



**Fritz Breithaupt**

## **The Narrative Brain**

### **The Stories our Neurons Tell**

With illustrations

(Original German title: *Das narrative Gehirn*.)

Was unsere Neuronen erzählen)

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**Why do we dedicate so much time to stories? And why do we even engage with narrative thinking in the first place, why are we downright addicted to it? Based on the most current research findings, Fritz Breithaupt presents a ground-breaking redefinition of humans as narrative beings.**

*»The Narrative Brain: The Stories our Neurons Tell is a unique interdisciplinary exploration of emotional rewards of narrative thinking.«*

*—Lisa Zunshine, author of The Secret Life of Literature*

*»Everyone is talking about narratives.*

*Finally there is a book to explain what's really behind this.«*

*—Wolfram Eilenberger, author of Time of the Magicians*

*»Breithaupt develops nothing less than an approach to a completely new kind of psychology.«*

*—Hans Ulrich Gumbrecht, author of Production of Presence*

## **ABOUT THE BOOK**

**Life is experienced more intensely when we are enmeshed in stories—I narrate, therefore I am. But it is not only our own lives that are heightened by narratives; through narratives we are also able to transform individual experience into shared experience. To achieve this, our brains and the ways in which we tell stories must be attuned to each other. But how exactly does this happen? Fritz Breithaupt's brilliant book redefines humans as narrative beings who anchor themselves in the world through narratives.**

Tapping into the essence of thinking in stories, Breithaupt draws on the latest scientific research including neuroscience and experiments where thousands of subjects play the telephone game, as well as on literary analysis of novels, Grimm's fairy tales, and everyday office gossip. The reward of narrative thinking, it turns out, is emotional, and we live the way we live because we follow the specific reward patterns of narratives. Yet at the same time, things can always turn out differently in narratives, and it is precisely this fact that allows us to try out different versions of our own lives.

## PRAISE

»*The Narrative Brain: The Stories our Neurons Tell* is a unique interdisciplinary exploration of emotional rewards of narrative thinking. Fritz Breithaupt is a distinguished literary scholar, cognitive scientist, and the Director of the Experimental Humanities Lab at the IU Bloomington. His witty, imaginative, genre-and media-crossing book changes everything we thought we knew about how stories satisfy their readers.«

—*Lisa Zunshine, Bush-Holbrook Professor of English, University of Kentucky, and author of The Secret Life of Literature (MIT Press, 2022)*

»Applying the concept and the analysis of narration not to previously spoken or written texts, but to a practice of consciousness that we all perform daily and that is nevertheless specific, is the first punch line of Fritz Breithaupt's book on "the narrative brain." From this premise, he develops nothing less than an approach to a completely new kind of psychology. The second punch line is a result of the competence with which he brings into play the most important insights that the humanities and natural sciences have previously developed in regard to narratives, which have always been manifest, from their structure to their aesthetics to their political-social functions. The fact that Breithaupt thus invites his readers to enjoy a productive reflection on their own existence, instead of guiding them in an overly pedagogical or authoritarian manner, is what makes this essay so charming.«

—*Hans Ulrich Gumbrecht, Albert Guérard Professor in Literature, emeritus, Stanford University, and author of Production of Presence (Stanford UP, 2003)*

## ABOUT THE AUTHOR

**Fritz Breithaupt** is Provost Professor for cognitive science and Germanic Studies at Indiana University in Bloomington (USA) and a regular guest professor at St. Gallen University (HSG) in Switzerland. Among his recent publications are *The Dark Sides of Empathy* (original German edition by Suhrkamp published in 2017, English edition by Cornell UP published in 2019, also published in Korean by SOSO and Hungarian by Typotex) that examines the many cases where empathy fails. The German version of the book made it on the *Spiegel* bestseller list in February 2017. He is also the author of *Kultur der Ausrede* (Culture of the Excuse; Suhrkamp 2013); *Kulturen der Empathie* (Cultures of Empathy; Suhrkamp, 2009; Spanish edition by Katz, 2011); and *Der Ich-Effekt des Geldes* (The Ego-Effect of Money; Fischer Verlag, 2008). His research combines empirical methods from the sciences with humanities approaches and has appeared in leading journals of the field, including *Proceedings of the National Academy of Sciences*, *Cognition & Emotion*, and *Critical Inquiry*. Fritz Breithaupt has received fellowships from the Fulbright Foundation and the Alexander-von-Humboldt Foundation. He is a frequent contributor to publications such as *Die Zeit*, *Philosophie Magazin*, and *Chronicle of Higher Education*, and has given interviews for NPR, BBC, and Deutsche Welle. In his spare time, he goes trekking, biking, or listens to Baroque concerts with his wife Leela.

Breithaupt is also the founding director of the unique **Experimental Humanities Laboratory**. The lab with members from many fields explores narrative events, empathy, moral thinking, side-taking, and emotions, sentiments and violence in narratives and media.

### **PRAISE FOR *THE DARK SIDES OF EMPATHY*:**

»Fritz Breithaupt's thorough examination of the risks of empathy—self-loss, polarization, and bystander effects—warns that we should not expect it to lead inevitably to altruism.

Breithaupt shows that empathy can be a source of emotional vampirism or sadistic pleasure.

His work encourages circumvention of barriers to empathy and  
channeling it into helping others.«

—*Suzanne Keen, Hamilton College, author of Empathy and the Novel*

»Fritz Breithaupt's new book is a brilliant, iconoclastic inquiry into the »terrible things we do because of our ability to empathize with others.« It ranges widely in its case studies—from

Angela Merkel's refugee politics, and the aesthetics of empathy, to helicopter parenting—while remaining pointedly reader-friendly, compelling, witty, and personable. *The*

*Dark Sides of Empathy* is a must-read for anyone who writes about empathy, prizes it, or  
thinks that we don't have enough of it to go around.«

—*Lisa Zunshine, University of Kentucky, author of Getting Inside Your Head*

»By focusing on the dangers arising from our capacity for empathy, Fritz Breithaupt illuminates its dark side, and demonstrates why empathy doesn't necessarily lead to altruism or moral behavior. An important book to temper the accepted and a bit naïve view that empathy is the solution to our social ailments.«

—*Jean Decety, University of Chicago*

»Empathy, Fritz Breithaupt shows through an abundant collection of examples, can lead to immoral acts as well as moral ones.«

—*Neue Zürcher Zeitung*

»The deeper you go into this book, the more dominant the dark sides of empathy seem—and the more urgent it is to face them.«

—*BR*

# THE NARRATIVE BRAIN: THE STORIES OUR NEURONS TELL

(Alternative title: *Telephone Games*)

## Translation sample by the author

(Note on this translation: Author will provide a clean copy, not a translation.  
The English version will be similar but not identical to the German.)

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## Introduction

Why do we spend so much time with stories and narratives? By this I mean not only the movies we watch and the books we read, but also the many conversations we have about who did what to whom, the posts on social media, our memories, and our own thoughts about what to do in certain situations, which can seem like little episodes we watch.

The answer to this first question is simple: in narratives, we relive the experiences of others and share their experiences. This is possible because in narratives we can imagine ourselves in the place of others and have “their” experiences ourselves. We don’t have to touch a hotplate, rob a bank, or cheat on our partner to realize that maybe that’s not such a great idea. Something in us holds us back from that, and it’s not morality or knowing better, but somehow already having had a related experience that was given to us in narrative form. Narratives give us the pleasure of trying out the forbidden. There is the nice saying, “You can’t have your cake and eat it too.” But with narratives we can do just that: We can have the experiences—narratively, mentally—and at the same time not perform the actions. We double our lives. We can also witness what has already been completed in the past for a second time or visualize a planned action, ranging from the most minimal events to major life decisions.

In this respect, narrative thinking is a great medium for experiencing and planning. You don’t have to be an evolutionary biologist to recognize that narrative thinking offers real survival advantages. We are better prepared for more life situations and can plan future actions. We learn from each other, and we manage to do something incredible: the experiences of one person can become the experiences of other people. We are not singular isolated beings, but a network of individuals. Sponges, ants, and herds of mammals only share a limited range of experiences, such as blind panic in cases of immediate danger. We, on the other hand, are constantly multiplying our experiences and can thus make better decisions and are better prepared for a range of events. Fewer events traumatize us.

However, this raises a second question: why do we engage in this narrative thinking? We don’t do something just because it gives us selective advantages. After all, we don’t get involved in the laborious exercise of reproduction with all the problems of finding a partner because it helps our genes to spread, but because sex magically attracts us and love makes us happy. Conversely, not everything we do makes sense in evolutionary terms. For example, I dare to doubt that the foods most popular in the U.S. are good for my fellow citizens.

This second question of why we engage in narrative thinking is the starting point for this book. What is in it for us? We will come to an answer by examining telephone games, that is chains in which people retell stories and events, to see what sticks in narratives. In fact, my

lab conducted what is likely the largest retelling study to date with close to 20,000 retellings and 12,800 participants. It turns out that emotions play a central role in this process. Narrative thinking may be so attractive to us because it rewards us with specific emotions. When we co-experience a narrative episode, we also co-experience the emotions of the sequence of events. Having emotions is certainly better than not having emotions, and there is a long list of highly attractive emotions. This is true even for some negative emotions. There is another benefit of these emotions. They have a stop function that allows us to step out of the narrative and return back to our present situation. In short, emotions reward us, but also release us from the narrative. It seems that we want to dive deep into our dream spaces, but also constantly return back to the surface.

This thesis in regard to the emotional rewards will lead us to a third question. Narratives are, in a sense, addictive. Or, to put it more cautiously, certain narrative sequences imprint themselves on us to such an extent that we revisit them again and again and get used to them. Everyone has their own weaknesses in this regard. Some want to see themselves as triumphant heroes, while others celebrate victim roles that they can emotionally relate to. I bet any reader of these lines will know what narrative emotions attract them and become their go-to-choices in their daydreams, movie selections, as well as memories of their lives. This “sticking” tendency of narrative emotions raises the question of whether narrative thinking, which takes us out of our narrow existence and allows us to experience the lives of others, does not also hold us captive. In other words, can we “change our narratives,” as people like to say these days? Or are we stuck in a narrow world of narrative patterns that we repeat over and over? Here we get to the large question of who we are because we think, co-experience, and live in narratives. We are narrative creatures, but what does this mean?

### **I Think I am on the Wrong Track**

Everyone is the architect of her own life, as the saying goes. But above all, we know the reverse: we dig our own graves. This does not only mean that we unintentionally fall into the traps we set for others. Rather, we tend to deepen our unhappiness by aligning our worldview with such unhappiness. We all know a pessimist for whom even the best news somehow becomes evidence of his unhappiness. One would like to grab hold of such a pessimist and shake them, but it would not change anything. Rather, it would only prove to them that everyone is against them, including the friend shaking them.

Some of these graves are not directly negative, but they are the groves of sameness. We expect what we know. Obviously, it is not easy to change one's patterns. Like the pessimist, we can all be caught up in our view of things that determines who we are, where we are, and how we envision our future. Good girls go to heaven, to quote another saying, but the rest of us stay where we are. And most of all, that means we all keep getting trapped in our narratives. We expect certain things, and are entangled in our bleak expectations until they occur. And when they don't occur, we wait until they do. In the process of waiting, we reshape actual events in our minds to fit our vision. In every smiling grandmother, some people just see a wolf. And in the U.S., even after many scandal-ridden years, many people can't help but view Trump as a hero.

As a professor, I know many colleagues who cling to a vision from their teenage years. They want to become a professor at Harvard, win a Nobel Prize, or find a cure for cancer. These are all nice goals that may spur us on to work. But these visions do not seem to make my colleagues happy. Instead some are bitter, frustrated, and envious of what others have accomplished. The narrative these colleagues have chosen no longer fits their lives. But they can't seem to drop it either.

Other people constantly see themselves in the victim role. Of course, it is important to recognize when one is being oppressed in order to rebel against it or seek help. But being a victim can also become a role that is revisited again and again because someone knows that role too well and can slip into it like a glove that fits. After all, the victim narrative portrays the victim as morally superior and denies them responsibility and agency. For the victim, the narrative can thus be a relief, but one that binds to more victim-narratives.

Another variation I often hear from my friends in Germany is the narrative of the one hardworking worker bee and the hundred lazy parasites. Unfortunately, it is not a fairy tale with a good outcome, because my friends find themselves surrounded by exploiters and freeloaders. In the end, the wrong person always wins, even though my friends alone keep the business going.

Likewise, certain family roles can capture us. One of them is the super-mother, which is found in many cultures. Always smiling, she keeps the household running, is the best friend of her children's friends, does the emotional labor in the family, always has food ready for everyone in a clean kitchen, and at the same time still has a career... The pressure is great, there is hardly a free minute, especially when something doesn't work out.

We might further find ourselves attracted to specific roles in love. You could fall in love with the wrong person. Actually, you fall in love with the right person, but there is no

reciprocity. Or the beloved turns out to be a sociopath. In that case, the right person suddenly becomes the wrong one. But you can't just forget the person you love. Again and again, small sequences flash before you: how you are together in an Argentine tango bar, how you grasp each other's hand, or how the other is just with you in the shopping mall right now. Letting go is hard.

These examples show a wide range of behaviors in which a self-image becomes a trap. At first glance, holding on to such an imaginary self-image is not a matter of narrative thinking. We might try to explain these fixations in terms of worldviews, past experiences, and imprints, schemas, scripts, patterns, or ideals. This may all be true, but at the same time these self-images can only exist because they stand before us as concrete minimal narratives with action potential. We see ourselves as heroes (insofar as academics can be heroes, and that is a notion that certainly requires a truly academic effort), as victims, as persuaders, as super-mothers, or as lovers only because we can concretely imagine ourselves into a situation that involves actions and events with a narrative before-and-after structure. Some narratives may just appear to us as a flash in split seconds, others can stand before us as concrete guiding path, but even the short version offers some development, some action pattern that draws us in and invites us to stay.

It is not easy to leave behind these narratives and the self-images built on them. Narratives are the form in which our brain simulates our actions and the actions of others. Because we consider these simulations suitable to represent our actions, they are under strong suspicion of reality. And who wants to say goodbye to reality? But there is also a way out.

On the one hand, narratives are representations or simulations of the social world that act out our situations, decisions, actions, and feelings. On the other hand, they are merely figments of our imagination. Narratives have forms. And forms have their own regularities that do not just dance to the tune of reality. Narratives have forms into which we put the observed actions of ourselves and others. When we observe others, we quickly attribute certain motivations and interests to them, we nail them down to something. We observe events in small sequences and episodes in which everyone takes on dyadic or triadic roles in relation to each other: Villain, perpetrator, hero, love interest, rival, helper, liar, victim, judge, friend, false friend, traitor, sociopath, witness, mentor, freeloader... These roles exist only in our minds, because of course all people have many tendencies and could find themselves in most roles. But to observe a social situation, it is a tremendously convenient simplification that we can commit people to one role or another. This makes the situation manageable and opens it for simulation. In this way, the narrative can run smoothly in our minds, like a movie, and can also be remembered excellently afterwards. More simply, narratives offer a highly attractive



orientation in a complex world. Who could say no to that? In any case, our brain does not miss this opportunity. Narratives allow us to make assumptions and predictions about the social world, to remember them, and to communicate them. This is not just convenience, but quite rational and usually works excellently well. But it is also precisely how we get stuck in a rut. The narrative, once developed, is so convincing that we cannot simply shake it off.

This being caught goes far beyond self-images and captures many forms of behavior. In most cases, it certainly helps that we know how to behave in certain situations and what to expect. But many odd forms of misbehavior also fall within the realm guided, at least in part, by narrative thinking. Entire narrative programs can be activated by short triggers.

In a frightening racist incident in my American hometown, on 7/4/2020, a man of African descent was harassed by a group of white people who were, allegedly, shouting “Get the noose.” In a chilling way, this phrase put before everyone’s mental eyes what sequence of events might be taking place. The words trigger a mental program, not only a narrative pattern but an action program. Such incited narratives often materialize. This was also known to the possible victim, who for his part might have provoked this situation, because after all he invaded the party on private property of the group twice in a row, after he was first escorted out once, as will soon be discussed in court. Although his friends caught the action on cell phones, the horrific call was not recorded. Nevertheless, what seems to have started as an accidental trespassing quickly solidified, following century old narratives of oppression.

Not all such solidified forms of behavior need to be terrible. A typical behavior in committees or teams, which I know from the university, but which is certainly part of everyday life elsewhere, is that someone decides quickly—all too quickly—for or against an initiative. After the initial decision, the person almost always sticks with it. Whoever is for it can always find justifications, even if rational problems arise. Those who are against can make everything look bad. This is not just about the intellectual convenience of maintaining a judgment once it has been made. Rather, it is essentially about one’s role, about how one appears in the group: as an enthusiastic advocate or as a sharp rationalist who seeks out the flaws in the thinking of others. Such roles want to be cultivated with the right formulations, facial expressions, and codes of collegial behavior. Many good ideas and initiatives are destroyed in this way.

The so-called sunk cost fallacy or the escalating commitment also belong to the circle of narrative patterns: We have decided on something and now simply cannot let go. We have this concert ticket and are now driving there through a snowstorm, even though we are sick. The alternative of simply staying in bed doesn’t occur to us, because our enthusiastic experience of the music is too concrete in front of our mental eyes, which we will hardly be able to enjoy

when we have a bad cold. Or we can imagine how we will tell others about our enthusiasm, no matter what it will really have been like.

Here we come back to the pessimist, the unhappy lover, and the frustrated colleague, all holding on to the wrong narrative. What can help them? The answer: more narrative thinking! Narratives are not simply one-way streets. Rather, narratives always come in the plural. For every narrative, there is a counter-narrative. And more importantly, when we find ourselves in a narrative, whether watching a movie or contemplating the narrative of our lives, things can always turn out differently. Narratives are multiversional. Multiversionality here is not to say that there is more than one version of a medieval manuscript. Rather, multiversionality means that as we find ourselves entangled in a narrative, we are faced with more than one possible development and outcome. Narratives are so exciting and intense for us because everything could always turn out differently. And we ourselves constantly create this plurality by anticipating what could or should happen.

It is precisely this mental multiversionality (to introduce a beautiful conceptual monster into the field) that offers a way out of the ruts that we have dug for ourselves with our narratives. Narratives always allow us to skip and jump onto other tracks, simply by imagining it. Narratives can be the medium of our unhappiness, but narratives are also the means of escaping it. The spear that strikes the wound also heals it.

To avoid misunderstandings: This is not a self-help book. As a therapist, I am quite unsuitable. If someone were to tell me his life and was looking for a way out of a misfortune, I, armed with the findings of this book, might perhaps fail to select the best way out of my friend's mess, but instead recommend the most exciting storyline. Suspense can be great, but one might not want to have to endure everything that is suspenseful in one's own life.

However, in narrative thinking, everything could always turn out differently—even if it usually does not. Couldn't I have said something else that one day in that little café? We could still be together then. Couldn't Ned Stark in *Game of Thrones* have sensed the trap? Couldn't I have convinced my mother to go to the doctor sooner? Why doesn't Elizabeth realize Wickham is a fraud?

Every narrative generates ideas of alternatives. We imagine how things could have gone differently. We wish our favorite character would suddenly fall out of character to escape a trap. We realize that friends are ensnared in bad narratives. Sometimes we ask ourselves if we shouldn't do something really crazy right now instead of continuing with the mundane. And at times, we do. Because we think narratively, we can also recognize and at times seize upon *alternative versions*. Narratives allow us to see ways out, even where there seem to be none.

We can shape the narratives that play out around us; we can get creative and exercise control. Imagine: We do what we really want to do. It sounds simple. But to get there, we need narratives that show us where we are and no longer want to be.

In this book, several dimensions of the narrative brain will be brought into focus to offer models of our narrative brain. The path to the theses of this book combines everyday experiences with works of fiction and is also guided by the findings of numerous scientific disciplines. At more than one point, we will also dig a little deeper and report on the studies conducted in my laboratory, the Experimental Humanities Laboratory at Indiana University. As will be shown in the empirical studies conducted there, stories are always not only about clarity and the completion of thoughts, but also about confusions, coincidences, and alternatives.

[...]

## **Q & A**

Narratives allow us to co-experience the situations of others. In narratives, we can transfer experiences from one person to another and we can share possible and even impossible experiences in fiction, fantasy, and planning. Thanks to our narrative brain, we are connected to other beings in a deep way since we can go through similar experiences by just talking about them. We are not alone in our lives and in our most important experiences since we can share them with others, thereby also reliving them in different form, mediated by our audience. This is an amazing capacity. Narrative co-experience allows for a community that goes far beyond simply being together at the same time and space. We can escape from the prison of our own brains and the here-and-now. Mobility of consciousness is the great evolutionary achievement of our species. To understand how our consciousness became so mobile, we need to look at narratives, because they offer transportation and immersion into strange worlds.

However, the list of questions about narrative thinking is long. They can basically be divided into three groups:

1) What are narratives, respectively what are narratives in our thinking? What do they convey? How does the content of narratives differ from other types of information? When we hear or read narratives, what sticks with us? What gives them stability?

2) Why is it attractive for us to engage in narratives? Why do we not only engage in this complex way of thinking, but have elevated it to one of our most popular leisure activities, if one thinks of watching movies or the happy social chitchat with our friends? What's in it for us?

3) How do narratives drive our consciousness out of the here-and-now? How does the immersion into another world succeed? Where do the intensities of the target world come from that makes us (almost) forget the body in our home world? What is mobility of consciousness anyway? This last set of questions also will lead us to the one-sidedness of thinking and the fact that we remain stuck in certain patterns. Here we will ask what narrative thinking has to offer us to break out of narrow and one-sided thinking, to transport us into the unknown.

Here is one central idea in advance. It is by means of episodes that we structure our narrative thinking, and the ending of a successful episode is marked by an emotion. These emotions reward narrative thinking. Narratives tempt us, detach our consciousness from the here-and-now, and transport us to a world where we hope for an emotional reward. We also seek such an episodic structure with emotional reward in our behavior: we are done with something when we reach the concluding emotion. Narrative thinking is so important for us because it allows us to recognize the beginning and end of sequences and, with the emotion at the end, gives us a signal that something has now been accomplished and completed. The emotion at the end is therefore a reward in a double sense. It rewards and evaluates the concrete actions that we have narratively experienced, and at the same time it redirects us out of the narrative world back to ourselves.

The happy ending obviously rewards morally good behavior. The narrative of curiosity, for example, finds its reward in the feeling of wonder. But more complex and negative feelings also belong here: the ambivalent feeling of shame can be a punishment for the one who stepped out of line and thus rewards the angry observer. Sometimes, sadness is rewarding too. But here it quickly gets complicated, because we always have to ask from which perspective the scene is witnessed. However, one consequence is already clear: Narratives train us to expect emotions. We expect or hope for certain emotions as a reward for our engagement in narrative sequences. The adventure and hero story, for example, trains us to expect triumph. In love stories, after appropriate delays, we expect erotic fulfillment. Subtle stories accustom us to aesthetic emotions of sudden clarity. And we have come to feel the same way in real life, where, for example, after hard work we feel a satisfaction of accomplishment, or after the admonition and the argument we hope for the subsequent reconciliation. These expectations structure our lives and thus subject it to the narrative thinking in episodes. They can make us addicted. We may be aware of this in the extreme cases from the workaholic to the sex addict, but other people also orient their lives toward some doses of emotion.

## Basic terms

Instead of concluding with an overview of the following chapters, I would rather like to briefly introduce the most important basic concepts for this book at the end of this introduction. These basic concepts will be like the pieces of a mosaic from which the overall picture can emerge.

***Mobility of consciousness.*** Our minds possess a miraculous mobility of consciousness, a basic concept already mentioned above. Narrative thinking is its medium. With narrative thinking, we can mentally live in the situation of any other being and thus co-experience it. By understanding the situation of another as narration, they become accessible for us to experience.

***Simulation.*** With narrations, we simulate actual or fictitious situations. We imagine and even start to feel a body we do not have. On the one hand, simulation is a duplication or copy of bodily life, and in respects, simulations are oriented toward regular processes of life. But on the other hand, simulations are disconnected from the world of bodies and the regime of strict temporal succession. They only play out in our mind. This disconnect begins with the fact that we can revisit past events and mentally replay them. But we can also plan and fantasize. We can imagine what it would be like to leave everyday life and move to a tropical island. Will I really be happy then, now, but also in ten years from now? What would actually happen if you were dating a movie star? Some simulation is also much more mundane. In the morning before I get up, I go through my calendar on full days, where I have to be and when, who I will meet there, what it will be about in each case. This is usually a boring story, although I do spend more time thinking about the more difficult meetings, and at times I make them complex. Such a simulation prepares me for when things really get going. In some cases, I play out entire scenes of behavior and dialogue from many perspectives.

Such simulations are said to take place “offline,” i.e. in a state that is decoupled from actual and physical action. Offline behavior includes the observation of others, but also mental simulation. Neuroscientists are analyzing how the neural networks established “online” are simultaneously used for reenacting and simulating social interactions (*re-use*).<sup>1</sup> Conversely, it is possible that networks established through simulation or observation prepare one’s own behavior. Such simulations through narrative thinking play an important role in many decisions and judgments. These include, for example, moral issues, such as wondering whether one can get away with a little cheating or how one should respond to moral transgressions by others.

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<sup>1</sup> Leonhard Schilbach, “On the relationship of online and offline social cognition,” in *Frontiers in Human Neuroscience* 8 (2014), p. 278.

**Predictive brain, prediction error.** Neuroscientific measurements show that our brain is often just ahead of the external situation:<sup>2</sup> When driving, we react to the smallest stimuli that indicate that someone might overtake us in a moment. We see a movement, not consciously, but already react by preparing the activation of muscles and possible actions. Emotions are also activated.<sup>3</sup> In most cases, this involves immediate expectations, i.e. our brain produces expectations (*predictions*) about what is already happening or has already begun. These predictions may or may not come true, errors may occur (*prediction error*), which are then corrected.

It would certainly be wrong to call these minimal and usually barely conscious expectations narratives. However, we have to ask ourselves where the transition from immediate expectations to narrative-like expectations lies. Consider the following case: you register a twitch in your partner's face, presumably without consciously noticing it, but this twitch is in many cases associated with anger and rage and somehow, these emotions get registered. You adjust to this and suddenly you have the sentence in your head, "Maybe she will leave me." In response to this sentence, images and sequences appear in a flash, until you realize that it probably won't happen that way. Nevertheless, something sticks, a reality that is multiple in narrative terms now shapes our experience.<sup>4</sup>

**Multiversionality.** Stories are often exciting and can keep us spellbound. While we are in the world of a story and in a specific situation, we feel tension, disappointment, and hope. We have expectations and doubts and consider different possibilities. In the process, we end up mentally generating different, mutually exclusive versions of what might happen, or might have already happened. Maybe Harry Potter survives in the final book, but maybe not. When a friend tells us about their last date, many versions of what might have gone wrong pop into our heads. Talking about the model railroad in his basement was perhaps only partially useful for a successful date. I call this consideration of different possibilities multiversionality.<sup>5</sup> Multiversionality is not an accidental or incidental property of narratives, as I will argue, but an essential feature of narrative thinking.

**Serial reproduction. Telephone games. Chinese whisper.** The term serial reproduction denotes a method from psychology in which participants are asked to repeat a story or a cultural

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<sup>2</sup> See chapter 4; for an introduction, see Jakob Hohwy, *The Predictive Mind*, Oxford: Oxford University Press, 2013.

<sup>3</sup> See Benjamin J. Hutchinson and Lisa Feldman Barrett, "The power of predictions: An emerging paradigm for psychological research," in *Current Directions in Psychological Science* 28, 3 (2019), pp. 280-291.

<sup>4</sup> See chapter 7.

<sup>5</sup> Already Anat Zanger, *Film Remakes as Ritual and Disguise*, Amsterdam: Amsterdam University Press, 2006; see also Fritz Breithaupt, *Kultur der Ausrede*, Frankfurt: Suhrkamp, 2012.

artifact from memory many times, i.e., retell the same story repeatedly or trace and retrace a picture many times. In this process, either the same participant can reproduce the memory several times or chains of participants each receive a story or artifact and pass it on to the next participant, as in the telephone game. Such experiments of serial reproduction can be conducted in laboratories, but they also happen naturally when artifacts of culture are passed on. In fact, it can be said that all culture is a large telephone game in which people pass on information from one generation to the next. Myths and the Grimm fairy tales, which we will discuss later, are a product of serial reproduction, but also laws, religions, and many aspects of our daily life that have been passed on over centuries.

This method was popularized by the Cambridge psychologist Frederic Bartlett in 1932 and has since been tested to study a wide range of phenomena, such as cultural evolution, memory, communication, social media, and art. Bartlett observed a tendency for memory to stabilize when narratives reached certain forms. He concluded from his experiments on the retelling of an obscure myth that this method was particularly well suited to distilling the basic forms of narratives and that this basic form consisted in their rational coherence, that is, in a narrative with causal links.<sup>6</sup>

In this book, I will present a series of experiments that seek to trace narrative thinking by means of serial reproduction.<sup>7</sup> For example, I will describe an experiment in which my collaborators and I played telephone games with many thousand participants to better understand what information is passed on and what is dropped. The startling result was surprisingly clear and quite different from what Bartlett thought.

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<sup>6</sup> Frederic C. Bartlett, *Remembering: A Study in experimental and social Psychology*, Cambridge: Cambridge University Press, 1932.

<sup>7</sup> See Chapter 3.