

Sönke Ahrens

How to Take Smart Notes

One Simple Technique to Boost Writing,
Learning and Thinking – for Students, Academics
and Nonfiction Book Writers.

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“Notes on paper, or on a computer screen [...] do not make contemporary physics or other kinds of intellectual endeavor easier, they make it possible ... no matter how internal processes are implemented [...you..] need to understand the extent to which the mind is reliant upon external scaffolding.” (Levy 2011, 270)

“One cannot think without writing.” (Luhmann 1992, 53)

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INTRODUCTION

Everybody writes. Especially in academia. Students write and professors write. And nonfiction writers, who are the third group of people this book is aiming to help, obviously write as well. And writing doesn't necessarily mean papers, articles or books, but everyday, basic writing. We write when we need to remember something, be it an idea, a quote or the outcome of a study. We write when we want to organise our thoughts and when we want to exchange ideas with others. Students write when they take an exam, but the first thing they do to prepare even for an oral examination is to grab pen and paper. We write down not only those things we fear we won't remember otherwise, but also the very things we try to memorise. Every intellectual endeavour starts with a note.

Writing plays such a central role in learning, studying and research that it is surprising how little we think about it. If writing is discussed, the focus lies almost always on the few exceptional moments where we write a lengthy piece, a book, an article or, as students, the essays and theses we have to hand in. At first glance, that makes sense: these are the tasks that cause the most anxiety and with which we struggle the longest. Consequently, these "written pieces" are also what most self-help books for academics or study guides focus on, but very few give guidance for the everyday note-taking that takes up the biggest chunk of our writing.

The available books fall roughly into two categories. The first teaches the formal requirements: style, structure or how to quote correctly. And then there are the psychological ones, which teach you how to get it done without mental breakdowns and before your supervisor or publisher starts refusing to move the deadline once more. What they all have in common, though,

is that they start with a blank screen or sheet of paper.¹ But by doing this, they ignore the main part, namely note-taking, failing to understand that improving the *organisation* of all writing makes a difference. They seem to forget that the process of writing starts much, much earlier than that blank screen and that the actual writing down of the argument is the smallest part of its development. This book aims to fill this gap by showing you how to efficiently turn your thoughts and discoveries into convincing written pieces and build up a treasure of smart and interconnected notes along the way. You can use this pool of notes not only to make writing easier and more fun for yourself, but also to learn for the long run and generate new ideas. But most of all, you can write every day in a way that brings your projects forward.

Writing is not what follows research, learning or studying, it is the *medium* of all this work. And maybe that is the reason why we rarely think about this writing, the everyday writing, the note-taking and draft-making. Like breathing, it is vital to what we do, but because we do it constantly, it escapes our attention. But while even the best breathing technique would probably not make much of a difference to our writing, any improvement in the way we organise the everyday writing, how we take notes of what we encounter and what we do with them, will make all the difference for the moment we do face the blank page/screen – or rather *not*, as those who take smart notes will never have the problem of a blank screen again.

There is another reason that note-taking flies mostly under the radar: We don't experience any immediate negative feedback if we do it badly. But without an immediate experience of failure, there is also not much demand for help. And the publishing market working how it works, there is not much help in supply for this lack of demand either. It is the panic in front of the blank screen that brings students and academic writers to

1 Cf. for example the writing guide of the University of Toronto: <http://www.writing.utoronto.ca/advice>

turn to the bookshelves full of self-help books on writing, a market publishers meet in droves by focusing on how to deal with this horse-has-already-left-the-barn situation. If we take notes unsystematically, inefficiently or simply wrong, we might not even realise it until we are in the midst of a deadline panic and wonder why there always seem to be a few who get a lot of good writing done and still have time for a coffee every time we ask them. And even then, it is more likely that some form of rationalization will cloud the view of the actual reason, which is most likely the difference between good and bad note-taking. “Some people are just like that,” “writing has to be difficult,” “the struggle is part of the deal” are just a few of the mantras that keep too many from inquiring what exactly distinguishes successful writing strategies from less successful ones.

The right question is: What can we do differently in the weeks, months or even years *before* we face the blank page that will get us into the best possible position to write a great paper easily? Very few people struggle with their papers because they don't know how to cite correctly or because they suffer from a psychological issue that keeps them from writing. Few struggle to text their friends or write emails. The rules of citation can be looked up and there is no way that there are as many mental issues as papers postponed. Most people struggle for much more mundane reasons, and one is the myth of the blank page itself. They struggle *because* they believe, as they are made to believe, that writing starts with a blank page. If you believe that you have indeed nothing at hand to fill it, you have a very good reason to panic. Just having it all in your head is not enough, as getting it down on paper is the hard bit. That is why good, productive writing is based on good note-taking. Getting something that is already written into another written piece is incomparably easier than assembling everything in your mind and then trying to retrieve it from there.

To sum it up: The quality of a paper and the ease with which it is written depends more than anything on *what you have done in writing before you even made a decision on the topic*. But if that

is true (and I wholeheartedly believe it is), and the key to successful writing lies in the preparation, it also means that the vast majority of self-help books and study guides can only help you to close the barn door correctly and according to official rules – not just a moment, but many months after the horse has already escaped.

With that in mind, it is not surprising that the single most important indicator of academic success is not to be found in people’s heads, but in the way they do their everyday work. In fact, there is no measurable correlation between a high IQ and academic success – at least not north of 120. Yes, a certain intellectual capacity helps to get into academia, and if you struggle severely with an IQ test, it is likely that you will struggle to solve academic problems, too. But once you are in, a superior IQ will neither help you to distinguish yourself nor protect you from failure. What *does* make a significant difference along the whole intelligence spectrum is something else: how much self-discipline or self-control one uses to approach the tasks at hand (Duckworth and Seligman, 2005; Tangney, Baumeister, and Boone, 2004).

It is not so important who you are, but what you do. Doing the work required and doing it in a smart way leads, somehow unsurprisingly, to success. At first glance, this is both good and bad news. The good news is that we wouldn’t be able to do much about our IQ anyway, while it seems to be within our control to have more self-discipline with a little bit of willpower. The bad news is that we do not have this kind of control over ourselves. Self-discipline or self-control is not that easy to achieve with willpower alone. Willpower is, as far as we know today,² a limited resource that depletes quickly and is also not

2 The research on willpower or “ego depletion” is in a bit of turmoil at the moment. But it is safe to say that using willpower is a terrible strategy to get things done in the long run. For an overview: <https://replicationindex.wordpress.com/2016/04/18/is-replicability-report-ego-depletionreplicability-report-of-165-ego-depletion-articles/>

that much up for improvement over the long term (Baumeister, Bratslavsky, Muraven, and Tice, 1998; Muraven, Tice, and Baumeister, 1998; Schmeichel, Vohs, and Baumeister, 2003; Moller, 2006). And who would want to flog oneself to work, anyway?

Luckily, this is not the whole story. We know today that self-control and self-discipline have much more to do with our *environment* than with ourselves (cf. Thaler, 2015, ch. 2) – and the environment can be changed. Nobody needs willpower not to eat a chocolate bar when there isn't one around. And nobody needs willpower to do something they wanted to do anyway. Every task that is interesting, meaningful and well-defined will be done, because there is no conflict between long- and short-term interests. Having a meaningful and well-defined task beats willpower every time. Not *having* willpower, but *not having to use* willpower indicates that you set yourself up for success. This is where the organisation of writing and note-taking comes into play.

1 Everything You Need to Know

Until now, writing and note-taking techniques were usually taught without much regard to the overarching workflow. This book aims to change that. It will present you with the tools of note-taking that turned the son of a brewer into one of the most productive and revered social scientists of the 20th century. But moreover, it describes how he implemented them into his workflow so he could honestly say: “I never force myself to do anything I don't feel like. Whenever I am stuck, I do something else.” A good structure allows you to do that, to move seamlessly from one task to another – without threatening the whole arrangement or losing sight of the bigger picture.

A good structure is something you can trust. It relieves you from the burden of remembering and keeping track of everything. If you can trust the system, you can let go of the attempt to hold everything together *in your head* and you can start focusing on what is important: The content, the argument and the

ideas. By breaking down the amorphous task of “writing a paper” into small and clearly separated tasks, you can focus on one thing at a time, complete each in one go and move on to the next one (Chapter 3.1). A good structure enables *flow*, the state in which you get so completely immersed in your work that you lose track of time and can just keep on going as the work becomes effortless (Csikszentmihalyi, 1975). Something like that does not happen by chance.

As students, researchers and nonfiction writers, we have so much more freedom than others to choose what we want to spend our time on. Still, we often struggle the most with procrastination and motivation. It is certainly not the lack of interesting topics, but rather the employment of problematic work routines that seems to take charge of us instead of allowing us to steer the process in the right direction. A good, structured workflow puts us back in charge and increases our freedom to do the right thing at the right time.

Having a clear structure to work *in* is completely different from making plans *about* something. If you make a plan, you impose a structure *on yourself*; it makes you inflexible. To keep going according to plan, you have to push yourself and employ willpower. This is not only demotivating, but also unsuitable for an open-ended process like research, thinking or studying in general, where we have to adjust our next steps with every new insight, understanding or achievement – which we ideally have on a regular basis and not just as an exception. Even though planning is often at odds with the very idea of research and learning, it is the mantra of most study guides and self-help books on academic writing. How do you plan for insight, which, by definition, cannot be anticipated? It is a huge misunderstanding that the only alternative to planning is aimless messing around. The challenge is to structure one’s workflow in a way that insight and new ideas can become the driving forces that push us forward. We do not want to make ourselves dependent on a plan that is threatened by the unexpected, like a new idea, discovery – or insight.

Unfortunately, even universities try to turn students into

planners. Sure, planning will get you through your exams if you stick to them and push through. But it will not make you an expert in the art of learning/writing/note-taking (there is research on that: cf. Chapter 1.3). Planners are also unlikely to continue with their studies after they finish their examinations. They are rather glad it is over. Experts, on the other hand, would not even consider voluntarily giving up what has already proved to be rewarding and fun: learning in a way that generates real insight, is accumulative and sparks new ideas. The fact that you invested in this book tells me that you would rather be an expert than a planner.

And if you are a student seeking help with your writing, the chances are that you already aim high too, because it is usually the best students who struggle the most. Good students wrestle with their sentences because they care about finding the right expression. It takes them longer to find a good idea to write about because they know from experience that the first idea is rarely that great and good questions do not fall into their laps. They spend more time in the library to get a better overview of the literature, which leads to more reading, which means that they have to juggle more information. Having read more does not automatically mean having more ideas. Especially in the beginning, it means having fewer ideas to work with, because you know that others have already thought of most of them.

Good students also look beyond the obvious. They peek over the fences of their own disciplines – and once you have done that, you cannot go back and do what everyone else is doing, even if you now must deal with heterogeneous ideas that come without a manual on how they might fit together. All that means is that a system is needed to keep track of the ever-increasing pool of information, which allows one to combine different ideas in an intelligent way with the aim of generating new ideas.

Poor students do not have any of these problems. As long as they stick within the boundaries of their discipline and read only as much as they are told to (or less), no serious external system is required and writing can be done by sticking with the

usual formulas of “how to write a scientific paper.” In fact, poor students often *feel* more successful (until they are tested), because they don’t experience much self-doubt. In psychology, this is known as the Dunning-Kruger effect (Kruger and Dunning, 1999). Poor students lack insight into their own limitations – as they would have to know about the vast amount of knowledge out there to be able to see how little they know in comparison. That means that those who are not very good at something tend to be overly confident, while those who have made an effort tend to underestimate their abilities. Poor students also have no trouble finding a question to write about: they neither lack opinions nor the confidence that they have already thought them through. They also won’t have trouble finding confirming evidence in the literature as they usually lack both interest and skill to detect and think through dis-confirming facts and arguments.

Good students, on the other hand, constantly raise the bar for themselves as they focus on what they haven’t learned and mastered yet. This is why high achievers who have had a taste of the vast amount of knowledge out there are likely to suffer from what psychologists call imposter syndrome, the feeling that you are not really up to the job, even though, of all people, they are (Clance and Imes 1978; Brems et al. 1994). This book is for you, the good students, ambitious academics and curious nonfiction writers who understand that insight doesn’t come easy and that writing is not only for proclaiming opinions, but the main tool to achieve insight worth sharing.

1.1 Good Solutions are Simple – and Unexpected

There is no need to build a complex system and there is no need to reorganise everything you already have. You can start working and developing ideas immediately by taking smart notes.

Complexity is an issue, though. Even if you don’t aim to develop a grand theory and just want to keep track of what you read, organise your notes and develop your thoughts, you will

have to deal with an increasingly complex body of content, especially because it is not just about collecting thoughts, but about making connections and sparking new ideas. Most people try to reduce complexity by separating what they have into smaller stacks, piles or separate folders. They sort their notes by topics and sub-topics, which makes it look less complex, but quickly becomes very complicated. Plus, it reduces the likelihood of building and finding surprising connections between the notes themselves, which means a trade-off between its usability and usefulness.

Thankfully, we don't have to choose between usability and usefulness. Quite the contrary. The best way to deal with complexity is to keep things as simple as possible and to follow a few basic principles. The simplicity of the structure allows complexity to build up where we want it: on the content level. There is quite extensive empirical and logical research on this phenomenon (for an overview: cf. Sull and Eisenhardt, 2015). Taking smart notes is as simple as it gets.

Another item of good news regards the amount of time and effort you have to put into getting started. Even though you will change considerably the way you read, take notes and write, there is almost no preparation time needed (except for understanding the principle and installing one or two free programs). It is not about redoing what you have done before, but about changing the way of working from now on. There is really no need to reorganise anything you already have. Just deal with things differently the moment you have to deal with them anyway.

There is more good news. There is no need to reinvent the wheel. We only need to combine two well-known and proven ideas. The first idea lies at the heart of this book and is the technique of the simple slip-box. I will explain the principle of this system in the next chapter and show how it can be implemented in the everyday routines of students, academics or nonfiction writers. Thankfully, there are digital versions for all major operating systems available, but if you prefer, you can also use pen and paper. In terms of productivity and ease, you will still easily

surpass those who are taking not-so-smart notes.

The second idea is equally important. Even the best tool will not improve your productivity considerably if you don't change your daily routines the tool is embedded in, just as the fastest car won't help you much if you don't have proper roads to drive it on. Like every change in behaviour, a change in working habits means going through a phase where you are drawn back to your old ways. The new way of working might feel artificial at first and not necessarily like what you intuitively would do. That is normal. But as soon as you get used to taking smart notes, it will feel so much more natural that you will wonder how you were ever able to get anything done before. Routines require simple, repeatable tasks that can become automatic and fit together seamlessly (cf. Mata, Todd, and Lippke, 2010). Only when all the related work becomes part of an overarching and interlocked process, where all bottlenecks are removed, can significant change take place (which is why none of the typical "10 mind-blowing tools to improve your productivity" tips you can find all over the internet will ever be of much help).

The importance of an overarching workflow is the great insight of David Allen's "Getting Things Done" (Allen, 2001). There are few serious knowledge workers left who haven't heard of "GTD" and that is for a good reason: It works. The principle of GTD is to collect everything that needs to be taken care of in one place and process it in a standardised way. This doesn't necessarily mean that we actually do everything we once intended to do, but it forces us to make clear choices and regularly check if our tasks still fit into the bigger picture. Only if we know that everything is taken care of, from the important to the trivial, can we let go and focus on what is right in front of us. Only if nothing else is lingering in our working memory and taking up valuable mental resources can we experience what Allen calls a "mind like water" - the state where we can focus on the work right in front of us without getting distracted by competing thoughts. The principle is simple but holistic. It is not a quick fix or a fancy tool. It doesn't do the work for you. But it does provide a structure for our everyday work that deals with

the fact that most distractions do not come so much from our environment, but our own minds.

Unfortunately, David Allen's technique cannot simply be transferred to the task of insightful writing. The first reason is that GTD relies on clearly defined objectives, whereas insight cannot be predetermined by definition. We usually start with rather vague ideas that are bound to change until they become clearer in the course of our research (cf. Ahrens, 2014, 134f.). Writing that aims at insight must therefore be organised in a much more open manner. The other reason is that GTD requires projects to be broken down into smaller, concrete "next steps." Of course, insightful writing or academic work is also done one step at a time, but these are most often too small to be worth writing down (looking up a footnote, rereading a chapter, writing a paragraph) or too grand to be finished in one go. It is also difficult to anticipate which step has to be taken after the next one. You might notice a footnote, which you check quickly on. You try to understand a paragraph and need to look up something for clarification. You make a note, go back to reading and then jump up to write down a sentence that formed itself in your mind.

Writing is not a linear process. We constantly have to jump back and forth between different tasks. It wouldn't make any sense to micromanage ourselves on that level. Zooming out to the bigger picture does not really help, either, because then we have next steps like "writing a page." That does not really help with navigating the things you have to do to write a page, often a whole bunch of other things that can take an hour or a month. One has to navigate mostly by sight. These are probably the reasons why GTD never really caught on in academia, although it is very successful in business and has a good reputation among the self-employed.

What we can take from Allen as an important insight is that the secret to a successful organization lies in the holistic perspective. Everything needs to be taken care of, otherwise the neglected bits will nag us until the unimportant tasks become urgent. Even the best tools won't make much of a difference if

they are used in isolation. Only if they are embedded in a well-conceived working process can the tools play out their strengths. There is no point in having great tools if they don't fit together.

When it comes to writing, everything, from research to proofreading, is closely connected. All the little steps must be linked in a way that will enable you to go seamlessly from one task to another, but still be kept separate enough to enable us to flexibly do what needs to be done in any given situation. And this is the other insight of David Allen: Only if you can trust your system, only if you really know that everything will be taken care of, will your brain let go and let you focus on the task at hand.

That is why we need a note-taking system that is as comprehensive as GTD, but one that is suitable for the open-ended process of writing, learning and thinking. Enter the slip-box.

1.2 The Slip-box

It is the 1960s, somewhere in Germany. Among the staff of a German administration office is the son of a brewer. His name is Niklas Luhmann. He went to law school, but he has chosen to be a public servant, as he did not like the idea of having to work for multiple clients. Fully aware he is also not suited for a career in administration, as it involves a lot of socializing, he excuses himself every day after his 9-5 shift and goes home to do what he liked most: reading and following his diverse interests in philosophy, organizational theory and sociology.

Whenever he encountered something remarkable or had a thought about what he read, he made a note. Now, many people read in the evening and follow their interests, and some even take notes. But for very few is it the path to something as extraordinary as Luhmann's career.

After collecting notes for a while in the way most people do, commenting in the margins of a text or collecting handwritten notes by topic, Luhmann realised his note-taking was not leading anywhere. So he turned note-taking on its head. Instead of

adding notes to existing categories or the respective texts, he wrote them all on small pieces of paper, put a number in the corner and collected them in one place: the slip-box.

He soon developed new categories of these notes. He realised that one idea, one note was only as valuable as its context, which was not necessarily the context it was taken from. So he started to think about how one idea could relate and contribute to different contexts. Just amassing notes in one place would not lead to anything other than a mass of notes. But he collected his notes in his slip-box in such a way that the collection became much more than the sum of its parts. His slip-box became his dialogue partner, main idea generator and productivity engine. It helped him to structure and develop his thoughts. And it was fun to work with – because it worked.

And it led him to enter academia. One day, he put some of these thoughts together into a manuscript and handed it over to Helmut Schelsky, one of the most influential sociologists in Germany. Schelsky took it home, read what this academic outsider had written and contacted Luhmann. He suggested that he should become a professor of sociology in the newly founded University of Bielefeld. As attractive and prestigious as this position was, Luhmann wasn't a sociologist. He didn't have the formal qualifications required even to become an assistant for a sociology professor in Germany. He hadn't written a habilitation, the highest academic qualification in many European countries, which is based on the second book after the doctoral thesis. He had never held a doctorate or even obtained a sociology degree. Most people would take the offer as a huge compliment, but point out the impossibility of it and move on.

Not Luhmann. He turned to his slip-box and with its help he put together a doctoral thesis *and* the habilitation thesis in less than a year – while taking classes in sociology. Shortly after, in 1968, he was chosen to become professor of sociology at the University of Bielefeld – a position he would hold for the rest of his life.

In Germany, a professor traditionally starts with a public lecture presenting his or her projects, and Luhmann, too, was

asked what his main research project will be. His answer would become famous. He laconically stated: “My project: theory of society. Duration: 30 years. Costs: zero” (Luhmann, 1997, 11). In sociology, a “theory of society” is the mother of all projects.

When he finished the final chapter, almost exactly 29 and a half years later, as a two-volume book with the title “The Society of Society” (1997), it stirred up the scientific community.³ It was a radical new theory that not only changed sociology, but stirred heated discussions in philosophy, education, political theory and psychology as well. Not everyone was able to follow the discussions, though. What he did was unusually sophisticated, very different and highly complex. The chapters were published individually, each book discussing one social system. He wrote on law, politics, economy, communication, art, education, epistemology – and even love.

In 30 years, he published 58 books and hundreds of articles, translations not included. Many became classics in their respective fields. Even *after* his death, about half a dozen more books on diverse subjects like religion, education or politics were published in his name – based on almost finished manuscripts lying around in his office. There are more than a few colleagues I know who would give a lot to be as productive in their whole lifetime as Luhmann was after his death.

While some career-oriented academics try to squeeze as many publications out of one idea as possible, Luhmann seemed to do the opposite. He constantly generated more ideas than he was able to write down. His texts read as if he is trying to squeeze as much insight and as many ideas as possible into one publication.

3 The introduction to his theory was published in 1987 in the form of a book with the title “Social Systems” and the book series number “666.” Those who were not aware of his note-taking system might have been tempted to think that this was not by chance, as his productivity could only have been explained by a deal with the devil.

When he was asked if he missed anything in his life, he famously answered: “If I want something, it’s more time. The only thing that really is a nuisance is the lack of time.” (Luhmann, Baecker, and Stanitzek, 1987, 139) And while some academics let their assistants do the main work or have a team that is writing the papers to which they add their names, Luhmann rarely had any assistance at all. The last assistant who worked for him swore blind that the only help he was able to give was to spot a few typos in his manuscripts here and there. Luhmann’s only real help was a housekeeper who cooked for him and his children during the week, not that extraordinary considering he had to raise three children on his own after his wife died early. Five warm meals a week of course do not explain the production of roughly 60 influential books and countless articles.

After doing extensive research on Luhmann’s workflow, the German sociologist Johannes F.K. Schmidt concluded his productivity could only be explained by his unique working technique (Schmidt 2013, 168). That technique has never been a secret – Luhmann was always open about it. He regularly mentioned the slip-box as the reason for his productivity. From as early as 1985, his standard answer to the question of how anyone could be so productive was: “I, of course, do not think everything by myself. It happens mainly within the slip-box” (Luhmann, Baecker, and Stanitzek 1987, 142). But few gave the slip-box and the way he worked with it a closer look, dismissing his explanation as the modest understatement of a genius.

His productivity is, of course, impressive. But what is even more impressive than the sheer number of publications or the outstanding quality of his writing is the fact that he seemed to achieve all this with almost no real effort. He not only stressed that he never forced himself to do something he didn’t feel like, he even said: “I only do what is easy. I only write when I immediately know how to do it. If I falter for a moment, I put the matter aside and do something else.” (Luhmann et al., 1987,

154f.)⁴

Until recently, almost no one really seemed to believe it. We are still so used to the idea that a great outcome requires great effort that we tend not to believe that a simple change in our work routines could not only make us more productive, but the work also more fun. But doesn't it make much more sense that the impressive body of work was produced not in spite of the fact he never made himself do anything he didn't feel like, but *because* of it? Even hard work can be fun as long as it is aligned with our intrinsic goals and we feel in control. The problems arise when we set up our work in such an inflexible way that we can't adjust it when things change and become arrested in a process that seems to develop a life of its own.

The best way to maintain the feeling of being in control is to stay in control. And to stay in control, it's better to keep your options open during the writing process rather than limit yourself to your first idea. It is in the nature of writing, especially insight-oriented writing, that questions change, the material we work with turns out to be very different from the one imagined or that new ideas emerge, which might change our whole perspective on what we do. Only if the work is set up in a way that is flexible enough to allow these small and constant adjustments can we keep our interest, motivation and work aligned – which is the precondition to effortless or almost effortless work.

Luhmann was able to focus on the important things right in front of him, pick up quickly where he left off and stay in control of the process because the structure of his work allowed him to do this. If we work in an environment that is flexible enough to accommodate our work rhythm, we don't need to struggle with resistance. Studies on highly successful people have proven again and again that success is *not* the result of strong willpower and the ability to overcome resistance, but ra-

4 <https://youtu.be/qRSCkSPMuDc?t=37m30s> (all links are on takesmartnotes.com)

ther the result of smart working environments that avoid resistance in the first place (cf. Neal et al. 2012; Painter et al. 2002; Hearn et al. 1998). Instead of struggling with adverse dynamics, highly productive people deflect resistance, very much like judo champions. This is not just about having the right mindset, it is also about having the right workflow. It is the way Luhmann and his slip-box worked together that allowed him to move freely and flexibly between different tasks and levels of thinking. It is about having the right tools and knowing how to use them – and very few understand that you need both.

People still search for Luhmann’s “secret,” putting down his remarkable output to him being a genius or even thinking they only need his slip-box and they would be set. Sure, you need to be smart to be successful in academia and writing, but if you don’t have an *external system to think in* and organise your thoughts, ideas and collected facts, or have no idea how to embed it in your overarching daily routines, the disadvantage is so enormous that it just can’t be compensated by a high IQ.

As far as the technology is concerned, there is no secret. It has all been in the open for more than three decades now. So why is not everybody using a slip-box and working effortlessly towards success? Is it because it is too complicated? Certainly not. It is rather surprisingly simple. The reasons are much more mundane:

1. Until very recently, when the first results from the research on the file system were published, some crucial misunderstandings prevailed about how Luhmann actually worked, which led to disappointing results for many who tried to emulate the system. The main misunderstanding stems from an isolated focus on the slip-box and a neglect of the actual workflow in which it is embedded.
2. Almost everything that is published about this system was only accessible in German and was almost exclusively discussed within a small group of devoted sociologists who specialised in Luhmann’s theory of social systems – hardly the kind of critical mass that would draw much attention.

3. The third and maybe the most important reason is the very fact that it is simple. Intuitively, most people do not expect much from simple ideas. They rather assume that impressive results must have equally impressively complicated means.

The contemporaries of Henry Ford did not understand why something as simple as the conveyor belt should be that revolutionary. What difference does it make to let the cars move from worker to worker instead of letting the workers walk from car to car? I would not be surprised if some of them even thought of Ford as a bit simpleminded and overly enthusiastic about a rather minor change in work organization. It is only in hindsight that the scale of the advantages of this small tweak became obvious to everyone. I wonder how long it will take until the advantages of Luhmann's slip-box and work routines become equally obvious to everyone. But by then, everyone will already have known it all along the way.

Whatever the reasons were: The word is out now and I wouldn't be surprised if it spreads fast.

1.3 The slip-box manual

How does the slip-box, the heart of this system, work?

Strictly speaking, Luhmann had two slip-boxes: a bibliographical one, which contained the references and brief notes on the content of the literature, and the main one in which he collected and generated his ideas, mainly in response to what he read. The notes were written on index cards and stored in wooden boxes.

Whenever he read something, he would write the bibliographic information on one side of a card and make brief notes about the content on the other side (Schmidt 2013, 170). These notes would end up in the bibliographic slip-box.

In a second step, shortly after, he would look at his brief notes and think about their relevance for his own thinking and writing. He then would turn to the main slip-box and write his ideas, comments and thoughts on new pieces of paper, using only one for each idea and restricting himself to one side of the

paper, to make it easier to read them later without having to take them out of the box. He kept them usually brief enough to make one idea fit on a single sheet, but would sometimes add another note to extend a thought.

He usually wrote his notes with an eye towards already existing notes in the slip-box. And while the notes on the literature were brief, he wrote them with great care, not much different from his style in the final manuscript: in full sentences and with explicit references to the literature from which he drew his material. More often than not, a new note would directly follow up on another note and would become part of a longer chain of notes. He then would add references to notes somewhere else in the slip-box, some of them which were located nearby, others in completely different areas and contexts. Some were directly related and read more like comments, others contained not-so-obvious connections. Rarely would a note stay in isolation.

He did *not* just copy ideas or quotes from the texts he read, but made a transition from one context to another. It was very much like a translation where you use different words that fit a different context, but strive to keep the original meaning as truthfully as possible. Writing that an author struggles in one chapter to justify his method can be a much more adequate description of this chapter's content than any quote from the text itself (this would call for an explanation, of course).

The trick is that he did not organise his notes by topic, but in the rather abstract way of giving them fixed numbers. The numbers bore no meaning and were only there to identify each note permanently. If a new note was relevant or directly referred to an already existing note, such as a comment, correction or addition, he added it directly behind the previous note. If the existing note had the number 22, the new note would become note number 23. If 23 already existed, he named the new note 22a. By alternating numbers and letters, with some slashes and commas in between, he was able to branch out into as many strings of thought as he liked. For example, a note about causality and systems theory carried the number 21/3d7a7 following a note with the number 21/3d7a6.

Whenever he added a note, he checked his slip-box for other relevant notes to make possible connections between them. Adding a note directly behind another note is only one way of doing this. Another way is by adding a link on this and/or the other note, which could be anywhere in the system. This very much resembles, of course, the way we use hyperlinks on the internet. But, as I will explain later, they are quite different and it would be rather misleading to think of his slip-box as a personal Wikipedia or a database on paper. The similarities are obviously there, but the subtle differences are what makes this system unique.

By adding these links between notes, Luhmann was able to add the same note to different contexts. While other systems start with a preconceived order of topics, Luhmann developed topics bottom up, then added another note to his slip-box, on which he would sort a topic by sorting the links of the relevant other notes.

The last element in his file system was an index, from which he would refer to one or two notes that would serve as a kind of entry point into a line of thought or topic. Notes with a sorted collection of links are, of course, good entry points.

That's it. Actually, it is even simpler than this, as we now have software that makes it much easier (cf. chapter 1.3): we don't need to manually add numbers on notes or cut out paper as Luhmann had to.⁵

Now that you know how the slip-box works, you only need to understand how to work with it. And the best way to understand this is to understand a little bit about the way we think, learn and develop ideas. And if I were forced to boil it down to a single bullet point, it would be this: We need a reliable and simple external structure to think in that compensates for the limitations of our brains. But first, let me guide you through the process of writing a paper with the slip-box.

5 On the back of his notes, you will find not only manuscript drafts, but also old bills or drawings by his children.

2 Everything You Need to Do

Imagine you do *not* start with a clean sheet. Imagine instead some friendly genie (or well-paid personal assistant – whatever is more likely for you to have available) prepared a rough draft of your paper for you. It is already a fully developed argument including all references, quotes and some really smart ideas. The only thing left to do is to revise this rough draft and send it off. Make no mistake: there is still work to do and it is more than just finding some typos. Editing is work that needs focus. You have to rephrase some sentences, delete one or two redundancies and maybe add a couple of sentences or even passages to fill some holes left in the argument. But at the same time, it is a well-defined task: nothing that couldn't be done within a few days and certainly nothing you would have trouble motivating yourself to do: Everybody is motivated when the finish line is within reach. No problem so far.

Imagine now you are not the one who has to edit the rough draft and turn it into the final paper, but the one who has to prepare it. What would be helpful to achieve that quickly? It would certainly make things a lot easier if you already had everything you need right in front of you: The ideas, the arguments, the quotes, long developed passages, complete with bibliography and references. And not just readily available, but already in order, sorted by chapters that have descriptive headlines. Now that's also a clear assignment. No worries about perfect sentences (someone else will take care of that), no worries about finding things and coming up with ideas (someone else already took care of that), you just focus on turning a string of ideas into a continuous text. Again, that is still serious work and you have to put some effort into it, if you want to make it great. You might spot a missing step in an argument and have to fill it, or you might want to rearrange some notes or leave something out that you regard as less relevant. But, again, this is not an overwhelming task and luckily, it doesn't need to be perfect. No problem so far.

Equally manageable is the task of bringing already existing

notes into order, especially if half of them already are in order. Searching through a file system with strings of discussions, plenty of material and ideas is, believe it or not, fun. It does not require the kind of focused attention you would need to formulate a sentence or to understand a difficult text. Your attention is rather at ease and it even helps to have a playful mindset. Only with a less narrow focus will you be able to see connections and patterns. You see clearly where long strings of discussions have already been built up – this is a good starting point. If you do look for specific notes, you have an index to turn to. No problem at all so far.

At this point, it should become clear that you don't need to wait for a genie to appear, as each step is clearly not only within your abilities, but also straightforward and well defined: Assemble notes and bring them into order, turn these notes into a draft, review it and you are done.

Now, that's all well and good, you might say, but what about *writing* these notes? Obviously, it is easy to write a paper if the main part of the writing is already done and only needs to be turned into a linear text. But isn't that a little bit like saying: If you are short of money, just take what you need out of your piggy bank? Everyone can make things look easy by leaving out the main part. So, where is the genie for that?

Granted, writing these notes is the main work. It will take enormous amounts of effort, time, patience and willpower, and you will probably break under the weight of this task. Just kidding. It is the easiest part of all. Writing these notes is also not the main work. Thinking is. Reading is. Understanding and coming up with ideas is. And this is how it is supposed to be. The notes are just the tangible outcome of it. All you have to do is to have a pen in your hand while you are doing what you are doing anyway (or a keyboard under your fingers). Writing notes *accompanies* the main work and, done right, it helps with it. Writing is, without dispute, the best facilitator for thinking, reading, learning, understanding and generating ideas we have. Notes build up *while* you think, read, understand and generate ideas, because you have to have a pen in your hand if you want

to think, read, understand and generate ideas properly anyway. If you want to learn something for the long run, you have to write it down. If you want to really understand something, you have to translate it into your own words. Thinking takes place as much on paper as in your own head. “Notes on paper, or on a computer screen [...] do not make contemporary physics or other kinds of intellectual endeavour easier, they make it possible,” neuroscientist Neil Levy concludes in the introduction to the *Oxford Handbook of Neuroethics*, summarizing decades of research. Neuroscientists, psychologists and other experts on thinking have very different ideas about how our brains work, but, as Levy writes: “no matter how internal processes are implemented, (you) need to understand the extent to which the mind is reliant upon external scaffolding.” (2011, 270) If there is one thing the experts agree on, then it is this: You have to externalise your ideas, you have to write. Richard Feynman stresses it as much as Benjamin Franklin. If we write, it is more likely that we understand what we read, remember what we learn and that our thoughts make sense. And if we have to write anyway, why not use our writing to build up the resources for our future publications?

Thinking, reading, learning, understanding and generating ideas is the main work of everyone who studies, does research or writes. If you write to improve all of these activities, you have a strong tailwind going for you. If you take your notes in a smart way, it will propel you forward.

2.1 Writing a paper step by step

1. Make fleeting notes. Always have something at hand to write with to capture every idea that pops into your mind. Don't worry too much about how you write it down or what you write it on. These are fleeting notes, mere reminders of what is in your head. They should not cause any distraction. Put them into one place, which you define as your inbox, and process them later. I usually have a simple notebook with me, but I am

happy with napkins or receipts if nothing else is at hand. Sometimes I leave a voice record on my phone. If your thoughts are already sorted and you have the time, you can skip this step and write your idea directly down as a proper, permanent note for your slip-box.

2. Make literature notes. Whenever you read something, make notes about the content. Write down what you don't want to forget or think you might use in your own thinking or writing. Keep it very short, be extremely selective, and use your own words. Be extra selective with quotes – don't copy them to skip the step of really understanding what they mean. Keep these notes together with the bibliographic details in one place – your reference system.

3. Make permanent notes. Now turn to your slip-box. Go through the notes you made in step one or two (ideally once a day and before you forget what you meant) and think about how they relate to what is relevant for your own research, thinking or interests. This can soon be done by looking into the slip-box – it only contains what interests you anyway. The idea is not to collect, but to develop ideas, arguments and discussions. Does the new information contradict, correct, support or add to what you already have (in the slip-box or on your mind)? Can you combine ideas to generate something new? What questions are triggered by them?

Write exactly one note for each idea and write as if you were writing for someone else: Use full sentences, disclose your sources, make references and try to be as precise, clear and brief as possible. Throw away the fleeting notes from step one and put the literature notes from step two into your reference system. You can forget about them now. All that matters is going into the slip-box.

4. Now add your new permanent notes to the slip-box by:

- a) Filing each one behind one or more related notes (with a program, you can put one note “behind” multiple notes; if you use pen and paper like Luhmann, you have to decide

where it fits best and add manual links to the other notes). Look to which note the new one directly relates or, if it does not relate directly to any other note yet, just file it behind the last one.

- b) Adding links to related notes.
- c) Making sure you will be able to find this note later by either linking to it from your index or by making a link to it on a note that you use as an entry point to a discussion or topic and is itself linked to the index.

5. Develop your topics, questions and research projects bottom up from within the system. See what is there, what is missing and what questions arise. Read more to challenge and strengthen your arguments and change and develop your arguments according to the new information you are learning about. Take more notes, develop ideas further and see where things will take you. Just follow your interest and always take the path that promises the most insight. Build upon what you have. Even if you don't have anything in your slip-box yet, you never start from scratch – you already have ideas on your mind to be tested, opinions to be challenged and questions to be answered. Do not brainstorm for a topic. *Look* into the slip-box instead to see where chains of notes have developed and ideas have been built up to clusters. Don't cling to an idea if another, more promising one gains momentum. The more you become interested in something, the more you will read and think about it, the more notes you will collect and the more likely it is that you will generate questions from it. It might be exactly what you were interested in from the beginning, but it is more likely that your interests will have changed – that is what insight does.

6. After a while, you will have developed ideas far enough to decide on a topic to write about. Your topic is now based on what you *have*, not based on an unfounded idea about what the literature you are about to read might provide. Look through the connections and collect all the relevant notes on this topic (most of the relevant notes will already be in partial order), copy

them onto your “desktop”⁶ and bring them in order. Look for what is missing and what is redundant. Don’t wait until you have everything together. Rather, try ideas out and give yourself enough time to go back to reading and note-taking to improve your ideas, arguments and their structure.

7. Turn your notes into a rough draft. Don’t simply copy your notes into a manuscript. *Translate* them into something coherent and embed them into the context of your argument while you build your argument out of the notes at the same time. Detect holes in your argument, fill them or change your argument.

8. Edit and proofread your manuscript. Give yourself a pat on the shoulder and turn to the next manuscript.

These are the steps, presented as if you will write only one paper/article at a time. In reality, you never work on just one idea, but many ideas in different stages at the same time. And that is where the system plays out its real strengths. We cannot help but think about more than one question at a time and the chances are that you will think and write in the future as well. It might not be for academia or a publication, but certainly for your own intellectual growth. Gather what you encounter along your way and don’t let any good idea go to waste. You might read a certain book in hope it could be useful for one of the papers you write. Maybe you are wrong, but it still might contain some interesting thoughts worth keeping and useful for something else you haven’t thought about yet.

In truth, it is highly unlikely that every text you read will contain exactly the information you looked for and nothing else. Otherwise, you must have already known what was in there and wouldn’t have had reason to read it in the first place.⁷ As the only way to find out if something is worth reading is by

6 In the program Zettelkasten, the desktop is where you can bring notes into project-specific order. Each project should have its own desktop. If you use pen and paper, use your actual desktop.

7 This problem is known as Meno’s paradox (Plato, Meno 80e, Grube translation).

reading it (even just bits of it), it makes sense to use the time spent in the best possible way. We constantly encounter interesting ideas along the way and only a fraction of them are useful for the particular paper we started reading it for. Why let them go to waste? Make a note and add it to your slip-box. It improves it. Every idea adds to what can become a critical mass that turns a mere collection of ideas into an idea-generator.

A typical work day will contain many, if not all, of these steps: You read and take notes. You build connections within the slip-box, which in itself will spark new ideas. You write them down and add them to the discussion. You write on your paper, notice a hole in the argument and have another look in the file system for the missing link. You follow up on a footnote, go back to research and might add a fitting quote to one of your papers in the making.

How focused you want to read depends on your priorities. You don't have to read anything you don't consider an absolute necessity for finishing your most urgent paper, but you will still encounter a lot of other ideas and information along the way. Spending the little extra time to add them to your system will make all the difference, because the accidental encounters make up the majority of what we learn.

Imagine if we went through life learning only what we planned to learn or being explicitly taught. I doubt we would have even learned to speak. Each added bit of information, filtered only by our interest, is a contribution to our future understanding, thinking and writing. And the best ideas are usually the ones we haven't anticipated anyway.

Most people follow different lines of thought at the same time. They might focus for a while on one idea, but then leave it alone for another while until they see how to proceed further. It is helpful then to be able to pick up on another idea now and go back to the earlier thought later. It is much more realistic to keep this flexibility and you don't have to worry about starting all over.

3 Everything You Need to Have

There is this story where NASA tried to figure out how to make a ballpoint pen that works in space. If you have ever tried to use a ballpoint pen over your head, you have probably realised it is gravity that keeps the ink flowing. After a series of prototypes, several test runs and tons of money invested, NASA developed a fully functional gravity-independent pen, which pushes the ink onto the paper by means of compressed nitrogen. According to this story, the Russians faced the same problem. So they used pencils (De Bono, 1998, 141). The slip-box follows the Russian model: Focus on the essentials, don't complicate things unnecessarily.

Academic writing in itself is not a complicated process that requires a variety of complicated tools, but is in constant danger of being clogged with unnecessary distractions. Unfortunately, most students collect and embrace over time a variety of learning and note-taking techniques, each promising to make something easier, but combined have the opposite effect.

The whole workflow becomes complicated: There is the technique of underlining important sentences (sometimes in different colours or shapes), commenting in the margins of a text, writing excerpts, employing reading methods with acronyms like SQ3R⁸ or SQ4R,⁹ writing a journal, brainstorming a topic or following multi-step question sheets – and then there are, of course, the one thousand and twelve apps and programs that are supposed to help with learning and writing. Few of these techniques are particularly complicated in themselves, but they are usually used without any regard to the actual workflow, which then quickly becomes a mess. As nothing really fits together,

8 SQ3R is the acronym for “Survey, Question, Read, Recite, Review,” developed by psychology professor Francis Pleasant Robinson for the U.S. Army during World War II (Robinson, 1978).

9 SQ4R, “Survey, Question, Read, Reflect, Recite, Review” will most certainly be replaced soon by SQ5R – whatever that will stand for.

working *within* this arrangement becomes extremely complicated indeed and difficult to get anything done.

And if you stumble upon one idea and think that it might connect to another idea, what do you do when you employ all these different techniques? Go through all your books to find the right underlined sentence? Reread all your journals and excerpts? And what do you do then? Write an excerpt about it? Where do you save it and how does this help to make new connections? Every little step suddenly turns into its own project without bringing the whole much further forward. Adding another promising technique to it, then, would make things only worse.

That is why the slip-box is not introduced as another technique, but as a crucial element in an overarching workflow that is stripped of everything that could distract from what is important. Good tools do not add features and more options to what we already have, but help to reduce distractions from the main work, which here is *thinking*. The slip-box provides an external scaffold to think in and helps with those tasks our brains are not very good at, most of all objective storage of information.

That is pretty much it. To have an undistracted brain to think with and a reliable collection of notes to think in is pretty much all we need. Everything else is just clutter.

3.1 The Tool Box

We need four tools:

- Something to write with and something to write on (pen and paper will do)
- A reference management system (the best programs are free)
- The slip-box (the best program is free)
- An editor (whatever works best for you: very good ones are free)

More is unnecessary, less is impossible.

1. You need something to capture ideas whenever and wherever they pop into your head. Whatever you use, it should not require any thoughts, attention or multiple steps to write it down. It can be a notebook, a napkin, an app on your phone or iPad. These notes are not meant to be stored permanently. They will be deleted or chucked soon anyway. They only function as a reminder of a thought and are not meant to capture the thought itself, which requires time to phrase proper sentences and check facts. I recommend having pen and paper with you at all times. It is really hard to beat a notebook in its simplicity. If you use other tools, make sure everything ends up in one place, a central inbox or something like that, where you can process it soon, ideally within a day.
2. The reference system has two purposes: To collect the references (duh) and the notes you take during your reading. I strongly recommend using a free program like Zotero, which allows you to make new entries via browser plugins or just by entering the ISBN or digital object identifier (DOI) number. Zotero also can be integrated into Microsoft Word, OpenOffice, LibreOffice and NeoOffice, which allows you to insert quotations without actually typing in the reference. That not only makes things easier, you also mitigate the risk of messing things up when you add, edit or delete additional references. You can also easily change the format according to the standards required by your professors or the journal you write for. You can add notes to each entry – but it would also be fine to write your notes by hand and link them to the reference if you prefer to write by hand at this stage. In that case, just give the notes a standardised title like “AuthorYear” and keep them in alphabetical order in one place. You can download Zotero for free at zotero.org (Windows, Mac and Linux). You will find the links to all

recommended programs on takesmartnotes.com.¹⁰ If you prefer or already work with another, equally simple program, there is no reason not to use that.

3. The slip-box. Some prefer the old-fashioned pen and paper version in a wooden box. That's fine – computers can only speed up a relatively minor part of the work anyway, like adding links and formatting references. They can't speed up the main part of the work, which is thinking, reading and understanding. All you would need are sheets of paper about the size of a postcard (Luhmann used the DIN A6 size, 148 x 105 mm or 5.83 x 4.13 inches) and a box to keep them in. And even though there are clear benefits of handwriting (cf. below chapter 3.2.1), I recommend using the digital version, if only for mobility. Even though you could basically emulate the slip-box with any program that allows setting links and tagging (like Evernote or a Wiki), I strongly recommend using Daniel Lüdecke's Zettelkasten. It is the only program I know that really implements the principles behind Luhmann's system and is at the same time simple and easy to use. It is free and available for different operating systems. You can download it from zettelkasten.danielluedecke.de (please consider sending a donation to the developer if you like it).
4. Finally, the editor: If you use Zotero, I recommend using one of the editors it is compatible with (Microsoft Word, OpenOffice, LibreOffice or NeoOffice), because it makes life a lot easier if you don't have to type in every reference manually. Except for that, everything works fine – no editor can improve an argument.

If you have pen and paper, an editor, your slip-box and reference system at hand, you are ready to go.

¹⁰ While there are no official apps for smartphones available at the moment, there are multiple third-party solutions for both Android and iOS.

4 A Few Things to Keep in Mind

Getting the tools ready shouldn't have taken more than 5-10 minutes. But having the right tools is only one part of the equation. It is easy to get fooled by their simplicity. Many "tried them out" without really understanding how to work with them and were expectedly disappointed with the results. Tools are only as good as your ability to work with them. Everybody knows how to handle a flute (you blow into one end and press your fingers on the holes according to the notes you are playing), but nobody would try it out once and then judge the instrument on what they hear.¹¹

But with tools like the slip-box, we sometimes forget that the handling is as important as the possibilities of the tool itself. If we try to use a tool without putting any thought into the way we work with it, even the best tool would not be of much help. The slip-box, for example, would most likely be used as an archive for notes – or worse: a graveyard for thoughts (cf. Hollier 2005, 40 on Mallarmé's index cards). Unfortunately, there are quite a few explanations of Luhmann's technique on the Internet that focus in a misleading way on the technicalities of the slip-box. This has led to plenty of misconceptions about its abilities. But things are changing: Luhmann's slip-box is currently the object of a long-term research project at the University of Bielefeld, and their first results have already given us a comprehensive understanding about how Luhmann really worked with it. You can look up for yourself some of his notes on their website.¹² Soon, you will be able to access the whole digitalised slip-box online. Add to this understanding recent psychological insights about learning, creativity and thinking, and we also get a pretty good picture *why* it works. And it is indeed crucially important not only to know how it works or how to work with it, but also why it works. Only then will you be able to tweak

11 Google Monty Python "How to Play the Flute".

12 Unfortunately most of it is in German: <http://www.uni-bielefeld.de/soz/luhmann-archiv/>

it for your own needs. And this is what this book is for: To give you all the resources you need to work in the best possible way with the best technique available. By keeping just a few basic principles in mind and with an understanding of the logic behind the file system, I see no reason why anyone should not be able to replicate Luhmann's formula for successful learning, writing and research.