture before you focus on the relevant aspect you want their input on.

Summative evaluation of your project idea

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), who may or may not have given you input during the realization phase, about their feedback. 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 (e.g. literary recension), they might provide you with insights how to improve your work in the future.

Feedback

DO YOU REALLY WANT FEEDBACK?

Feedback is important, but ask yourself if you really want to receive it before your work is done (or at all).

Are you good enough for feedback?

Sometimes, especially when you are learning, you know that your work is not good (yet). That is why you are learning to do it. While you need feedback to improve yourself, you see the mistakes yourself and *you know what you have to do to improve yourself*, and this is enough for your current level of expertise. Feedback from others will just be too much, causing you to discard the domain because you think that you have no talent for it, when all you need is more experience. This does not mean that you should not seek the best teacher you can, who will give you feedback, but not to seek external feedback outside of the teacher-student relationship until you are good enough to present your work to someone else.

A new idea is delicate. It can be killed by a sneer or a yawn; it can be stabbed to by a quip, and worried to death by a frown on the right man's brow.

Charlie Brower

Do you really want to use the feedback?

It is frustrating for a critic to be asked about his opinion, invest a lot of time and effort to get to know the work, give detailed feedback as best he can, and then to have his opinion discarded without consideration. The best the critic can hope for then is to say *"I told you so."* when his predictions come true, but this is without real satisfaction. While no critic can or should expect that his opinion is regarded all the time, and you should have a critical look at any feedback you receive and discard it if it is not applicable, you should at least be open to actually change your work based on his input. Criticism is not a feel good measure, and if you do not want a person to have an influence on your work, do not ask that person for feedback. If you do and you do not use this feedback, it is unlikely that this person will invest the effort and criticize your work again.

Do you fear feedback?

If you decide that you want (or rather need) feedback, do it right. Cloaking an idea in vagueness, using difficult language or atrocious presentations is a strategy often used if people feel their idea is not that good anyway. On the one hand they (are told to) want feedback, but on the other, they fear it. *Don't*. Show your work as clearly as you can, as objective you can. Otherwise you will not get a realistic impression of your work.

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

Feedback

FEARING FEEDBACK

If you fear feedback, find out why: is it a lack of expertise or sensitivity to negative feedback?

And here I stand;
judge, my masters.
Shakespeare

Lack of Expertise

If you are not good enough in the domain (yet), if you lack knowledge or skills, you might fear feedback, because it shows you how much you still lack. But on the other hand, it is the only way to improve yourself and your work. The worst that can happen is, if the whole project, the key idea(s) behind it, is (are) without merit. It can happen, and probably will, in the beginning of your career. But feedback can prevent this, if you ask others early about your project. This feedback, and the feedback you should ask before you begin any major steps, will help you to improve your work, see it with the eyes of experts who will give you their perspective for a few moments in the hope that you adopt some of their knowledge. It will help you steer the project to completion, and realizing a project even with insufficient skills will provide invaluable learning opportunities which you cannot draw from book learning or repetitive training.

Yes, feedback is scary if you are no expert, but good critics know this and will help you become one. So get feedback early and often!

Sensitivity to negative feedback

Some very good artists were so very sensitive when it came to negative feedback that they quit their work when they received it, often unjustified. If you cannot handle negative feedback, try to find someone who understands your reactions to it. Some who can give you feedback about the quality of your work without you taking it personally. And avoid public feedback until the work is finished and publicized. You might still feel that you do not want to be creative anymore when someone writes a negative recension about your project. Especially if the critic is really hateful and without merit for the improvement of your future work. But it is likely that you will have other feedback that shows your work in a positive light. Try to understand that there always will be the envious, the disgruntled, the ones who like clipping wings because they themselves cannot fly, but that there are also others who like your work (and possibly your future works). While it might be satisfying on a deep level to simply throw it all down in righteous anger and quit the whole creative business, it is actually very cowardly and lazy. You always can improve yourself and only a small part of the field will not appreciate it (if these kinds of critics belong to the field at all).

IT HAPPENS TO EVERYONE

No matter how good the work, there are always some who criticize it. Look at the reviews on Amazon.com — no matter how good the book is, it is very likely that some people will not like it.

Feedback

WHY IS IT SO HARD TO ACCEPT FEEDBACK?

A lot of people have difficulties with accepting feedback. They do not directly fear it, but they find it very difficult to accept it when someone criticizes their work, even if this person is a good critic by giving negative feedback. Cognitively they accept it, may even see that the critic is right, but emotionally they are hurt, and often *very, very angry*. Sometimes they even play the role of the “unrecognized genius”, rejecting any feedback as stupid complains that fail to the big (or real, or any) picture — and often they ostracize themselves this way.

The greatest mistake you can make in life is to be continually fearing you will make one.

Elbert Hubbard

Why do people often react negatively on negative feedback — and why is this an unnecessary reaction?

Difficulties in dealing with (negative) feedback might be the result of one or more misconceptions:

Perceived Negativity of Feedback

One point of this section about feedback is, that good feedback is not necessarily nice. And often, good feedback is negative feedback. If other people have suggestions, point you to things you can do better, *they give you the chance to improve your work*. To make it better. It does not matter that you did not think about it until they told you so. This feedback is about your work, not about you. If you are clever, you will have an additional look at the feedback on an abstract level, try to find out how the critic thought, get the necessary knowledge and skills, and *internalize* it. So the next time you work on a project, you will remember it and prevent the mentioned weaknesses, flaws or mistakes. Good feedback, even if it is negative, is the best thing that can happen to your project (and to you): because it improves your project (and you).

As Pratchett would put it, being Good and Right doesn't make you Nice, and she isn't. She prefers to be respected.

Wikipedia Entry about Susan Sto-Helit from Discworld

Perceived Waste of Time and other Resources

Creative work takes lots of time and other resources. A common misconception is, that if the feedback is negative, these resources just went down the drain. This is not the case: in every project, even in the most abysmal failure, you learn something. Not only by the final result (i.e. what not to do), but also while working on it. You use your knowledge, you train your skills. Even if the end product was not reached or turned out to be ... different than expected, no one can take this from you. It might be disappointing to realize that your imagined masterpiece turned out to be another training session for it, but on the other hand, it is not a failure. See also page 348 about cancelled projects.

You have the capacity to learn from mistakes. You will learn a lot today.

Unknown

That some good can be derived from every event is a better proposition than that everything happens for the best, which it assuredly does not.

James K. Feibleman

Perceiving Oneself as Stupid

Whether the negative feedback is just a simple spelling error or a huge screw-up,

Feedback

we often ask the question: “How could I be *so stupid* not to avoid this mistake in the first place? The smart critic did notice it immediately.” Sure did he notice it, after all, he did point out the mistake to you. We notice and focus on *the critic* and *the mistake* he did find. But this does not mean that *every other critic* would have also found this mistake. Another critic might find *other mistakes* which the smart critic did miss, or he might find none. And finding mistakes is easy. Sometimes we become so entangled in the work, that we lose the big picture, that we stop looking at the things in front of us, but at the things we imagine there. If you ever wrote, rewrote, and rewrote, and rewrote, and rewrote a paper and then rewrote it some more, you know what I am talking about. You stop reading the sentences but see what you expect there to be. One time I forgot the verb in a sentence in a conference submission (I changed the sentence very often and just dropped it). One reviewer pointed it out to me in a very condescending manner. Sure did he see it — that was easy for him because it was a simple mistake and he had not spend ages writing it. He read what was there and the verb was not. One more reason to give it to someone else before submitting it. But the other reviewer did not mention this mistake. He might have seen it, or he found other aspects to be more important, which the first reviewer did miss. Do not think you are stupid just because you have made a mistake and the critic did notice it, *especially if this mistake is stupid* — because these are the mistakes you can easily make and which can be easily spotted by others. If the critic had done the work you would (probably) also find mistakes in it.

“Real stupidity beats artificial intelligence every time.”
Bursar 1 - Hex 0 in “Hogfather”
by Terry Pratchett

Every man is a damn fool for at least five minutes every day; wisdom consists in not exceeding the limit.
Elbert Hubbard

Perceiving Others as Perfect

Men (and especially women) are a social animals: we like and need to compare ourselves with others to know how good we are. Regarding feedback we often assume that others are perfect. As any critic or reviewer can tell you: *they never are*. They are like you, they make mistakes. The work that gets presented, even when checked by colleagues, reviewers, critics, etc. p.p., can still be improved. It might take some serious engagement with an excellent work to find the flaws, but they are there. So do not think that negative feedback happens only to you — it happens to everyone. Without wanting to raise the index finger, you can differentiate yourself from the rest if you accept the feedback, have a good look at it, and implement what should be implemented (see page 325).

“It happens to everyone.”
(countless sources)

Have no fear of perfection, you'll never reach it.
Salvador Dali

The only person you should ever compete with is yourself. You can't hope for a fairer match.
Todd Ruthman

And if you want to compare your work to others, compare it to your earlier works and compete against yourself.

Perceived Linear Increase of the Quality of Creative Work

Some people think that the quality of their work should continuously increase in a linear fashion: each new work must be better than the previous one. After all, they trained and increased their knowledge, so why shouldn't it? Surely a new work cannot be worse than a previous one? Equal perhaps, if you reached a plateau, or

Feedback

the top. Fortunately this is not true. The quality of a work depends on a great number of factors. Some are random and some you can influence at least partially or with a certain probability. In some rare cases everything works in your favor: you have a topic you love, you grok it, you are in excellent physical and mental condition, you have the right tools, everything works perfectly — and you do a great work. Now imagine the next project. The probability is very high that some factors are not in your favor now, because it is very rare that everything is in your favor like it was during the previous project. Perhaps you had a rough night and are tired now, perhaps you do not like the topic as much, perhaps your tools have a flaw, or perhaps you are just unlucky. So this new work, despite your increase in knowledge and skill, will — if enough factors are stacked against you — be *worse than the previous project*. You find this effect in statistics as “regression toward the mean” and it is the reason why a pilot who just did an excellent landing will probably perform worse the next time, and why children who were extraordinarily well-behaved on one day will probably be worse on the next. Additionally, creative work is per definition new and this means you are faced with new challenges, some harder than the previous ones. Why is it fortunate that the project quality does not linearly increase? Because this effect also means that bad days are possible and likely. And since it is a regression toward the mean and not to the minimum, it also means that extremely, even extraordinary bad projects are unlikely to be followed by an even worse one. Not only is there increasingly less room at the bottom the worse your projects become, but it is also unlikely that all the factors that were (all) stacked against you will also be against you in the next project.

“It is possible to make no mistakes and still lose; that’s not a weakness, that’s life.”

Jean-Luc Picard in *Star Trek TNG*: “Peak Performance”

Each player must accept the cards life deals him or her: but once they are in hand, he or she alone must decide how to play the cards in order to win the game.

Voltaire

Perceived Loss of Creative Ability

As mentioned on page 26 and seen in the previous point, it is a misconception to perceive creativity as stable. Some people react violently emotional on negative feedback, because they think that creativity is something they either have or do not have, and due to this stable and unchanging nature any negative feedback would indicate that they are not creative — or not as creative as they would like to be. Not true. Creativity is dependent on many factors and a lot of them change. Not only your mood, your skills and your knowledge, but also the field itself and the domain (hopefully with your contribution). Just because you did not produce something creative today does not mean that you cannot do so another day. The circumstances are constantly changing.

Perceived Loss of Ego

Some people draw a lot of energy for their ego from their current creative work. Some see themselves as artists, some as creative scientists. Some simply think that creativity defines them, is their key attribute that makes them what they are. If their creativity work takes a hit, their ego takes the damage. They feel that any negative feedback invalidates them as a creative, even as a human being. Some even need continuous attention and praise because they cannot

My play was a complete success. The audience was a failure.

Ashleigh Brilliant

Feedback

sustain their ego on their own. If this is relevant to you, have a look at the previous points. The quality of your works will change and whether you like it or not, some will be worse than previous ones. Have a look at your creative works in context. Do not look only at the last project, but how you have improved yourself over time. No matter what, even a bad work late in your career will probably be better than your very early works (even if have to go back to kindergarten). And have a look at your successes. There is no reason to assume that you cannot reach them again or that a bad work will obliterate them. Since the quality of a creative work does not only depend on you alone, if you did everything you could to make the project as best as you could, you have a clear conscience. Other factors are then responsible for it and the feedback will show you what they were and what they did. However, do not use this as a cheap shield against any critique. Good feedback will also tell you what you did wrong. Make sure you also take the responsibility for it and improve yourself by implementing the feedback.

Perceived Meddling of Others

Sometimes we have a clear vision of what the project should be, what our project should be. We think it is our project because we did it all. Then we present it to others and — now there is someone who wants to be part of the process, who gives suggestions, who influences the course of the project. While this is often a problem that people sought feedback when they did not really want it (see page 312), it is also a misconception about the work the critic can do. Sure, he can have a brilliant idea. Worst case: your project becomes remembered for the one aspect that a critic suggested, not for the rest of the work. It can happen. But would the project have existed without our work? Would the feedback of the critic have been implemented without your work? Could it have been implemented without your expertise? Would others have implemented it in the same way or does your style shine through? A critic is not there to do your work. He might help you, even make more than a simple suggestion, but the work is still your own. And it is your decision whether to implement it or not, and how.

Perceived Disappointment of Others

If a project did turn out to have flaws and mistakes (and all projects have them), we often fear that we have disappointed others: our parents, our partners, our colleagues, our teachers, our mentors, our audience, the list is endless. 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. On the other hand, imagine

A man may fall many times, but he won't be a failure until he says that someone pushed him.
Elmer G. Letterman

"People don't like to be meddled with. We tell them what to do, what to think, don't run, don't walk. We're in their homes and in their heads and we haven't the right. We're meddlesome."
Young River in "Firefly"



A picture I did in a drawing course — what is not seen is the sketch that preceded it. When the course instructor saw my sketch, she made a few adjustments (within 3 seconds) without asking me — which made the sketch extraordinary. But it wasn't my sketch anymore and it really hurt when others passed the finished picture (which was solely my work), but were deeply impressed by the sketch (which was not). Correspondingly, I discarded the sketch. Today I would hope that I would keep it to try to learn from it.
But at that time, it was just meddlesome and hurting.

Feedback

someone would do a project for you. Would you expect perfection? Could you expect perfection? While it is a good goal to strive for excellence, because it inspires you to do the extraordinary, perfection is an impossible goal and completely unsuitable to measure the quality of a work. No one with half a brain would expect perfection, not only because it is unachievable — it is also boring as hell. If the other people, whom you think you have disappointed, really appreciate you and your work, they will tolerate flaws and mistakes, because they will know that you did your best, and that you will use the feedback to do whatever you can to either eliminate the mistakes and flaws in the current work and/or prevent them from occurring in your future works.

Perceiving Everyone as Audience

Sometimes people strive to try to appeal to everyone. Their work should please everyone and negative feedback means that they have failed. Not that their work has failed, but *they have*, because the critic is not pleased (or not as pleased as he could be). While striving to appeal to everyone is a noble (or financially lucrative) goal, it is also impossible. *Humanity is too diverse*. Their interests, desires and tastes are vastly different. Even if the project addresses them all, there will be people who will not like your work. Envious competition for example. People who do not like creativity will also hate it. People who see you in a certain, rather unfavorable way, will also dislike it on principle. Try it as you might, you will not succeed. And you do not have to. Because every critic who gives you good feedback, even if it is negative, gives you the opportunity to improve your work. He likes it at least enough to care for its improvement. Define your audience clearly and remember that a critic is not there to *like* your work, but to *improve* it.

And accept the fact that no matter what you do, you will never please everyone.

Perceived Loss of Reputation

Some people think that any negative feedback tarnishes their reputation. Be it that they imagine it to be perfect or spotless, or that they fear that even the slightest negative comment will let them sink in the eyes of others, they try to protect it at all costs. However, this is virtually impossible. The only way to have a spotless reputation would be to deliver perfect work from the first day on. Besides being impossible (some factors cannot be controlled and lead to changing quality of the works), any change would result in negative feedback, either for the current project (deterioration) or for the past projects (improvement). However, there is no need to fear negative feedback. In most cases it does point to improvements and does not invalidate the whole work. Since creativity changes it is

I want to know if you can disappoint another to be true to yourself: if you can bear the accusation of betrayal and not betray your own soul.

"The Invitation" by Oriah Mountain Dreamer (excerpt)

"I'm only gonna say this once. The guys you send to create those diversions are gonna die."

"Yes they are. You try not to get anybody killed you wind up getting everybody killed. Get ready to move out."

Gunn and Wesley in Angel Episode #44: "There's No Place Like Plrtz Glrb"

I don't know the key to success, but the key to failure is trying to please everybody.

Bill Cosby

Until you've lost your reputation, you never realize what a burden it was.

Margaret Mitchell

In the game of life it's a good idea to have a few early losses, which relieves you of the pressure of trying to maintain an undefeated season.

Bill Baughan

Feedback

unlikely that a really bad project is followed by another one — at least if you implement the feedback. You can rebuild and improve your reputation with new works. A bad project can also help to set expectations right: if you did excellent work for a long time other peoples expectations might be unrealistically high. If your project turned out not as good as the last but also not an abysmal failure, others can get used to the usual fluctuations in creativity (yes, even yours). They realize that you might not deliver perfect work every time, but — in the long run — superior work most of the time. So the occasional screw-up will not kill the faith in the quality of your work. It is like conditioning a dog: if you give him a reward every time he does the desired behavior, the dog will stop showing it very quickly when you stop rewarding him. If you only give him a reward intermittent when he does the behavior, the desired behavior is much more prevailing when you stop rewarding him. So, even if your work has room for improvement and others notice this, if you deliver excellent work most of the time, it wont harm your reputation.

Perceived End of the Line

People sometimes talk about “getting only one shot at success”, perhaps because after the fall they know how hard it is to climb the ladder to the top (or to your chance). Knowing how hard it will be to climb it again, and how long it takes, can be worse than working your way up to the top (or to your chance) in ignorant bliss in the first place. And it might be harder on the second run: The public can be unforgiving if your work really sucked and avoid you in the future. A scientist whose work turns out to be rubbish might have a difficult time getting a new grant or employment. And even among friends a screwed creativity project might isolate you. People look at you funny. You were creative, now you are just wacky. Yes, this can happen. But his does not mean that a comeback is impossible. A fall down to the ground floor must not be the end of the line.

Even if the end up in the subbasement you are not forced to stay there. On the positive side you know a way up (if it still works), on the negative side you might meet people who remember you — negatively. After a really big screw-up it will be very hard to convince them that you have learned your lesson. Some people change the domain or the field. Some admit their mistakes and try to avoid them in the future. However, keep in mind that really big screw-ups are also really rare. For this to happen (nearly) everything must be stacked against you.

The Additional Sting: Publicly Admitting Mistakes

In the silence of the studio, workshop or laboratory most creatives could probably handle their own negative feedback. But negative feedback from others has an additional sting: it is public. Even if the critic is the only one who knows about it, he now knows about one of our failures. Some people become angry with the critic, because without the critic they would not have experienced this failure (no, it’s not reasonable behavior, killing the messenger never is).

“You lost today, kid. But that doesn’t mean you have to like it.”

Fedora in “Indiana Jones and the Last Crusade”

Supposing you have tried and failed again and again. You may have a fresh start any moment you choose, for this thing we call “failure” is not the falling down, but the staying down.

Mary Pickford

A man should never be ashamed to admit he has been in the wrong, which is but saying, in other words, that he is wiser today than he was yesterday.

Pope

Feedback

Accepting the feedback would mean to publicly admit a mistake, to accept a failure or admit to failures in the creative work. Given that many people *falsely* want to protect their ego, *falsely* see the invested resources as wasted, and *falsely* see creativity as stable, it is no wonder that only few people are able to do this. If you accept that your ego is not directly tied to your current work, that you learned something from doing the project, and that creativity is variable you might be able to do so.

Yes it is hard — deal with it.

Emotionally accepting feedback, especially negative feedback, is hard. And there are some kinds of feedback you should not accept. People who are out to hurt you or your work, who want to tarnish your reputation, who really give feedback not to improve your work but to deteriorate you, who want to derail you and make you angry or depressive. But those people are rare. You would probably not ask them for feedback in the first place (although some are very clever in disguising themselves). And you will probably immediately recognize this kind of feedback. Most of the times feedback, if it has merit (see page 305), is there to improve your work. This means that others want your work (and you) to improve, to become better.

Cherish and accept their feedback. Have a look at your work after you implemented the feedback. Is it better? Did the feedback improve your work? Did you learn something from the feedback?

If so, then why should you be angry?

It is sometimes a mistake to climb; it is always a mistake never even to make the attempt. If you do not climb, you will not fall. This is true. But is it that bad to fail, that hard to fall? [...] Sometimes you wake, and sometimes, yes, you die. But there is a third alternative. ... sometimes, when you fall, you learn to fly.

Morpheus in Sandman: "Fear of Falling" by Neil Gaiman

DEALING WITH EMOTIONS

One thing a very valued critic told me is missing here is how to deal with the negative emotions once they occur when receiving criticism. Unfortunately, there is not much I can say in this regard. I hope that the amount of information why criticism is sometimes hard to accept will **prevent** some or even most of the negative emotions that might have occurred otherwise. To use a different image: I think it is better to fill up the dry well instead of hanging a rope in it when the aim is to help people deal with the possibility of falling into it.

Feedback

CRITIC OR CRITICS?

If you have the choice, do you want one critic or multiple critics? This will have consequences on different aspects:

Invested Effort of the Critic

If you have only one critic and the person knows this, he will probably feel more responsibility for providing good feedback. You might get a companion on the journey of your project who gets intimately familiar with it. On the other hand he might feel like he has invested something in your project and (also) lose his objectivity. He might become more of a project partner or companion and not the objective critic you need to have.

Integration of Feedback

Different critics often have different tastes, background in knowledge, and priorities, resulting in different, sometimes contradicting suggestions for improvement. If you ask them at the same time, you get different ideas how your project could improve. And you cannot realize them all nor can you easily take an aspect of critic *A* and then use an idea of critic *B* unless you are sure that the combination of both ideas, that were made by different critics and never intended to be used together, are actually compatible and result in a better total idea. If you ask different

SEQUENTIAL CRITICS

It is often best to ask one critic, then see which aspects are useful, change the work and then ask the next critic. If you parallelize it and ask different critics at once it becomes very hard to integrate the feedback.

critics in different stages of your work, your project could change direction quickly and repeatedly, getting lost in an “improvement cycle” that moves very fast in itself but not forward. If you use more than one person for feedback you need to have a very strong sense where your project should be going to. You will get a lot of different influences, sometimes a whirlwind of ideas pushing you in different directions, and it will be your (very hard) job to separate the wheat from the shaft and pick a mixture of those suggestions that will push the idea in the direction you want to go.

Accuracy of Feedback

If one person is wrong, he can be dead wrong. Giving you constant ideas that always push you in the same direction, albeit the wrong one. However, even with multiple critics you will have to judge whom you trust if their opinions differ (and it is likely that they do). You can ask yourself who is the best critic according to the previously mentioned criteria or ask them for their reasons and test them on their validity. Keep in mind that it is not the trust in the person himself that is the main criteria (also it is a necessary one), but who has a better grasp on the quality of your creative work. Sometimes this can mean choosing to follow the opinion of a detested colleague over the opinion of your best friend, because no matter if you like him or not, your detested colleague is dead right. But like the integration of feedback, you will have to do the work yourself in finding out whom you trust.

Feedback

IF YOU DO NOT RECEIVE USEFUL FEEDBACK

Giving good feedback is hard work and often you will make a huge effort to get feedback (e.g. show your work on a conference), but you will not receive any valuable feedback (or any feedback at all).

“That’s nice. Would you like something to eat?”
Feedback by my mother for one of my creative projects.

If this happens find out why:

Wrong audience

Take a look at the qualification of the critics. Did they have the necessary background knowledge or was their background too general to understand your idea? Were they interested enough or was the presentation not engaging enough (or was it simply the last presentation of the conference)? Do they want you to succeed or couldn’t they care less? Getting a knowledgeable, engaged and favorable (see page 307) audience is extremely difficult. If you do not succeed in getting feedback in a presentation, try to find the persons who could give you feedback and ask them for their opinion in private. If they did not see your presentation all the better. Seek out the *right audience* (including an *audience of one*) instead of hoping that they will come to you.

Unclear presentation

Sometimes the critics want to give feedback but they simply did not understand your idea. While it is easy (i.e. lazy) to make their lack of interest/intelligence/knowledge responsible for it, take a good look at how you presented your idea. If you have spend months or years working on an idea, much appears trivial to you. But for an audience that has other things on their minds (their own projects, family, sex, sports, clothing) your idea might be hard to grasp. See communicating ideas on page 328 on ideas how you can bring your point clearer to an audience with no prior knowledge.

No starting points for feedback

To receive critic, your idea must leave your audience points where they can 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, it is hard for a critic to give you any feedback. Stress where you are unsure, where you need feedback, during your presentation.

Even if the feedback is useless to you, the amount of time and effort you will have to invest to show your work to others, to make it understandable, will often be an important step in realizing for yourself how well your project is faring. See “help the critic” on page 323 for more information how you can make it easier for the critic to give you feedback.

Feedback

HELP THE CRITIC

While some tortured creatives would laugh at the idea of helping a critic, there is a lot you can do to improve the quality of the feedback you receive for your work.

“They have a pretty good idea.”

“They have a pretty clear idea, but it’s not a good one.”

Unknown

Tell him why you see feedback

Without closer information feedback is often too unspecific. Feedback regarding a written text can range from the detection of spelling errors to structural changes to pointing to missing facts. Give your critic the information where you are at your project and why you need the feedback to improve your work. You should work together to improve the project, not work against each other or in complete ignorance of the general picture.

Tell him what kind of feedback you seek

When I gave the first draft of my diploma thesis to my counsellor for a review, I got my copy back with a lot of corrections: spelling errors, citations, grammatical mistakes. When I asked him about the scientific quality of the results and discussion sections he told me “Oh, I did not feel like reading it for the content yesterday, I guess we can talk about it now.” Since the words are usually heavily rewritten from the first draft to final version, his grammatical and spelling corrections were utterly useless for me. The feedback I expected from him was specific regarding his expertise: the scientific quality of my work. I did not need a substitute professor in psychology for spell checking! Although it might be argued that my goal regarding his feedback would have been expected, I did not tell him this in advance. So, if you ask someone for feedback, make sure this person understand which kind of feedback you expect. If the person knows where you are at your project, he will often focus on the right kind of feedback himself, but make sure he really understands this. Otherwise you waste his and your time.

Ask him specifically to point out what is good

Criticizing is fun and errors sometimes are just so obvious. However, critics often neglect to point out the strengths of a work. Even if the feedback about the bad parts is useful, it is often too demotivating to implement it. While pointing out what is good is often implied by the critics (i.e. “*I did soak it in red ink, so it was good or at least acceptable.*”), explicitly marking the strong points tells you what you did especially well, a very useful and motivating information.

Ask him to use a specific schema

You can help your critic by giving him some kind of guidelines, e.g. keywords on the aspects you need input on. But whatever you provide him with, leave him with the (physical and psychological) space to provide his own perspective. He must be able to bring his perspective in, to be valued as a provider of feedback. You want detailed feedback, not a participant in a multiple-choice survey. A possible schema for ideas is SWOT, the abbreviation for *Strengths* (should be used), *Weaknesses* (should be reduced/eliminated), *Opportunities* (should be exploited) and *Threats* (should be defended against or eliminated). The first two are qualities of the idea itself, the last two are external to the idea. However, you should also keep in mind other important topics, e.g. if the idea will give you an adequate return of invest-

Feedback

ment (will it pay off for you) or if there are other ideas that might be better.

Schema for feedback on this book

As written in the introduction of this book I am interested in your feedback regarding this book. You can reach me via one of the following eMail-Addresses: organizingcreativity@mac.com, danielwessel@organizingcreativity.com or creativity@ipsych.de or via my webpage (www.ipsych.org).

If am interested in open feedback, especially regarding 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?
- With which aspects of this book do you like?
- With 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?

Thank you very much. :-)

Feedback

USING CRITICISM

Asking for real feedback is not easy. Even if you found critics that are motivated and knowledgeable enough for good feedback, it is unlikely that the criticism will be all positive. Especially in art the appreciation of creative works is highly individual and not everyone will like your work. Even in science there are different paradigms, different favored methods and designs that will lead to criticism. But once you have accepted the feedback it is your job to use it (which might include *not implementing it* if you have good reasons).

Take a (critical) look at the feedback you received. Find out which feedback has merit and which does not. Keep in mind that you often cannot implement all feedback, but that you have to prioritize. Time and other resources are often short and some feedback, while right and important, cannot be implemented. You can still mention it in your work, e.g. in the foreword of a book or in the “future work” part of a thesis, but you cannot reach perfection.

Analyzing feedback

Divide it in the following sections and act accordingly:

Critical Importance

Feedback that shows you where you messed up. Someone detected a showstopper that will invalidate your work, either because it was already done, cannot be done or should not be done. You are lucky if you receive this kind of feedback early, because you will have to do some major changes to your project (or even kill it).

Important but not critical

Feedback that is right but not critical in the sense that it still works, albeit not as good as it could. You can try to use their feedback and make changes in your project, but since it will still work, you can neglect to do it, if you have good reasons, e.g. not enough time or other resources. Find out what you can implement and leave the rest. However, make sure that you inform the critics why you could not implement their suggestions. In a scientific work, you also have to inform the audience about the things you could have done to improve the work, but could not do. Perhaps, other researchers can implement these suggestions from the start.

True but not important

They are right but their feedback has little influence on the project itself. Some neglected aspect, e.g. a subgroup of the population that your study does not include, but which does not fall into the main target group, some factual errors in a fiction story that only physic nuts will notice. You can change the project to include this information but it is optional and low priority.

False and useless feedback

Either you did not explain it sufficiently or the other person did misunderstand it (or likely: both), but you will receive feedback that is simply not applicable. Sometimes you have people in your audience who just like to hear themselves talk but do not have the qualification necessary to contribute to your project. Some people are just too caught up in their own way of thinking, that they misunderstand your project and see it through the wrong glasses. Take note how they went wrong and how you can avoid these misunderstandings in the future.

Feedback

Unclear feedback

The feedback that you did not understand. While it is easy (i.e. lazy) to say: “I did not understand it, perhaps the person did not understand my work either, it is not important.”, make sure that you contact the person who gave you the feedback and make sure that you do understand it. A short conversation is often all that is needed and it might provide you with feedback that is critical to your project.

Note: The section you assign the feedback to is often subjective

Take the example in the “true but not important” category. If you write a science fiction novel and you made some factual errors with physics, you might see it as “true but not important” if the focus is on the story. But if you want to write a scientific accurate novel, it becomes of critical importance to implement it. Vice versa, having an idea that does not work (e.g. for a perpetual mobile) is no showstopper if your plan is to demonstrate your ability to work wood and metal by creating a strikingly beautiful machine that will only run for some time.

This might be trivial for yourself, make sure that the critic knows your aims. While his knowledge may have no negative effect on your ability to sort the feedback into the right category, it might be hard for him to understand why an apparent showstopper does not disquiet you at all or why you are take “a minor suggestion” so hard.

Keep the aim of feedback in mind

Keep in mind that the feedback is there to improve your work. Do what you can with it to use it this way. An remember that there will always be ways to improve something. There simply is no perfection, you can strive for it, and striving for it will make your work extraordinary, but you cannot reach it. But also remember that your resources are limited (at the very least your time on earth and the patience of your audience), and 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.

Feedback

CONCLUSION

Finding and using a good critic is very hard and should not be taken on lightly. A good critic is someone who wants to improve your work (not sooth you) and urges you on to improve yourself this way. The other hard part of criticism is to actually use the criticism, find out which has merit and which does not, and implement it as good as you can.

WHEN YOU HAVE TO GIVE FEEDBACK

This section is also usable if you have to give feedback. There are variants of the golden rule in nearly any religion and world view, try to criticize as well as you want to receive criticism.

Communicating Ideas

Realizing an idea is only the first step. There is no difference between an unrealized idea and a realized idea that cannot be distributed to the right people, except that the later did cost you much more resources. If the field does not evaluate the realized idea as creative, it is not creativity. So make sure you know how to distribute the idea to the right people in advance.

Trying to “advertise” your ideas, be it still in its infancy or the finished product, might seem like an insult: The idea was brilliant, so why should you lower yourself to become a salesman or an advertiser?

Even the best idea cannot fight for itself, nor will it convince others automatically. Not today where everyone is bombarded with attention grabbing “information” all the time. If you cannot gain the attention of the right people, your idea will not win, your idea will not be used. Having an idea is worth nothing if you cannot lead others to understand it, to like it, to use it, to promote it, to fight for it. Given that a new idea is likely to create reactance, there is no need to make it harder for it than necessary.

The following methods might help getting your idea across. First we look at finding the right audience and then at ways to convince it.

Find the right Audience

There is nothing sadder than a creative who tries in vain (or sometimes even successfully) to convince people of the worth of his ideas who do not belong to the relevant field. It is nice if ones idea gets recognized by a large audience (or any audience at all) and you might want to strive for masses. But your time is limited and you cannot convince everyone. You need to get to the right people. But who are they?

Getting known to the field

Make sure you find out who belongs to the relevant the field of your idea. Who decides about its acceptance? Who can judge it? Who can further your project? Find out what these people read, where they spend their time, what they notice, and how they will react to your idea. Sometimes you have to induce it slowly, sometimes you have to make a radical presentation, but get the (positive) attention of these people.

Get the opinion leaders

All men might be equal, but the worth of their opinions and their influence differs. Not every convert has an equal worth. In most groups there are people whose opinion counts more than others. They decide for the group, either because others

DISTRIBUTING IDEAS

Even if you have to focus on realizing the idea, make sure that you can get it to the right audience first or chose another project. The field decides what is creative, so even if you realize it or make it work, it is useless if your field does not accept it.

But in science the credit goes to the man who convinces the world, not to the man to whom the idea first occurs.

Sir Francis Darwin

(video narration) “What if great ideas weren’t cherished ... what if they carried no importance ... or held no value ...”

(text) How to live in a world, where even good ideas are regarded as threatening?

Beginning of a BMW advertisement (video) and a question by the author (text) of a YouTube video regarding the problems of communicating ideas without negative effects

“And **this** is the **only** way to measure creativity!”
“Did you ever publish your results as a journal article?”
“Yes, I have written hundreds of articles in the last twenty years.”
“Any of them in English?”
“No, only in Bulgarian.”

A Bulgarian researcher being questioned at the International Conference of Psychology 2008

Communicating Ideas

accept them as leaders or because they know how to influence the group. Use your time to convince the people whose opinion matters. Go for the shepherd and the guide dogs, not the individual sheep.

Gain Mass

Sometimes you cannot convince the opinion leaders because they loose too much due to your idea or you cannot get their attention. If you strive for social change, politicians might be the field, but to get their attention, you might need to develop a movement. If you can appeal to the “masses” (difficult due to their fast changing attention and interests and high heterogeneity), you have a better position to get to the people that matter.

“Schatzi, sollen wir das machen?”
[Sweetie, shall we do this?]
Older woman to her husband, regarding the opportunity to use an electronic guidebook for a museum visit

“Ideas that spread, win.”
Seth Godin

Get Promoters

Some ideas have prospered due to the right promoters, e.g. Charles Darwin had Thomas Henry Huxley as “bulldog” who fought for evolution. If you can get one person who really buy into your idea, you are essentially multiplying your efforts. Be careful however, whom you chose as champion(s). Your idea will likely be tied to *their reputation*, and if they mess up, they take your idea with them (religious movements seem to suffer from this, when followers take matters into their own hands). Your “champion” might also take over your idea if he is louder and more effective than you are and becomes more associated with the idea. Promotor can beat you in being “a people person” because they did not have to spend so much time to develop the idea. In the worst case, they can not only take your idea but distort it for their own purposes (green movements that turned into a treehugging-festival-mentality movement is one example) or present it as their own idea — “only to help spreading the idea”, of course (no kidding, I have — hopefully now had — a colleague with this mentality).

“Technology is easy — people are hard.”
Unknown

Find an interpreter

Not the kind of self-proclaimed interpreters who cluster around creative people like flies and repeat what they hear, so that they might also be regarded as creative. Find someone who understands both sides and can actually translate your idea, find ways to better bring your point across. This is especially important if you work interdisciplinary or when you have to “sell” your idea to different departments of a company (e.g. marketing and production). You need someone with high *interactional expertise*, who is actually familiar with both worlds and can take the view of each, who can see your idea from different perspectives and translate them into the “language” of another department or discipline.

“When they explain which problem they are currently trying to solve, they don’t want to hear the solution from you when they have finished talking.”
A colleague of mine, regarding my behavior during the meeting of our work group — apparently, having good ideas is not enough.

Be remarkable

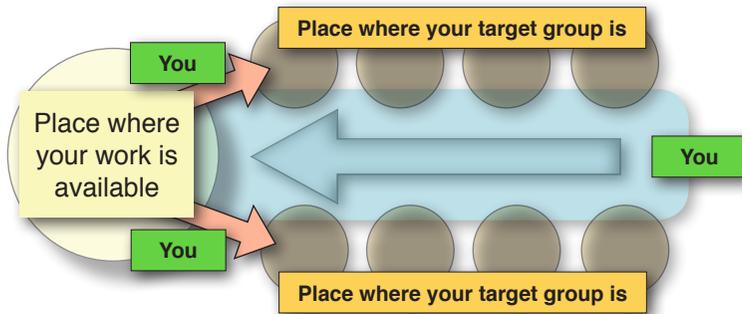
Seth Godin said it best in his TED Talks presentation: “Ideas that spread win” and

Communicating Ideas

to gain the attention of the field your idea has to be remarkable. It must tempt the field “to make a remark about” it, to spend their time on it. If you get people to talk about your idea (favorably), you get multipliers who spread your idea to other people, who will spread it again and again. But for this to happen your idea must be remarkable.

Lead the target group to your work

Find out where your target group is and point them to your work. If they do not know that it exists and that it might be interesting for them, they cannot appreciate it. Sometimes the target group will realize it mostly by themselves (e.g. your work gets published in a peer-reviewed scientific journal that is read by your target group, in this case scientists in your sub-domain, and is accessible via scientific databases). Other times you have to do a lot of work yourself (e.g. you publish a book of recipes via a book-on-demand service that serves special tastes — it is unlikely that your audience will visit the webpage of this book-on-demand service and see it there). So you must find the target group where ever it is and point them to your work. Today this can also mean *making your work available* at the places where your target group frequently is.



Ways of making your project available for the target group. Visiting the places where your target group is and pointing them to your project or making your project available where your target group is.

Communicating Ideas

CONVINCING OTHERS

Clarity and Simplicity

Imagine that you work in a research and development department of a large company. You have had a brilliant idea and a working prototype. One morning you ride alone in the elevator with the CEO. He asks you what you are working on. You have 15 seconds until the elevator stops, what do you say?

This classic (illusory) scenario illustrates a point: you have to be able to tell others about your idea in less than 15 seconds. This does not seem like much time, but you will be lucky if you get anyone's attention for so long, especially people who matter and who have a lot of more important things to do than to listen to you. *15 seconds*. Without hurry, without speaking in abbreviations, but slowly and determined. To do so, you need to be very clear about your idea, you also need to be able to formulate it in simple sentences. Do not try to use words that are so complex, so condensed with information that your typical addressee does not understand them. Sure, you could tell the non-technical CEO of your company in engineering terms, that you found a way to produce a central component with a new process involving method x , y and z and the new technical developments h , g and a taste of i , greatly reducing the waste of materials A , B , and C , conserving energy of xyz watt per unit and reducing the time to produce a unit to 32%. Or you could take a look at the issue from his point of view: "*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 we hope that this method gets accepted by our department boss soon*". Clear and simple, for his point of view.

One man's 'Simple' is another man's 'Huh?'
David Stone's law

If you can't write your idea on the back of my calling card, you don't have a clear idea.
David Belasco

Getting the gist across

You might want to present your idea correctly at all time, but keep in mind that your goal is to convince your audience. You are not aiming for a technical correct presentation but for getting *the gist across*. To do so, you must adapt it. Make sure you find the *right level of detail* of your idea regarding the audience. If you are working with computer science, a technical description is not the right way to convince an executive with not background in that area (unless you are really talking to his advisors who will translate your presentation later). Make sure you can get the idea across in a way that the important parts of your audience can understand.

GET VERY GOOD AT DISTRIBUTING IDEAS

Depending on the field that is able to judge your idea, make sure you can present it to them. This can mean that you have to be good at verbal presentation (do rhetoric courses and practice, practice, practice) or writing (there are courses and books for that too).

Be good with people

Convincing others about the value of an idea is not all hard facts. You have to convince people personally. You have to leave a favorable impression. This does not mean to act like a con man or even a bootlicker. It is neither being false to others nor being "good to" people on your own expense (see Dale Carnegie's books for inspiration). But your idea will have it much easier if the other side does not only like the idea but also interacting with the promoter of the idea. If you are so-

Communicating Ideas

cially challenged *then address this problem*. The most successful engineers (sorry for this example) are the ones who are good with people, not the smart ones or those who are purely dedicated to their work. In the end, only experience with people can give you the perspective and inner calmness to deal with others, but there are courses that can help you get there faster. You can also read the classics of self-help literature by Dale Carnegie, e.g. “How to Win Friends and Influence People” or “How to Stop Worrying and Start Living”, but keep in mind that self-help books usually leave the reader in an ecstatic mood but few long term effects. In the end, you need to change your behavior, get positive experience and reinforcement until it becomes a habit. Whatever you do, keep in mind what your goal is: to be good with people. If something brings you further to this goal, good, if not, it might be fun, but it is not helping you with your creative projects.

Advertisement

To get your idea to spread you need to advertise it, and you need to do it right. If your target audience already has a need for whatever your idea will provide, good, if not, then you will have to stimulate that need. Next you have to present your idea, not once, but repeated times. Be careful not to become obnoxious. Use different channels, focusing on the ones that your main target group uses. Given today's information society, advertisement is pretty easy and available to anyone. You do not need to start with Google AdSense. You can write articles and blog entries or comments, make flyers, posters, even YouTube Videos (if you are good) and much more.

Doppler effect: The tendency of stupid ideas to seem smarter when they come at you rapidly. *unknown, supposedly from a Washington Post reader submission word contest in which readers were asked to alter a word by adding, subtracting, or changing one letter and supply a new definition.*

Select an interesting topic in the first place

Convincing others is easier if you have the zeitgeist on your side. In times where people scream to security, ideas that go in this direction have it much easier. If the scientific community has developed a preference for studies with eye tracking, you have it much easier to publish your eye tracking research. Unfortunately, few people are powerful enough to set trends, to influence the zeitgeist, especially in a field that is comprised of highly individual people. But with enough expertise you can get a feeling for where the field is moving. You won't have this expertise as a young researcher or artist, but, at least in science, some directors of institutes have this perspective (mine has). They see through their work which projects get funded, which articles get published, they notice shifts in the field regarding different topics that are researched and methods that are used. While you should not try to run behind the train, trying to catch up with the latest hot topic (and given the time that is needed for creative research, always publishing when the topic has grown cold again), you can try to do research in those areas that are probably more relevant in the future. However, there is no substitute for interest. Do not choose a topic just because it will (probably) become hot in the future. But if you can find a topic (or a specific aspect) that interests you and that will become hot in the future, focus on it.

Press

Publicity is a double-edged sword: on the one hand, the press spreads your ideas, on the other hand, they can make or bury you. In science, while the press is nice

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for relatives and friends or even reports for the government, the press is largely irrelevant for the field (unless you are doing controversial research). The public itself is not the field, it does not fund you as a scientist, so convincing them that you do important work is not as important as convincing other scientists who will review your proposals. Given that science is often complex, you will also have a hard time of getting the research findings out straight. Complex interrelationships between different variables and conditions do not readily fit into a single headline. Often reporters want to be creative themselves (unfortunately often without understanding the facts) and few (if any) will give you their article before they publish it.

The press can paint any picture in any color.
Unknown

Discussing ideas in public

Even when a lot of communication today is done via eMail or traditional mail, sooner or later you have to discuss your idea in public. What sounded convincing in the secure walls of ones own head can become difficult to promote to others. Usually the enemy is already inside your own head.

That Censor in your head

The fear of failure is a common emotion in creative projects, and fear is the worst creativity killer. Fear of being ridiculed, fear of standing out in a crowd, fear of becoming unpopular. And creativity is not popular, especially not if it happens close by and changes the status quo for those around you. Being creative can make you enemies. But in most cases, the worst enemy is inside of our head. We stifle ideas before they even see the light, we do not say what we think, and when we imagine other peoples reactions it is often negative.

Ideas should be evaluated in an open discussion, not aborted in a quiet corner of the mind. If ideas are quietly discarded, the pool to chose from is limited and popular ideas (i.e. not the best) might win.

But what if I am wrong?

That's the fear, isn't it? What if I say something and no one likes, it people look at me funny, if I destroy my career? Creativity is not for the faint of heart or as Marvin Kitman once said, "a coward is a hero with a wife, kids, and a mortgage". Yes, you can be wrong and yes, it can look bad on you. So ask yourself, if the idea is worth it. Not all ideas are, but if you believe in it and yourself, fight for it, openly if possible.

Can't I do it anonymously?

Sometimes we wish that we can contribute our idea anonymously. But since ideas cannot fight for themselves and it is rare that someone understands and realizes

"Hello ... hells, Glod, tell me where we are ... Sto Lat! Yay!"
"Soul Music" by Terry Pratchett

There is a policeman inside our heads, and he must be destroyed.
Motto of the 1960s Yippie self liberation movement

IF POSSIBLE, FIGHT FOR YOUR IDEA OPENLY

Anonymous improvement ideas are a nice option, but an anonymous idea lacks the support ("Not even the person who had the idea believes in it enough to stand behind it!").

Ideas must be communicated openly to be improved.

Some men see things as they are and ask why. Others dream things that never were and ask why not.
George Bernard Shaw

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an idea of someone else, without your support the idea often will not survive. And why should it, even you, its creator, do not believe in it. So, in most cases the answer is no, you cannot do it anonymously.

Be a good presenter

The best idea will die if it is presented in a boring fashion with a tiny voice, coming from somewhere behind a notebook where the presenter (and inventor) hides. Holding a presentation, stepping in front of other people and trying to convince them of your work, can be terrifying. If your own doubts are not enough, there are other people who watch your every movement, who will likely crush your dream if you displease them, who might even laugh at your ridiculous idea. Ok, probably not, but you might feel so. There is bad news and a good news regarding presentations: unfortunately, there is (often) no way past a presentation if you want to promote your ideas. Others will want to hear it from you, and they want to see if the idea is any good, and one criteria is if the inventor will stand up to it. But on the positive side: presentations can be trained. A neurotic introvert will probably never become the motivational speaker of the century (or he found a motivation strategy that worked for him), but how to hold a convincing presentation can be trained. A good course will not only focus on the way you create a presentation, on the thread, the key points, how you present the information and in which way and order. It will also focus *on you personally*: on your voice, your posture, your movements of your body and your arms, your facial expression. You will have the opportunity to hold some sample presentations in front of the course, get detailed feedback, sometimes even per video, and get feedback that will work for you, *because it improves your impression without trying to make you someone else*. This might sound scary, holding presentations in front of others, even if it is only in a course, with the looming big presentation somewhere in the future where you step in front of your colleagues, but it is the only way to learn to present your ideas. And unless you can do this, you cannot convince others.

“Oratory should raise your heart rate. Oratory should blow the doors off the place. We should be talking about not being satisfied with past solutions, we should be talking about a permanent revolution.”
Sam in “The West Wing”

Tell a Story

One of the most powerful ways to convey an idea is storytelling. It is not lying or exaggerating, but packing the idea in a story that illustrates the point, e.g. the problem in the present, the possible future how it could be, and the way to that future (via your idea). You have to be rhetorically savvy to promote an idea that way, you have to capture the imagination of the audience, and you have to tell it convincingly that this future could be realized this way. But if you are comfortable talking about your idea try this as an intro to your presentation. A story that bring the idea into a concrete example can help your audience to understand the fact much better than a down-to-the-bullet-point approach.

Show an example

Sometimes a simple demonstration has a larger impact than raw data or statistical analyses. For example, some engineers had trouble understanding that their washing spindles were too complicated to use. What finally convinced them were not a print out of customer complaints but a videotape of rural housewives from a poor educational background trying to put them up. It is one way to tell an engineer

Communicating Ideas

that “pulling the cord at 45°” is too complicated, but another way of showing him a video how (many different) housewives pull it at a much steeper angle, taking the washing spindle out of its anchor and injuring themselves.

Make numbers alive

Imagine a minimal difference between two drugs in effectiveness, way beyond the comma. How can you tell others that this tiny difference is important? Translate the numbers to cases: If we take the 10000 people that take our drug every year, *two will die*. If we change the process than *at least one of them will survive*. One person will be alive who would otherwise be dead, because we made our drug more effective or more secure. Translating it this way make the case not about a difference behind a comma, but about the life and death of a person.

Be unconventional if your idea can get noticed this way!

This can mean that you leave your poems on the usual dinner place of a famous poem (well-recognized expert in the field) to get his attention (and the attention of the field). It can mean to distribute hand-outs in an all powerpoint marathon to get the input of the participants. It can mean to distribute posters all over town at night to advertise your tiny theatre.

If it was attention I wanted,
I'd take off my clothes and
walk into the street.

Dave Matthews Band

Whatever you do, make sure that your idea is visible and that others come to the conclusion that the idea is really good (and not just a simple distraction that they deign with attention for a few seconds). Keep in mind that it is not just attention you want, which is easy to get, but that you want to communicate your work. People must talk about your idea, not yourself.

Make them believe it was their idea all along

Most people hate the bleak work they have to do after someone else had a brilliant idea, but *they will valiantly fight for any idea they think was theirs*. You loose the credit but might get the necessary support if you sell the idea like it was the idea of the important opinion leaders all along. This usually means that you give the person whom you want to have the idea all steps immediately prior to your solution. If you are “lucky”, the person will do the last step himself. If not, you can make suggestions, hints about the solution. Keep in mind however, that this is a poor way to realize ideas. You will not get any recognition, and what is worse, someone else will (and *for all that he knows he had the idea himself*), someone you see every day of your work. It is probably easier to switch jobs or try it another way.

Show Determination

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. “*Harry Potter and the Philosopher's Stone*” was handed to twelve publishing houses before it was accepted. “*Schlafes Bruder*” had a similar fate. In the end, they turned out to be public successes. The same might happen to your idea, your story, your artwork, or your business proposal. Mahatma Ghandi once said: “First they ignore you, then they laugh at you, then they fight you, then you win.” This does not mean that resis-

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tance is a necessary condition of a great idea or that every opposed idea wins in the end. Some ideas are rejected for good reasons, e.g. the thought that you can live on sunlight alone or the drinking of urine to fight diseases. But just because you have a great idea does not mean that your idea gets immediately accepted by everyone. There are still people who will not use a car or a computer. People who reject vaccinations or blood transfusions. If the people who do not like your idea are the majority, you will have to battle hard and long to convince them.

Communicating Ideas

PUBLISHING

As said, compared to earlier centuries, we live in a golden age of creativity. Not only are the tools and knowledge widely available to be creative, but so is the access to the field.

The internet has not only given us access to thousands of galleries, but also to stores that *will* publish your work. While this enables you to potentially reach the field and even special interest groups along *the long tail* (see Anderson, 2006: *The Long Tail: Why the Future of Business Is Selling Less of More.*), it becomes very hard to get noticed.

Publish the best, ditch the Rest

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. In earlier times the space restrictions of physical galleries or printed books would set the limits, today you have to do so yourself. Do not be tempted by the unlimited storage of virtual galleries but make a careful and hard selection of the best works. This can even help you to appreciate your work more. A year after I started with photography I made my first portfolio. I had to choose pictures for 100 pages that were available to me out of over 5000 pictures I had taken. This forced me to find the really good pictures in the mass of photos I had taken, and it helped me to get a realistic impression about the quality of my work.

Use the Long Tail

The advantage of the internet is, that followers of any interest can meet there and form a group, no matter where they are situated in the physical world. If you create something that is appealing to a specific subgroup, you might be able to reach your customers, even if they are only a handful and scattered over the planet — if you can find them online. Chris Anderson's book "The Long Tail" is very inspiring in this matter. Given that your creative interests match with their preferences, you will probably have an idea about the communication channels your interest group uses, the places where they meet, the forums, the webpages, the blogs. Try to make your work known there. If your work is appealing only to these individuals and you know where they are, and with the internet you can reach them cheaply, then by all means, do so. Take care however, to watch the etiquette of the group. Commercial advertisement might not be tolerated. You can side-step this by writing your own blog about related issues and try to get members of the group to visit your blog, where you can advertise for your products.

Do not try to convince everybody

There are people whom you cannot convince, never. For example those people whose life work you will invalidate. Or those who hate your guts for whatever reason. Science should be all facts, but unfortunately,

KEEP TRACK OF HOW YOU DISTRIBUTE YOUR IDEA

Keep notices how and where you have presented your idea, which people you have show it and what the current status is. If you have difficulties remembering people try a Farley File: record immediately after each conversation what you discussed with the person and have a look at your file the next time you know you will interact with that person.

Communicating Ideas

it is not, and the evidence of theories is rarely 100%. If these people dominate the field you will have a hard time, but this is rarely the case. Often there is a competition somewhere that is more open to new ideas.

A silver lining: the people who cannot change their minds because they are heavily invested in the current ideas, are probably people in the middle or during the end of their career, meaning that they are older and have a lower life-expectancy than you have — you will probably outlive them. If you become older, try to be more open minded than they were, when you are the guru and some young creative comes with a better idea.

Communicating Ideas

PROMOTING A REALIZED PROJECT ONLINE

Keep the following things in mind if you want to realize a project online.

A bad idea does not get better online.
IBM

Find the right time

There is no shortage of ideas online. Like stated a few times in this book: having an idea is not the problem. Good ideas are rarer, but they are still common. What makes the difference is having a good, realized and actually working idea. It must be usable. It must be finished in the sense that all that is missing is the reaction of the field. If it is a program, it must be working and easy to use by the audience. If it is a book it must be finished, well-written and proof-read. Promoting ideas is not about getting input from others, you should have done this earlier. It is promotion, not ex-ante or formative evaluation. There are a lot of people online advertising (sometimes with a strong streak of paranoia) their idea. Make a difference first and realize the idea before you go public.

NOT NECESSARILY ABOUT MONEY

Even if your project is for free, it still applies. What you want is that others use it, that you did not only create it for yourself. That others find it useful. And what you get, if you want it or not, is a reputation according to the quality of your project (and some other factors, e.g. it is hard to get a good reputation if opinion leaders do not like you). And reputation can be a currency as well, e.g. for getting additional information, being "in the loop" and even for job applications.

Do not SPAM

The main difference between promoting your ideas and SPAM is selecting the right audience. At earlier times you had to be selective when you advertised to the public by mail, because mail did cost money. There were ways to reduce this cost but for goods that did only appeal to a small part of the possible reachable people, you had to select. The internet makes it very easy to reach a large amount of people. It makes almost no difference (in money) to send an email to 20 people or 20 million. But it makes all the difference in the reaction of others. SPAM takes time, it puts you in the same category (i.e. SPAM folder) like Viagra ads and Nigeria Scams.

Select the right audience

Promoting your finished project is about showing people who *would be interested in it* that you have something that is of interest to them. This makes all the difference whether your promotion is regarded as SPAM or as useful information. I avoid the word advertising here, as I see it closer to SPAM than to information. To be informative, it must be interesting to them, it must be valuable. Not because you think that they would be better off if they use your project but because it fulfills a need they have, and does this very, very well. Since you are probably part of the audience (i.e. the field), you probably also know where people are who have similar interest as you have. Which kind of forums they frequently use. Which mailing lists they have subscribed. Which blogs they read. Be careful not to go too broad or too small. Make a list. Prioritize. Which places are really important. Since you need to do more than simply write a post there, make sure that you can manage the amount of places.

Get to know the house rules

First find out if the place where your audience gathers does actually allow ad-

Communicating Ideas

vertisement. Most places probably do not, and the last thing you want is getting kicked or ostracized from your peer group. Even if it is allowed, be subtle. It is easy to simply make an entry, e.g. in a forum, or a comment in a blog, that you have a written a program that makes this-and-that easier or written a book that contains information they “will” find interesting, and costs only €9,99. And in most cases — no matter how good it is — it will have exactly one effect: it will annoy people. Most of these places are places of information exchange, free information. And you just turned it into a marketplace. Sure, there are probably ads, but mostly they are external ads (e.g. via Google AdSense). This does not mean that it is impossible to “advertise” your product in a forum or a comment in a blog, but make it an information, not something you find in a catalog.

NETWORKING IS CRUCIAL

Once again people who know a lot of other people (i.e. can and did network) have an advantage. This might sound unfair because it has nothing to do with creativity, but that’s just the way it is.

Get to know the place

If you already know it and are known there, excellent. If not, you have to get to know the place. Who contributes valuable information? Who are the trolls? Who the jackasses? Who are the opinion leaders? Who the followers? This takes time and explains why you cannot choose to many places in the first place.

Make a contribution

This is your audience that you are seeing in the forum. The people who might profit from your project and you might profit from them. Do more for (to) them than simply informing them about your project. If you have created something, you often have acquired knowledge or skills, so share them with others. Answer questions. Make comments or give feedback. You can leave a link to your webpage at the end of an entry. The webpage will contain the project you did and specify where to get it and to which price if you do sell it.

Write articles

One of the best ways to inform about your project is to write an article. Discuss what you did and give information about it. A shorter, more superficial version of your book or a statement of a problem and the way your program solves it. Give them something valuable even if they never use your product. Conclude by pointing out to your project, e.g. where they can find more information if they liked the information you have already given them.

Worst Cases

Creativity is inherently risky. At the beginning of the book, we already mentioned a few of the dangers of creativity. Now, if you have invested a lot of time and effort into a project, the outcome might be widely different than you expected. Someone might have beaten you, you might be left without money or job, the idea might be good but the field is against you, the idea might have failed or be impossible (for you) to do or you really are not good enough or you simply cannot finish it.

Of course, you might also have success (see page 359).

PARALLEL CREATIVITY

Whom do you associate with evolution? *Charles Darwin* or *Alfred Russel Wallace*? Both had (similar) ideas about evolution but while everyone knows Darwin, few know Wallace. Of which fictional character do you think when you hear the following attributes: young boy, realizes that he can do magic, gets an owl, and attends a magic school? Of *Harry Potter*, created by *R.K. Rowling*, or of *Timothy Hunter*, created by *Neil Gaiman*? These and other examples illustrate that creative individuals are subject to the zeitgeist in the way that multiple people can have the same idea at the same time and that — in most cases — only one is widely remembered (or remembered at all).

Actually it is a very good thing (but not for you)

Parallel creativity is actually a very good thing. Not for you, but also not only for the one who beat you. If a unique idea occurred only to a single individual and no one else, that idea would be lost if this person could or would not realize the idea. And few people will invest a lot of time and resources in developing an idea to a creative product or process. So, the inevitable zeitgeist and diverse pulls and pressures (e.g. demand, drive for fame, available knowledge, etc.) lead more than one person to the same idea. Nature bets on a lot of horses, hoping that one gets through. This also means that it is not the end of the world (except in a case of a very, very bad timing) if you cannot realize an idea. The idea might be realized sometime later and history might turn out a little different (especially for you) but the idea will probably not cease to exist.

But unfortunately, this also means that someone else can have the same idea. And an edge in developing it that beats you to the point.

This has nothing to do with Plagiarism

Sometimes people plagiarize, but parallel creativity is not plagiarism. It is not an individual copying

"Don't Panik."
"The Hitchhiker's Guide To The Galaxy" by *Douglas Adams*

FILE FAST

Since the recognition usually goes to the one who gets it out first in the accepted ways (e.g. patent in engineering, publication in research) get it out fast. Make sure it works and that everything is in order but then get it out with your name attached to it.

A German mathematician worked on a difficult proof for some years. When he finally did it, he found out that someone beat him by a few months. He never attempted another proof.

The shoulders of Giants are full of Newtons.
Unknown

All my best thoughts were stolen by the ancients.
Ralph Waldo Emerson

Worst Cases

what others do without stating the sources (and promoting it much louder), but the available work and the the zeitgeist pointing multiple people in the same direction.

Who wins?

In engineering it is usually the one who first files the patent, in science it is usually the first published publication, and in art it is usually the one with the better PR. There are some exceptions. In some cases the recognition is shared, if one of the inventors finds it fair to do so or the authorities decides so (as with some Nobel Prizes).

Adam was the only man who, when he said a good thing, knew that nobody had said it before him.

Mark Twain

It happens but what do you do with it?

Unfortunately, parallel creativity just happens. Without malice, without bad intentions. Both groups work at the same solution but one inevitable is first. What do you do with it?

In science and engineering the best you can hope for is, if the other side acknowledges your work. Even if you will not get a share of the patent, you might at least get formal recognition. Some discoveries are named after two (independent) discoverers and even Nobel Prizes were awarded for different scientists.

Sometimes the discoveries are slightly dissimilar and can still be published if you focus on the dissimilarities or go further than the previous authors. You can also watch how the public reacts to the invention and modify your work accordingly. If you are still in the development phase you might be able to integrate major changes faster than the competition or avoid major (costly) errors they made.

One bad cold and someone else beats you to the finishing line. I could have finished it first!

Unknown

Alando was an internet auction house programmed by German entrepreneurs. It was second to ebay but important enough that ebay bought it for 43 million dollars. Not bad for coming second.

Given that you were both working on the same project you might even try to join resources, sharing your expertise. Almost no scientific projects end up explaining everything about an issue.

A personal case of parallel creativity

While writing this book I stumbled upon a blog entry that was recommending some quite similar things to what I did. It even used a language similar to my own and the notion that the best ideas come anytime and anywhere and all you have to do is to record them. I was not pleased to read this article. Knowing that someone did something similar, perhaps having the idea before me, hit hard. But then I began to recognize that some of the ideas might be based on quotations that were uttered long before either of us had the idea. For example, John Locke said that "The thoughts that come often unsought, and, as it were, drop into the mind, are commonly the most valuable of any we have." This was in 1699, so, maybe Locke beat us both in this point. As I searched around I found out that other people were recommending similar things, including Francis Bacon, when he said: "Write down the thoughts of the moment. Those that come unsought for are commonly the most valuable." This was even before Locke. I began to steel myself that others might do similar things and began to *look for differences*. And there were a lot, at least between

Worst Cases

the blog entry and my work. He recommended planing a time for brainstorming, I consider it a waste of time. I have a look at the whole process from generation to implementation, he did not. In time, my anxiety began to subside and I continued working on my project. The ideas may not all be new, not even the words, but the combination, the emphasis on specific points, the wording, these are unique and were not written like this before.

Worst Cases

NO MONEY, NO JOB

One of the worst thing that can happen is, if a creative project undermines your very existence. If a project fails, and does this spectacular enough, or if it drained too much attention and effort from your work, you might end up without money and without a job. This will rarely happen with private projects, at least if you keep a balance between your work life and your private life. Even if you have a brilliant idea, do not quit your job to follow it. In most cases, you can follow your dream and your job at the same time, at least until you see whether your dream can become reality or not (see page 54). Unfortunately, with the huge emphasize on individualism and creativity, as good as this is in itself, some people think they should quit their boring day job and try to focus on their creative profession. The exceptionally successful exceptions are widely known, the rest applies for social services after a few months. It is easy to be swept away by the ecstasy of being creative, especially in art (musicians seem to have a special vulnerability for this but at least they can earn money on the street).

So until you have made a reputation for yourself and a steady and reliable stream of income, do continue working with your current job, even if it is “only to earn the money”. If you want to be creative you will find the time to do so while working a normal day job. If you risk it before becoming proficient enough (i.e. having the skills, knowledge, reputation, contracts) you will not have the time to do anything, nor the money.

Worst Cases

THE FIELD IS AGAINST YOU

They are rare but they happen, the cases where a good idea gets rejected, not due to its quality but due to the effort of the field. Some ideas are too strange for the current zeitgeist, too radical, too different to be accepted. Today we laugh about those who did believe that the earth is flat, or that the earth is about 6000 years old (except in certain parts of the only remaining superpower), but even if we live in an age of reason, there is no reason to believe that something like that cannot happen today. Perhaps not on that scope, but individual scientists (or artists) can face opposition by the ones who control whether something gets accepted into the domain, not because they (rather: their ideas) are wrong, but because the current guard does not believe it is right. And sometimes, it is not the whole field, but one or a few adversaries that make your creative life a living hell. Depending on the power of the enemies it makes realizing the idea inconvenient to impossible. See page 350 if you cannot realize an idea. For now we look at a field that makes realizing the idea inconvenient and is hurtful in its feedback.

BE CRITICAL ABOUT CRITIC

Make a list of people whose critic is important to you. Look at the critic in descending order of priority.

Ignore negative feedback if you get positive feedback from the people that matter.

Other people can undermine your creativity

While other people are important for feedback and support, they can also be hell on earth.

Clipping wings

Yes, people love creativity. But they love it done by people with whom they have nothing in common. Some people do not like others to be creative (or more creative than they are) and if they are, they like to clip wings. They think that they will be more creative by comparison. Once you have found out who these people are, protect yourself against them but for the most part, try to ignore them. They will neither profit you nor your projects and there is not much you can do about them. You could laugh if they did not do so much damage.

"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

Mindlessness

If we are hurt, we often think that it was done intentionally. Most often, it is not. Other people can just fail to see the importance of the project to you, and not everyone knows how to give constructive criticism. If they are important to you, try to show them what your work means to you.

Lack of understanding

"But ... what is it good for?" — some people just do not get it. How could they, your idea is new and might not be obvious to anyone but yourself. If these people are important to you (e.g. they decide whether to finance your project or not), try to communicate your idea more clearly, find ways to illustrate your idea that other people can grasp (see page 328).

Worst Cases

Conclusion

Be careful whom you show your work and whose feedback you accept. Not all people can understand your work, see its importance (even if it is only to you) or have your best interest in mind.

Other people's opinion of you does not have to become your reality.
Les Brown

The advantages of negative feedback

A person giving you negative feedback is not necessarily a bad thing.

It can improve your work

Face it, sometimes you are dead wrong or you missed something. While negative feedback hurts, someone pointing out what does not work also helps you to focus your attention on that point. Do not expect the person finding the flaw to provide you with a solution. Some people actually think that someone who spotted a mistake in their grand work must also provide the solution ("or they should shut their mouths"). *This is stupid.* It is not the assignment of the critic to do your work, not are most critics able to. The ability to spot a mistake or where "something does not work" is vastly different from being able to correct it (see page 306 and page 314). There is probably no one who knows as much about the subject as you do, so do not expect a critic giving you the answer you were unable to find. You want the credit for being creative, you have to do the work.

It can show you what and how your enemies think

Do not solely look at what is criticized but also how. What kinds of arguments are used? What is considered as proof? What does their critic tell you about their work? If you are engaged in a debate this information will help you to defend yourself against criticism by making their strategies public, bringing the critic on a meta-level. If you get the impression that you cannot convince your enemies because you do not speak the same language concerning arguments and proofs, try to aim for the undecided, the middle ground. There is no reason to try to convince hardcore creationists who have invested years upon years in their "theory" and cannot change (or it would invalidate a huge part of their lives). But you can look at the arguments and convince the middle ground, taking potential followers away from them.

"No additional shot nor powder, a compass that doesn't point north," [looks at Jack's sword] "and I half expected it to be made of wood. You are without a doubt the worst pirate I've ever heard of." "But you have heard of me."

Norrington and Jack Sparrow in "Pirates of the Caribbean: The Curse of the Black Pearl"

It can show that you hit a spot

Especially if you are an artist negative feedback can actually be desired. You are out there to change things and negative feedback shows you that you were heard. People might not agree with you, but they sure did notice you. If your goal is "simply" to make a matter known, this might be enough. But if you actually want to change things, make them better, negative feedback is not enough.

There is only one thing in the world worse than being talked about, and that is not being talked about.
Oscar Wilde

Worst Cases

It can be ignored

There will not be any creative work that is liked by everyone of this planet, likely not even in your immediate environment. So it does not matter if there is negative feedback.

What matters is negative feedback from the people that matter.

Creative people sometimes think that just because someone does not like what they are doing they have failed. They have not. If one person likes yellow and the other blue, there is no way to satisfy both (unless they both like green). So make sure to ignore negative critic (especially hurtful critic) from people who are not important for you or your work.

"An insult is like a drink; it affects one only if accepted. And pride is too heavy baggage for my journey; I have none."
Star in "Glory Road" by Robert A. Heinlein

Worst Cases

FAILURE

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”. I think he is right in this regard. Creativity, innovation, is not playing it safe where you can reasonable expect that (almost) everything you do will work. It is not plugging in the toaster and expecting it to work. It 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.

“If you can’t take a little bloody nose, maybe you ought to go back home and crawl under your bed. It’s not safe out here. It’s wonderous with treasures to satiate desires both subtle and gross; but it’s not for the timid.”
Q in Star Trek TNG: “Q Who”

Failure is the opportunity to begin again more intelligently.
Henry Ford

Kinds of failures

Minor errors

Minor errors are common. You have not done it before, neither has anyone else (so far as you know), so it is expected that some things do not turn out the way they were suppose to. See page 295 and page 325 for more information.

Major conceptual errors

Even with the best preparation (learning of knowledge and training of skills), it is still possible that you have overlooked a serious aspect. Your project might not work how it was supposed to. But sometimes you can make changes that will still allow your project to come out as a success. See page 348 and page 325 for more information.

Complete Failure

Sometimes you know that a project will not work (see page 285). Either by your own conclusions or because someone else told you. While you still could both be wrong, there are some kind of failures that are final, usually when a project gets cancelled by someone else and you cannot continue it due to lack of funds. Even when a company or a sponsor ceased to support a project, sometimes the involved people tried to push it forward, even with their own resources and money (esp. in software engineering). Sometimes it is escalating commitment and sometimes the developers see the strength of the solution even if the sponsors do not.

If a project gets cancelled

No matter if by someone else or if you quit (likely when it is a private project), the project is cancelled. What do you do now?

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. You might not have bound a perfect book because the glue did not hold, but perhaps you have learned a lot about formatting and printing a book. Your team might not have developed an in-ear-cell-phone but you have made advances regarding the

It is a mistake to suppose that people succeed through success; they often succeed through failures.
Unknown

Worst Cases

miniaturization of key components. These milestone or important steps might not be as great as the project goal, but sometimes they too can have worth. So far they were only seen as parts of the project, have a look at them to find out if they can lead to another project or if they have worth on their own.

What did you gain from the project?

Even if the project failed, this does not mean that nothing positive happened during the time you worked for it. Given that you worked with new materials and techniques, you probably have learned a lot and improved your skills. You have gained experience that might help you to do better on other projects. Just because the project was a failure, does not mean that it must have been a failure for you.

That some good can be derived from every event is a better proposition than that everything happens for the best, which it assuredly does not.

James K. Feibleman

Why did the project fail?

It is a trite saying that we learn from your 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). Find out *what* went wrong and *why* — and *how* to prevent it in the future.

Worst Cases

NON-REALIZABLE IDEA

If you have many ideas, all but a few will be beyond the scope of your capabilities to realize. While Edison had his research lab where he delegated his work (and even he had to consider the bills), most of us are lone creatives without these resources. We lack time, money, interest and motivation to realize all the ideas we have. In most of the cases, this is no problem, as we have other, realizable ideas that keep us going until we die (see page 353).

However, what do you do if you have an idea which you really want to see realized but you lack the resources or skills or knowledge to do so?

Put it in the (virtual) drawer

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 if 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.

This is fine, it can be done at a later time.

Try to bring it out in another fashion

Some great scientific ideas were first written as science fiction stories by people who had the imagination but not the necessary resources to realize them. Sometimes they were so advanced of their times that the technology was considered possible but no techniques were known to realize it. So, while it was not possible for them to realize it physically, but they could put it in a story, describe it and explore its effects.

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).

Delegate the tricky part

If it is simply a matter of skill or time you often can delegate it. 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. In art there are craftsmen for almost anything that will happily try to realize your idea. Got an idea for a dress but cannot sew?

IF YOU CANNOT REALIZE AN IDEA YOURSELF

Put it on hold.

Try to bring it out in another fashion.

Delegate the tricky part

Set your idea free

Wormholes were first introduced to the public over a century ago in a book written by an Oxford mathematician. Perhaps realizing that adults might frown on the idea of multiply connected spaces, he wrote the book under a pseudonym and wrote it for children. His name was Charles Dodgson, his pseudonym was Lewis Carroll, and the book was "Through The Looking Glass".

Michio Kaku, "Visions - How science will revolutionize the 21st century"

Can build plane ... Delivery about three months.

Donald Hall, Chief engineer, Ryan Airlines, to Charles Lindbergh's request for feasibility of the airplane later known as "The Spirit of St. Louis"

Worst Cases

Get a seamstress do it for you. Got an idea for a beautiful desk? Ask a carpenter. In science some of the best scientists work on theory and study design and delegate the actual realization of the studies to their students or assistants. This is actually a very efficient use of time if you can delegate (which you will have to learn) and get your idea across (see page 328), at least *as far as the person needs to understand it*: A craftsman is often more skilled than you are but you have the expertise to generate good ideas. Or compared to business: an CEO gets paid too much money an hour to waste it on typing a simple letter.

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*. Additionally, most people like their own ideas better (even if they are inferior) and will try to avoid to do work on order. You have to give your idea to the right person in a way that it itches the person to realize it, not just snip out in the world. See page 328 on communicating ideas to get it across.

Ideas rot if you don't do something with them. Don't hoard them. I blog them or otherwise tell people.

Edd Dumbill cited in Danny O'Brien's presentation: "Life Hacks: Tech Secrets of Overproductive Alpha Geeks"

Worst Cases

TOO MANY IMPLEMENTABLE IDEAS

You just filled notebook no. 100 and more ideas come pouring in. Your wiki or database does not fit on a CD anymore, and you hear the last grains of sand rinsing through your hourglass. Under these circumstances, publishing your ideas as a whole might be a worthwhile course of action.

“Let’s put it on the Internet!”

“No, we have to reach people whose opinions actually matter.”

Unknown

In the best case, you spend some time tidying them up so that others might easily understand it, but even if the time is too short for this, publishing them is better than losing them. If they are stored digitally bringing them on the internet should take little effort. Perhaps nobody is interested in them, but perhaps there are some people with a lot of energy to implement ideas out there who are simply lacking a brilliant idea. They might stumble over your work and find what they need.

The chances are better compared with what would otherwise happen to them.

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DEATH

Your death must not mean the same for your ideas. This is not about remembrance or becoming immortal (in the Jesus/Elvis-kind of way), but about the realization of projects that were either started or are still in the idea collection in the event of the death of the creative.

Organizationally planned

Some large projects, e.g. longitudinal studies in psychology or space exploration probes, will not deliver (all) their data until the original scientists are dead or retired (e.g. dead to science). The organization behind them (research institute or company) will make sure that the project is continued. A golden rule for companies is that no employee should ever be irreplaceable (otherwise extortion is possible). This also means that all research should be well documented in case a researcher dies.

Organizational expected death

In the event of retirement (organizational death) some (but not all) organizations include a transition phase. Organizations try to capture the expertise of researchers, especially if they failed to introduce organizational structures to do so (e.g. clear documentation, reports and training of successors). Scientists at universities sometimes try to find people who continue their work.

Untimely death for scientist

For normal creatives, untimely death usually means the end to their creative ideas until others have the same idea (and then it is no longer their own).

Current projects of interests

Projects that are done with the interest of the researcher as motivator might get finished by other scientists, but I would not count on it. Unless one has established a tradition that the university wants to continue, the successor probably has his own interests and will deviate from the previous work (at least, if he is creative himself).

Current financed projects

Payed research has a higher chance to be finished if the company or organization is still interested in it and has the necessary resources. However, whether the successor will actually use the work of the previous researcher is not certain. The person has probably his own approach or his own solutions.

Ideas in the collection

The likelihood of realization drops is probably very low for projects that are still in the idea collection. For these kinds of ideas to be realized, the deceased must first (have) draw(n) people who think that he has had some important ideas still in planning, they

FIND SUCCESSORS

Spread your love of being creative to others, e.g. your children or the world as whole.

Start your own school (possible in art and science).

Spread your methods and perspective by teaching or publishing them.

"Before us, instinct-ridden researchers possessed a limited attention span — often no longer than a single lifetime. Projects stretching across fifty or more lifetimes never occurred to them."

Bene Gesserit Creed in "Dune Messiah" by Frank Herbert

"What do you do if you die before finishing the full B5 [sci-fi series] storyline?"
"Well...decompose, mainly...."
Viewer and JMS, the creator of Babylon 5 (sci-fi series)

Worst Cases

must find the idea, understand it (documentation?), consider it worthy to be realized, develop it further (without your unique background of knowledge and perspective), and have the means to realize it (money, access, skills). Unless you are so famous that they can use your name as powerhouse to get it realized, they would have to be so honest to admit that originally it was your idea. Highly unlikely.

It might happen for da Vinci but not for mere mortals.

Plan for the worst

However, it might happen, or at least someone might try to make it happen, and in this case you should make it easy for them. J.R.R. Tolkien, Frank Herbert and others have had people (often relatives) who continued their work, and if someone is willing to do so you should help them while you still can.

Make sure others know that you have an idea collection, that you want your ideas continued after your death, and that you give them the means to access it (at least in your testament).

Some very successful people start foundations that continue their cause after their death or make sure their works are safely in a museum as a permanent exhibition.

Do not count on it that anything survives

Your body might not be the only thing that gets cold after your death. Try to realize your ideas while you still can. Do not accept retirement as a ban from your profession unless you want to.

You have only a limited number of years available. Make sure you spend your time as best as you can, whether you work on creative projects or not.

What is remembered?

Researcher in smaller projects and of little fame can only hope that their *previous publications* will inspire others to continue their work. At least their publications will probably be stored for a very long time in scientific journals. A student might remember you for a while, but not beyond his generation. An artist can only hope to reach the *critical level of fame* that his works get accepted into the domain, that galleries will display his works. Otherwise they might at least end up in the storage facility of a museum or gallery. Very good artists can also try to *start a school or a movement*. And for private projects? As long as the family keeps its deceased member in mind, it might survive. Then it depends on the quality whether it becomes a *heirloom* or *sold* or *discarded* during the next generational change. One way to increase the probability that it becomes a heirloom is to choose a project that might have meaning to

MAKE PLANS IN CASE OF YOUR DEATH

Determine one or more persons in your testament that can and are likely to finish what you have started.

Make sure your work will well-documented in the event of your untimely death.

Make sure that your work is accessible after your death (e.g. passwords, file organization).

DO NOT COUNT ON THEM

Even if you are famous, death can change the impression of work you. Some artists gain worth after their death, most wont. If a lot of your work consisted of promoting your artwork, do not expect that after your death everything will run by itself.

If the doctor told me I had six minutes to live, I'd type a little faster.

Isaac Asimov

Every word written is a victory against death.

Michel Butor

Worst Cases

the descendants, e.g. a family chronic. Given that family members come in all types and are no museum restaurateurs, it should also be fairly rugged.

Worst Cases

YOU REALLY ARE NOT GOOD ENOUGH

You have started your project and you can clearly see where it is going. You take a confident look at the journal where you want to publish your work and you feel like someone punctured your chest. Not only are there other people who work in similar (but not necessarily the same) areas, they play in a far superior league way beyond your limits. This realization hurts and can lead you to end your creative career in desperate resignation. I am speaking from personal — painful — experience when I write this, although I should have been forewarned, when my mother could not tell the sex of the people I was drawing — *damn it, I drew them with breasts!*

This scenario is not specific for artistic talent or the lack thereof. If you ever read an excellent review by an experienced professor in any subject of academia, you become intimidated: they know the topic in a breath and depth that is incomprehensible to most novice, they see connections, and they can write.

Sometimes the realization describe here, as hard as it feels, is justified. There are people without talent whose best is not enough for the harsh competition in art and academia. But keep a few things in mind:

Change your perspective: It is not about being the best, it is about your fun

Running is a favorite exercise for millions of people, yet most will never win Olympic gold. A lot of part-time artists are similar: they need their art to express themselves like a jogger needs to run, but they do not want to make big money. And with art there is no clear “best” anyway: even drawings that are indistinguishable from those of children get sold (only kidding, well partly). The major point here is that you probably do not do this to show the best technique, or have the best eye, or produce the best sound, but to express yourself and have fun. And no competition can take this from you. One violinist started playing much, much too late to ever reach mastery, but he played with great enthusiasm. He never became good enough to play in an orchestra, but he nevertheless loved to play. When he was retired he travelled around and met many very good musicians and he played a few tunes with them. And he played for anyone who would like to listen. Did he become a successful artist? Not by the standards of any record label or music teacher. But he brought joy to other people and to himself, and what more is art about?

If you compete, compete against yourself

It is easy to loose if you compare yourself with others. How can you know more than someone who grew up as the child of an important professor or artist? Or as someone who has better genes, or got trained much earlier? Comparing yourself to others at an early stage of your career, academic or artistic, is unfair because most of the time you are still so young that your background has the largest influence in your current performance. And you can neither change this nor are you in any way responsible for it. But most careers take a long time to develop and the influence of your family and early training will decrease. Others might have an head start but unless you are working in an area that has any direct link to a sensitive period in childhood (which might be the case with some musical instruments) or the race is over pretty soon (like in some sports that you can only do when you are young), there is no reason why your performance should not increase over time. Nobody can guarantee that you become “better” than the competition — whatever this “better” might mean (e.g. earn more money, become more famous, get more

Worst Cases

original ideas accredited — this does not necessarily have anything to do with talent) and whoever is to judge (e.g. the customers, the critics, the colleagues, the parents?). The best way to improve yourself and keep your motivation is to compare your work against your prior work. Some slumps are part of the process but most of the time your new work will be better. Make your prior self your principal enemy against whom you try to win and learn from others to do so.

Change the playing field

If you do not think that you have any chance of improving yourself (anymore), you might want to consider to change the area you are working in. Athletes have done so after they got too old or too injured for a particular sport (either by switching to a different sport or by becoming teachers). The new area might suit you more, regarding the tools, the methods or the subjects. It might even stimulate your creativity.

Look at the earlier works of the great

Look at the date of publication and calculate the age when they produced it. This is a dangerous game because some artists were very good very early on, but not even Mozart produced works of superior quality until he had many years of experience. A lot of players in your field probably took some time to get good, good enough for publication. Try to find some early works if you can. Most of the time, you probably can not find anything. If they did not destroy it in shame (or silently swept it under the rug), it probably got rejected. That's what critics and peer reviews are for. With the advent of public exhibition in blogs and on social network sites on the one hand and the internet archive and Google on the other, future generations will have it much easier to take a look where the great "talents" came from.

Look at how the foundations were built

Few great works appear out of nothing. Even in art you can sometimes see where the artist got his ideas from: earlier works, common themes with new interpretations, works of others with own methods. In academia too, it is necessary and expected to build on the works of others. Sir Isaac Newton once said: "If I have become great, it is by standing on the shoulders of Giants." — true, especially for today's publishing system. To write a great review you have to know the field for quite some time (usually years or decades). You work in this field for a long time, publish papers which are reasonably good and begin to gain more and more expertise. If you have a good memory or a good organizing system, it is not that hard to write an extensive and in depth review. It is a cliché that there is no easy way to success — unfortunately this is true for academia and arts. But this also means that, if you are not great yet, great in the beginning of your career or within the first few years, it does not mean that you have failed and will not become great.

These things take time.

Disclaimer

Having giving up drawing for myself, these recommendations may sound hypocritical. On the other hand, I simply changed the playing field to writing (see above). Whatever your decision will be, I do not want to give false hope: Some people seem to have "the knack" for a certain field, some people are gifted and highly talented individuals who are really good (some even from a very early age),

Worst Cases

and for some areas this advantage is needed to be successful by any commercial or critical standard (i.e. to make a living out of it). This might not be the case with you. It is difficult to find good judges what it is in your case. Family and friends may be biased, critics might be envious, even the stranger on the street might be too polite or angry to say the truth (if there is such a truth and he is in possession of it). But even if you want to quit a field this does not mean that you have to quit creativity altogether. An other field may suit you more. But whatever it is, if you quit completely, continue or change your field, in the end it boils down to this:

It is your life and your decision what to dedicate it to.

Success

Congratulations.

Success, be it the smile of a loved one, a patent, a hit single or an accepted publication, is the reward for the hard work and time that creatives invest in their projects. Success might not be often, but given that intermitted reinforcement (irregular rewards) works best, it is no wonder that many creatives continue to be creative no matter whether we are successful or not. Be it 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 that there are some other things you can do:

What do do after a successful project

Without wanting to spoil the joyful moment, after a successful project you can do the following:

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 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, a similar way or when you just want to copy some parts of it. See archiving ideas in chapter 7 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. If you are concerned that it will reduce the quality of your work, include modifications.

Archiving Ideas

If you are creative this is what you do: you create. However, this should not be everything you do.

If you ask artists what they have produced over their lifetime, they will often say (and name) countless things. And if there were not so successful that their works are widely published, they will often regret that they cannot show you the artworks. In the times before cheaply available digital cameras and vast storage space, it was not easy to keep an archive. A writer might have his books at home, but a painter or sculpture only his sketches (if at all). Today it is very easy to make at least an acceptable picture of any kind of artwork. You do not need to be a master photographer to make photos of drawings, sculptures or even public events. Even a life performance can be recorded for future use.

Scientists have the advantage that their published papers are available for a very, very long time in the scientific journals. However, a publication is only the tip of the iceberg of data that is (was) available to the scientist. If questions are asked regarding a publication, be it by the scientist himself or by his colleagues, the scientist can only hope to have a good archive.

Even small private projects should be archived. Since most of them are gifts you will never see them again. An archive will provide you with a record of the things you made and help you to reproduce something you did. It can also prevent you from accidentally giving the same thing to the same person twice.

On the following pages we will have a closer look why you should archive projects (page 363), how to do it (page 364), problems of archives (page 367) and other aspects of archives (page 369).

Why archive projects?

There are many reasons for keeping an *archive* and most people deeply regret that they did not start one sooner because some of their works are not accessible anymore.

REASONS TO ARCHIVE CREATIVE PROJECTS

Here are some of reasons for keeping an archive:

Remembrance

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.

The written word is all that stands between memory and oblivion. Without books as our anchors, we are cast adrift, neither teaching nor learning. They are windows on the past, mirrors on the present, and prisms reflecting all possible futures. Books are lighthouses erected in the dark sea of time.

Jeffery Robbins in "Gargoyles"

Motivation and Inspiration

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, complete with pictures and descriptions at will.

Enabling to revisit past projects

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.

Learning from Mistakes

Mistakes are embarrassing but often we forgot that we made them. Archiving not only the successful but also the mediocre projects will help you to remember them. Over the time you will see patterns, typical mistakes you make, and — one can hope — 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.

Those who cannot remember the past are condemned to repeat it.

George Santayana (1863-1952)

Portfolio

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.

How to archive projects

If you want to make an archive the questions are what to archive and how. We will address both questions here before we look at the problems of archives.

WHAT TO ARCHIVE

Given the vast storage space of virtual collections make sure that you include the following information:

Copy/Photo of the created work

Depending on what you create a copy (e.g. of texts) or photos (e.g. of status, 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.

Make an extra version

If you create multiple instances of the same physical object, e.g. you print and self-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 lets face it, some things you would love to keep for yourself.

“Why build one if you can
two for twice the price?”

Contact

Meta information

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.

The following questions should be answered by the meta information:

Time

- When did you begin the project?
- When did you finish the project?

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?

Inspiration

- What inspired you to do this project?

How to archive projects

- What would be possible following projects?

Idea History

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 give the project another direction when you try to realize it.

Feedback and Reviews

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.

“Give him his former reviews, but only the good ones.”

Publishing editor to her secretary when one her authors has a writers block

Personal records

History loves personal records. Da Vinci is such a great artists, that his records are worth more than most designated artworks. And it is not da Vinci alone whose notebooks fascinate. The notebook of Otto Hahn is currently on display in the Deutsches Museum in Munich, resting in the lower right corner of his work table. The Museum of photography in Berlin does not only display photos by Helmut Newton but also his notes. Notebooks are very good in one regard: they give a glimpse into the design process, in the steps before the final product and at things that (for one reason or the other) could not make it into the final products. The creations do not exist anymore or have never existed in the first place, but the notebook where it was described, where the idea was captured into form, where it materialized, is still there. Compared to digital sources notebooks also have the advantage that they are written by the creators themselves. They have a certain aura, letting men of today connect to the great minds of the past.

Bill Gates purchased a notebook of Leonardo da Vinci for \$28,000,000 Dollar.

Wikipedia

Ok, enough daydreams — notebooks are great for artists and some world-famous scientists. If you already use notebooks for developing your creative products and recording the processes, simply keep them. At some point you probably have to make an index system to find your ideas in 50+ look alike notebooks on your shelves, and they suffer the same disadvantages as any paper: they love to burn, get destroyed by water, are difficult to backup and might decompose on their own. Even under best conditions paper wont last forever. Get at least acid free paper and ink that is made to last to give your notebooks the chance to survive until you have become famous, even if it is posthumous.

But if you keep an archive, especially a digital one, include some personal comments about your work. People who are trying to find out about you (relatives, mostly, if you kept up good relations with them despite the time you spend on your creative projects) are probably eager to learn what you thought when you had this or that idea. Personal comments can provide more insight than factual descriptions about how to realize a certain project ever can.

How to archive projects

WHERE TO ARCHIVE

If you want to start an archive you can use your idea collection to do so.

Using the idea collection to archive creative projects

Advantage: Using existing Infrastructure

In most cases you can use the existing infrastructure for the project. Often you do not even need to transfer the information or you can swiftly move them into another directory or onto another shelf.

Disadvantage: Possible confusion between realized and unrealized ideas

While the copies or photos of the finished work are a strong reminder that the project is finished, you will probably stumble upon realized ideas often while skimming the collection. Unless you can use dividers you lose the overview how much of the physical collection (or GB on the data storage) have already been realized and how many ideas you still have that you can realize. See also page 264.

Disadvantage: Backups become larger

Since you absolutely should do regular backups (see page 265) you will be doing a lot of backups of your archive. Virtual storage might be cheap but it adds up. With physical storage you might try to select but this is not always possible. If the projects are stored in different files, incremental backups will bypass this problem.

Proposed solution: same collection but separate parts

The proposed solution is to use the idea collection, but transfer the documentation of the realized project and the ideas used for it, to a separate part of it. 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 them in a separate place (e.g. a different directory) enables you to backup the collection regularly without the archive and add the archive to the backups only if something changed.

Caution: Make sure you have at least one copy of the archive on every backup media you use. Otherwise you might lose the whole archive, if you have only the latest backup.

Problems of Archives

Archives usually face two problems: they must be *future proof* and they must be manageable regarding their *size*.

FUTURE PROOF

Archives are essentially backups made for decades (depending on your life expectancy and the interest of those you leave behind) and 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 digitally.

Increasing the likelihood that the archives survives

There are some ways to increase the likelihood that your archive will survive:

Keep it active (rejuvenate it occasionally)

As long as you keep your digital archive on your hard disc and enlarge it from time to time (when a project is finished), the data will probably move with the rest of your work to a new system. Problems begin if you burn an archive on a DVD, e.g. "Photos from 2000-2002" and delete the files from your hard disc (e.g. because of the huge size). If anything damages this backup, your work is lost. If you put it in a cupboard and forget about it (for ten years), you might not be able to read it. While you should make backups of your archive, keep a copy of it active on your computer and backup it from time to time on the new storage media. It is the only way to make sure that it is accessible in the future.

Make a project out of it

You can make a project out of the best (and worst) projects you did in the last years (e.g. once every five or ten years). 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.

Distribute it

Given that the projects are realized security is usually of lesser concern. You can publish a portfolio of your projects on the web (and let the Internet Archive backup it). You can send pictures of it to your family and friends or put them in online archives (flickr is essentially an archive for photos, DeviantArt for a wider range of creative projects). While commercial (including advertisement-based) providers might not survive in the future, if you distribute your works wide enough at least one of them might.

With the rise of the internet, everyone has his 15 megabytes of fame.
Unknown

SIZE

An archive can become quite big if you include detailed information or copies of your finished works. A book of quotations I once made was over 550 MB (it had a lot of pictures), a CD I recorded about 10 MB (don't ask). In three words: it adds up. Digital media has its uses, but your works can still bring it to its knees. Besides the handling (speed of access, stability and backup), finding archived projects also becomes a problem over time.

Problems of Archives

Dealing with size problems

If size becomes a problem, think about the following:

Reduce it to the important files

You do not need to keep all the files. Make sure what is important: 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. You also might want to keep the ideas you noted in your idea collection. Perhaps you might want to keep some of the steps in between, but perhaps a screenshot is enough.

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. They are more expensive than DVDs, but you can still change the content. Since 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 (see page 269).

Keep a good index of your projects

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.

Use the same navigation structure and helpers as in the collection

Using the same structure will make it easier to find the finished projects and move projects that were just finished to the right places. Using the same tags will help you finding the projects. You can use an “archive” tag to either include the projects in the archive in your search or to explicitly exclude them, if they are in the collection.

I save about twenty drafts — that's ten meg of disc space — and the last one contains all the final alterations. Once it has been printed out and received by the publishers, there's a cry here of 'Tough shit, literary researchers of the future, try getting a proper job!' and the rest are wiped.

Terry Pratchett

Other Aspects of Archives

KEEPING AN OVERVIEW OF REALIZED PROJECTS

Over the years you will probably realize a few ideas. One good view to keep an overview for recollection or motivation is by creating a short summary of realized projects every year. The holidays between Yule and New Years Eve is very well suited for this. Usually this takes less than a day and you build up a nice collection of overviews over time.

There are different ways to do so:

Kinds of Overviews

New entry in your idea collection

If you archive your projects in your idea collection anyway you can simply make a new entry where you write down the titles, descriptions and put one or two images about the project. While the archived project is more complete, it is often too large to be used as an overview (e.g. in a table with other projects).

Expand your website/blog

Once upon a time personal websites were all the rage, now the focus is more on blogs. If you want to show others what you have done and keep a reminder for yourself, a website/blog is a nice way of doing so. Keep a local copy in case the company that hosts your website/blog loses your data or decides to do a customer service upgrade that leaves each customer with a fresh start.

Creating a personal Life-Newspaper

One project I do at the end of each year is to create an personal overview in the form of a one-version newspaper of the things that happened during this year. It is a kind of retrospective diary. It covers major topics like travels, courses I have taken, my health, social life, technology (new equipment), literature (good books read), sports, research (my job), finances, art, culture, quotations, and realized projects. It included text and selected images. This gives me an overview of the realized projects in the context of the time when I did them. Instead of having countless entries of the days of a year, I have a condensed overview of the important aspects of a year as remembrance.

I always turn to the sports pages first, which records people's accomplishments. The front page has nothing but man's failures.
Chief Justice Earl Warren

Final Remarks & Appendix

This chapter contains a final remark to you about this book (page 373), contact information (page 375), and an link index (page 377) which contains information about the software programs that were mentioned in this book.

Final Remarks

In this book I have tried to give an overview about organizing creativity, beginning what creativity is, why it should be organized, how to generate, capture, collect, realize and archive ideas. 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.

Best regards

Daniel Wessel

NONE OF THE ABOVE

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.

Your mind is filled with new ideas.
Do not let them go to waste.
Unknown

Contact the Author

FEEDBACK

As mentioned in the preface of this book (page 10) and under feedback (page 324), I would appreciate feedback. You can send it to either of these eMail-Adresses:

`organizingcreativity@mac.com`

`danielwessel@organizingcreativity.com`

`creativity@ipsych.de`

VISIT THE WEBSITE

At `www.ipsych.org` or `www.organizingcreativity.com` you can find current information about the links, the book, and much more.

MAILING LIST

If you want to receive information via eMail if a new revision of the book comes out, you can send an eMail to `mailinglist@organizingcreativity.com`

Your eMail address will be treated confidential and not used for SPAM.

Link Index

ABOUT THE LINKS IN THIS BOOK

If you do not know the mentioned programs or sources in the book, kindly refer to these links. For a good starting point for more information visit Wikipedia (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* 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 wont. 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 trail period, unless you want to reinstall your operating system. 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. 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 your own opinion.

Link Index

INFORMATION/INSPIRATION/HOW-TO'S

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.

ONLINE GALLERIES

deviantART (<http://www.deviantart.com>): A large online community for artists where people can exhibit their works, mostly photos and images, but also digital creations.

flickr (<http://www.flickr.com>): Probably the most famous and large photo site on the net.

myspace.com (<http://www.myspace.com>): A popular social networking site, especially for music.

YouTube (<http://www.youtube.com>): Popular video sharing site.

Worth1000 (<http://www.worth1000.com>): Most of the picture on this site are worth a 1000 words.

SERVICES ONLINE

Lulu (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).

CreateSpace (<http://www.createspace.com>). Self-publishing company, belongs to Amazon.com and all books are easily made available there.

cafepress (www.cafepress.com): A store/manufacturer where you can design, create and sell apparel, sticks, buttons, magnets, housewares, prints and cards, hats and bags, books and audio and data CDs.

zazzle (<http://www.zazzle.com/kedsstudio>): Design your own shoes (Keds only).

Information on Organization

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. When I wrote this page, LifeDev had an article about "25 Tools for Capturing Ideas Anywhere" which had a large amount in common with my (previously) written chapter on Capturing Ideas. Highly recommended.

Link Index

Getting Things Done (Book): 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.

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.

STIMULATION

Presentations

TED-Talks (<http://www.ted.com/talks>): TED stands for Technology Entertainment Design and the talks are (mostly) interesting, fascinating and almost never boring.

Authors@Google (search on 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.

Comics

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.

BOOKS, TEXT

Apple Macintosh

➤ **Scrivener** (<http://www.literatureandlatte.com>): One of the best writing software for books, especially fiction. (Mac).

Mellel (<http://www.mellel.com>): An interesting word processor for creative and technical writing. (Mac).

Ulysses (<http://www.blue-tec.com/ulysses>): Interesting word processor. (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

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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).

DevonThink (<http://www.devon-technologies.com>): A powerful Notes Management Software that can be used for writing. (Mac).

OmniOutliner (<http://www.omnigroup.com>): An excellent outliner to structure your information. (Mac).

WriteItNow (<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).

Microsoft Windows

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 (and other products) on a Mac and weep.

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).

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BOOKS, LAYOUT

➤ **Adobe InDesign** (<http://www.adobe.com/products/indesign>). Powerful but expensive. If you are student, Adobe has cheaper student versions. (Mac, PC).

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, PC).

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. (Mac, Windows).

PHOTOGRAPHY, POST PROCESSING

➤ **Adobe Photoshop** (<http://www.adobe.com/products/photoshop>). Perhaps the best software for editing images. 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).

Picasa (<http://picasa.google.com>). Googles attempt at handling photos. Interesting and free. (Windows).

iPhoto (<http://www.apple.com/ilife/iphoto>). Apple's attempt at handling photos. Not as powerful as Aperture but nice for amateurs. (Mac).

DIGITAL NOTEBOOKS

➤ **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. (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. (Win, Mac).

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OUTLINER

Omni Outliner (<http://www.omnigroup.com/applications/omnioutliner>). (Mac).

► **Circus Ponies Notebook** (<http://www.circusponies.com>). While not a dedicated outliner, CP Notebook, offers pages in outliner format. (Mac).

NOTES MANAGEMENT SYSTEMS

DevonNote (<http://www.devon-technologies.com/products/devonnote>) folder and text based. (Mac).

DevonThink (<http://www.devon-technologies.com/products/devonthink>) folder and text based. (Mac).

Tinderbox (<http://www.eastgate.com/Tinderbox>) graphic metaphor. (Mac).

MacJournal (<http://www.marinersoftware.com>): Program to help you organize Notes and other information. (Mac).

WIKI ENGINES

There are several wiki engines, for an overview see the list in Wikipedia: http://en.wikipedia.org/wiki/Comparison_of_wiki_software.

Media Wiki (<http://www.mediawiki.org>). Wiki Engine used by Wikipedia. (Webserver+PHP+SQL).

► **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).

TEXT EDITOR SOFTWARE

► **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).

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MINDMAP SOFTWARE

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). 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. (Win, Mac).

Microsoft Word can do nearly everything but nothing very well.
Unknown

REFERENCE MANAGEMENT TOOLS

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. There are several commercial and open source programs available. Make sure that you can use the program with your standard writing tool, e.g. EndNote with Microsoft Word or Citavi with TexNicCenter. If everything works as planned these tools can take off a load of time and effort to get the citations right. 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.

EndNote (<http://www.endnote.com>). Commercial program, powerful but expensive. (Mac, Windows).

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).

Mendeley (<http://www.mendeley.com>). A mixtrue between an online/offline reference management and social networking tool for scientists. (Mac, Windows).

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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).

A short history of this book

DEVELOPMENT OF THE PROJECT

The idea started in 2007 when a friend of mine told me about the MinD-Akademie conducted by the *MinD Hochschul Netzwerk*, a student organization. The topic that year was “creativity” and I became interested in holding a presentation regarding the organization of creativity, because I had started to use a wiki to collect my ideas a few months before. I started a survey of Mensa and MHN members regarding the way the organize their creativity. I did not get many responses and few of them did actually organize their creativity. Since I had good experiences with capturing my ideas and using the wiki as a collection, I made a presentation on this topic and held it 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.

“Writing a book is an adventure: to begin with it is a toy and amusement; then it becomes a master, and than it becomes a tyrant; and the last phase is just as you are about to be reconciled to your servitude – you kill the monster and fling him to the public.”
Winston Churchill

TOOLS USED

The ideas for this book were first **captured** with a **paper notepad** or directly with a **text file** on the PC and collected in my **DokuWiki**. I later used **Circus Ponies Notebook** to sort them. Then I made a **presentation** with **Keynote** that served as basis for a layout prototype in **Pages**. After the prototype reached about 200 pages, I copy and pasted the contents into a **Scrivener** file. Then I searched any notes I had made regarding this book if I had included everything I wanted to say. 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_p1.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 this 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 verison 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. Consequently I made an InDesgin version of the **.pages**-file (manually) and used the CS4 cross-references tool. After some fiddling with the layout I uploaded the file to Createspace and published it there.

And this is the version you have in your hand.

Notes

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Notes

Notes

Bring more structure in your creativity: Organize it.

About this Book

This book was written as a help for individual persons who want to organize their creativity, be it for science (incl. engineering and commercial projects), art or private projects. Its aim is to enlarge your options when having ideas and to improve the chance of realizing creative projects.

It is written as a practical handbook and describes how organization can support generating, capturing, collecting (incl. enlarging, restructuring, etc.) and realizing ideas.

While creativity “techniques” are dealt with, the focus is on the infrastructure to enable you to capture your fleeting ideas and cultivate them to finally realize them as creative projects.

Contents

- 1. About Creativity** *Definition, Misconceptions, Advantages & Disadvantages, Responsibility, Requirements for Creativity, and Helpful Skills*
- 2. Creativity and Organization** *Benefits of Organizing Creativity, Apparent Exceptions, Principles and Starting to Organize, and Organizing Yourself*
- 3. Generating Ideas** *The Creative Process, Hard Work & Time (I), Blocks, Techniques & Tactics, and Finding Problems*
- 4. Capturing Ideas** *Reasons, Ways, Evaluating Capturing Methods, Quality of Tools, Missed Ideas, Specific Ways to Capture, Worst Cases, Nothing to Capture, Other People, and Scenarios*
- 5. Collecting Ideas** *Reasons, Ways, Organizing the Idea Collection, Prioritizing, Evaluating Collection Methods, Ways of Collecting Ideas, Issues, Starting, Digitalizing Information, Expanding, Restructuring and Removing, and Protecting the Collection*
- 6. Realizing Ideas** *Harvest, Selecting Ideas for Realization, Hard Work & Time (II), Process of Realizing Ideas, Organizational Helps, Problems in the Realization Phase, Feedback, Communicating Ideas, Worst Cases, and Best Case*
- 7. Archiving Ideas** *Reasons, Ways, Problems, and Other Aspects*
- 8. Final Remarks & Appendix** *Final Remarks, Contact Information, Links Index, and a Short History of this Book*

Organizing creativity is similar to keeping an orchard: you prepare the ground (acquire knowledge and skills), you plant (put captured ideas in the idea collection) and raise (add to, enlarge and restructure the ideas) your culture (projects). Finally when a project is ripe (has sufficient ideas) you can harvest it (realize the project) and enjoy the fruits of success.