

I The Creativity at the Heart of Your Research

Chloe was frustrated. She had spent the last week staring at a computer screen making absolutely no progress. At this point, her team had a contract with a publisher, chapter outlines, and were long past the brainstorming stage. The project was moving slower than expected. One coauthor was derailed by a family emergency, and the other was struggling to fit their work in between administrative duties and teaching, so Chloe was picking up the slack. But Chloe felt like an impostor writing about a field she didn't know as well as her coauthors, and she was entirely unsure how to get from the muck she and her team were stuck in to a finished book manuscript. She had solved many other problems through sheer force of will, and she desperately hoped she would be able to do the same with this one.

Alexander had spent the last few months alternating between being excited and overwhelmed. He was in the second semester of his PhD and had so many ideas for his dissertation work. Every time he attended a seminar or read a paper, it sparked a dozen new potential topics. While having all these new ideas was exhilarating, it was also exhausting. Whenever Alexander's advisor asked for his thoughts on research topics, he floundered – he really didn't know how to prioritize among his many ideas and thus would answer with a simple, "I'm not sure yet; I'm still exploring." For all his ideas, it felt like he was making no progress at all.

Paloma was a talented amateur painter who had even sold a few of her paintings in a local gallery. She had spent so many years experimenting with color on canvas that when she was painting, time seemed to

2 THE CREATIVITY AT THE HEART OF YOUR RESEARCH

disappear. She somehow simply knew what needed to happen next to create surprising new depictions of familiar locations in the city. When it came to her graduate work, however, she was a very analytical scholar, approaching her research on human–computer interaction methodically and afraid to do anything that had not been done before. Paloma kept bringing her advisor data she had analyzed, but she didn't know how to fix it when he looked at her attempts at analysis and kept pushing her to think bigger and break new ground as she considered how the variables might be related.

Eric had been hired into a tenure-track job based on his award-winning history dissertation. He loved the process of archival research: the pursuit of rare documents in the archives, the intellectual quest of telling a coherent story about the past based on often fragmented evidence, and the process of building an argument that took into account others' research and theories. The only trouble was, he was now responsible for teaching five courses a year, was traveling regularly for conferences, and was directing his department's undergraduate degree. All this, combined with a two-year-old daughter at home, meant that the amount of quiet time Eric had to think had essentially disappeared. He no longer felt like he had the space to produce quality history.

Each of these scholars faced a different challenge, but they actually needed the same tool: greater awareness of their creative research process. This book is a practical guide for researchers who want to apply creativity more effectively to the challenge of performing scholarly research.

Creative thinking provides a way to explore ambiguous, messy problems and find ways to resolve them. At its core, creativity is a problem-solving tool demonstrated countless times, from ancient humans creating early devices to harvest and hunt, to medieval artists expressing their artistic vision in cathedrals, to modern entrepreneurs

developing groundbreaking technologies. In research, many times the big goal is clear: Earn the PhD, write a winning grant, finish the master's thesis, reach tenure, think up the next big thing in your field. But knowing which direction to go or how to move concretely toward that big goal is often not clear. This book is a distillation of methods you can use to build your creative competence and find effective paths toward your goals.

Each of the stories that led this chapter describes a real person sharing real concerns. All these people recognized the need for creativity in their research and sought out the classes and workshops that we've been leading for the last ten years. Our classes adapt design thinking and other approaches to building creativity to the specific needs and challenges of academic research.¹ Now, we offer the curriculum and exercises that we've developed in book form. Our students' experiences of learning to manage their creative process consciously compelled us to write this book. We provide practical guidance that combines the conversational tone of a workshop with the scholarly grounding to help you understand how these skills and techniques can be applied to your research. Whatever your background, discipline, or career stage, this book can give you concrete tools to gain clarity, be innovative, and make progress in your research journey.

THE CREATIVITY PARADOX OF MODERN RESEARCH

Creativity is the heart of research. No matter your field, scholarly work prizes novelty and innovation: identifying new problems worth solving, explaining unexplained phenomena, solving problems that haven't been solved before, producing new interpretations of important cultural or historical events, or developing new methods to study the world. While creativity is a nebulous construct (kind of a "you know it when you see it" thing), it is generally defined as the ability to produce new ideas or solutions.² This generation of novel ideas is the basis for innovation, so to be a truly innovative researcher, you need to be creative.³

4 THE CREATIVITY AT THE HEART OF YOUR RESEARCH

In addition, scholarly research is messy, nonlinear, and ill-defined – not the clearly structured method you probably followed in high school science labs.⁴ Doing research requires that you define a problem that is only partially known in advance, and you don't know whether an answer even exists until that answer is found. This means that researchers spend their days engaged in problem solving, by which we mean that they are taking a number of complex mental steps to reach solutions.⁵ Every day you make small decisions, for instance whether to spend the next hour revising a manuscript, reading a paper, synthesizing a new lab sample, or getting a snack. And you make big decisions, like who to collaborate with or what topic to study for a research project. Each of these decisions forces your brain into problem-solving mode, and the same creativity skills used to generate new ideas can help you work through these decisions in a more innovative and effective way.

Unfortunately, though, modern research conditions don't support optimal creativity, so many scholars are not achieving their full creative potential.

First, many researchers are never explicitly taught how to be creative, which means that most learn about creativity by trial and error. Graduate students don't tend to receive instruction in creativity as part of their training. A lucky few PhD students might learn the skills to manage creativity from mentors; a few exceptional courses also cover these skills. Some scholars with hobbies or previous careers in "creative" fields like music, fiction writing, software design, or printmaking may bring those lessons to their research. But these are the exceptions, rather than the rule. The majority are self-taught creative scholars: Over multiple years and multiple projects, researchers develop an appreciation for creativity and tailor their own techniques. Most of the time, this learning is left to the learner to figure out, meaning it becomes more sporadic, difficult, and stressful than it has to be. Developing creative skills or strategies from scratch – under pressure because you need them – is about as fun and useful as reinventing a wheel because you are stuck

somewhere without transportation. You get yourself wherever you need to go, which is the immediate goal, but perhaps you later realize that you could have done it with a bit less effort.

Second, academic life in the twenty-first century is not structured to foster creativity. Compare a day in your life to one of Charles Darwin's. When he wasn't sailing around the world in HMS *Beagle*, Darwin spent only a few hours in dedicated work. The bulk of his day was spent writing letters, going on walks, resting on the sofa, or eating with his family.⁶ This is exactly the setup that people who study creativity would espouse: leaving plenty of downtime for reflection and an idle mind. Part of generating novel ideas is absorbing information and then coming up with new associations between things you have assimilated.⁷ Activities where your mind isn't focused on a particular task, like going on a walk or daydreaming, help shift your mind into an idle state where generating and associating ideas is easier.⁸ In fact, you can even distract your conscious mind with easy tasks like brushing your teeth – which probably explains why so many people say they have great ideas in the shower!

But if you're like most modern scholars, your daily reality is not creative idle time, but being busy. In an industry that was once considered relatively low-stress, surveys of academics point to increasing levels of stress, "identifying both mounting workload and an increasing pressure both to publish and acquire external research funding as significant contributory factors to academic distress."⁹ It is increasingly hard to land a full-time job after completing the PhD, pressuring graduate students to come up with stellar research questions, publish a lot, and become well-known scholars just to land a job.¹⁰ Successfully doing this requires significantly different abilities than succeeding in coursework (where a problem is handed to students).¹¹ The emotional investments are potentially greater, too, given the passions that lead many students to pursue a PhD in the first place. And once you do find that coveted job, if you are one of the lucky ones,

6 THE CREATIVITY AT THE HEART OF YOUR RESEARCH

surveys suggest that it's more difficult to obtain tenure now than it was ten years ago.¹² This leads to an unhealthy "publish or perish" mindset – especially among pre-tenure faculty.¹³

What this adds up to is a focus on productivity and outcomes. Open any publication or blog providing advice for academics and you'll find guidance on how to write regularly, manage your time better, or work more efficiently so you can produce more and/or maintain work–life balance. But rarely do you see advice telling academics to slow down and revisit how they are doing their research.¹⁴

The result is tragic but all too common: Just like Chloe and the others from the introduction, many researchers are frantically trying to produce as much innovative research as possible without doing the things that science suggests lead to optimal creativity. In other words, they are focusing on outputs without paying attention to the process by which their research happens or developing awareness of the conditions in which their creativity flourishes.

GUIDANCE FOR YOUR CREATIVE PROCESS

What if you could be more intentional about being creative? That's where this book comes in. Our team's goal is to save you and/or your students from the need to reinvent creative wheels.

By shifting from a focus purely on *content* and paying conscious attention to the creative *process* of research, you can create conditions that lead you toward the innovative outputs you ultimately desire. We want to highlight our use of the terms "content" and "process," as this is a key distinction we will make throughout the book. "Content" refers to the substance of research, such as finding a research question, figuring out which analytical technique to use, or deciding how to structure an argument in a manuscript. "Process" refers to the ways you move through your research, such as addressing writer's block, deciding when to ask a colleague for input on a draft paper, or deciding how to communicate a research idea in a way that excites your coauthor or PhD advisor. While content and process are closely intertwined, we'll encourage you to be conscious about the distinction

and to practice designing creativity in both. Ultimately, a focus on creative process can yield more creative research content, making you more productive.

How do we do this? We give you tools and exercises to practice specific skills employed by creative scholars. There are plenty of books about how to be creative written by choreographers, writers, animators, designers, and other creative professionals.¹⁵ But their examples and advice require translation to apply them to scholarly research. We as an author team have explored many of the mindsets, abilities, and tools that people in creative professions use and spent a decade applying, testing, and iterating them in the specific context of research.

First, this book explores four foundational abilities that reflect things that creative people do: being aware of your thoughts and behaviors, understanding and using emotions, making sure that you solve the right problem, and learning through iteration and experimentation. Second, we dive into three additional abilities that help create the conditions for creative thinking; we call these support structures. The support structures are using language and stories to generate the creative behaviors and identity you want to adopt, managing your energy to create motivation, and using input from other people to amplify your creativity. Together, these seven abilities (Figure 1.1) provide different cognitive, emotional, and behavioral lenses through which to operationalize creativity.

(Our framework is not the only one available for understanding the mental abilities that contribute to creativity and creative problem solving. We have focused on the abilities we believe to be most relevant in the research context. But if you'd like to explore how other scholars describe the mental attitudes underlying creativity, in the Appendix we have mapped the abilities we use to those that appear in other frameworks in the literature.)

For each ability, we provide guidance on what it is and how it works, as well as exercises for you to practice using it in your research. You might think of your research endeavors like a sport,

8 THE CREATIVITY AT THE HEART OF YOUR RESEARCH

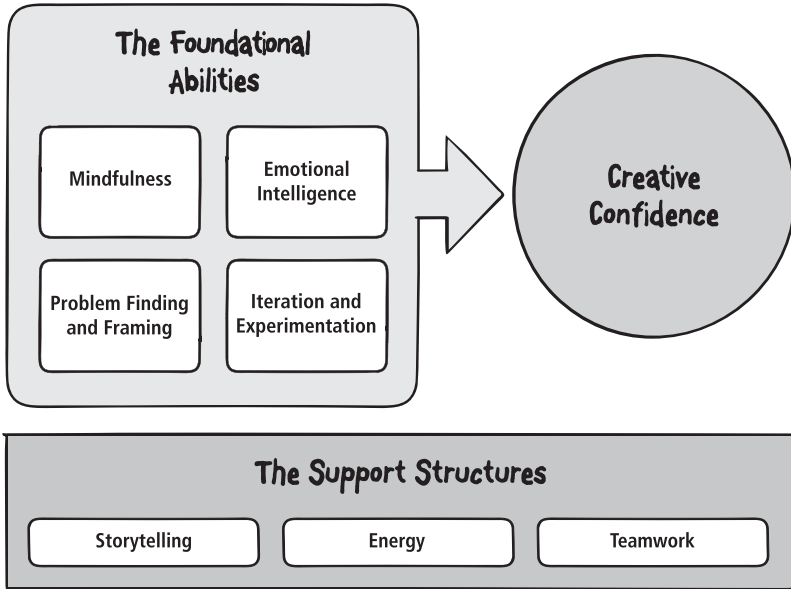


FIGURE 1.1 The creative abilities

where you need endurance, strength, flexibility, and balance to perform effectively. You do different exercises to develop these distinct skills, allowing you to combine them seamlessly when you perform during a competition. By practicing each of the creative abilities, you can increase your facility with generating novel ideas and solving problems – skills that will contribute to your overall creative research practice.

DEFINING CREATIVITY

What exactly do we mean when we say creativity? Is it about being imaginative? About being skilled at artistic endeavors? About generating new ideas or solutions?

A number of scholars who study creativity emphasize the final point – that creativity is about creating something new, whether that something is an idea or a product.¹⁶ However, what counts as novel depends on whether you adopt what's called a "little-c" or "big-C" view of creativity.¹⁷ According to big-C Creativity, the novel thing

also has to be deemed “appropriate, useful, or valuable by a suitably knowledgeable social group.”¹⁸ In other words, a scientific idea or a work of art is deemed creative only if it is also judged to be creative by other people. In contrast, the little-c creativity also requires novelty, but not social recognition. In little-c creativity, a teacher figuring out a new way to encourage a shy student to engage in class would count as creativity, as would figuring out a way to repair a piece of broken lab equipment. Everything that is big-C Creative is also little-c creative, but not vice versa.

This book primarily adopts the little-c perspective. We are giving you the tools to solve familiar and unfamiliar problems in new ways and generate new ideas in your research process and outcomes. Some of these new ideas might reach the standard necessary for big-C Creative acclaim (which would be great for your research, career, and field!), but even if they don’t there is much benefit to be gained from applying creative practices to your everyday research life.

Practicing the creative abilities will help you develop or strengthen a capacity called *creative confidence* (also known as creative self-efficacy): “a person’s belief in their own ability or personal power to successfully create or produce desired change and envisioned outcomes,” where the desired outcome is creating a novel or useful outcome.¹⁹ We focus on creative confidence because it helps you act in a more creative way. Studies of creativity in the workplace have repeatedly shown that creative confidence correlates with innovative behavior and idea generation at both the individual and team level.²⁰ Essentially, if you know that you have the tools to solve problems creatively, logic suggests that you are more likely to both succeed in solving problems and in producing more innovative ideas.

Creative confidence relates to Albert Bandura’s concept of self-efficacy and Carol Dweck’s conception of a growth mindset. Self-efficacy refers to “people’s beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. Self-efficacy beliefs determine how people feel,

10 THE CREATIVITY AT THE HEART OF YOUR RESEARCH

think, motivate themselves and behave.”²¹ A growth mindset refers to the belief that human abilities are things that one can cultivate; someone who possesses a growth mindset recognizes that their interests, strengths, and weaknesses can change as they have new experiences and gain new skills.²² People who adopt a growth mindset are usually able to persevere in the face of the inevitable challenges that arise when they learn something new, helping them stay motivated and work toward mastery.²³ In contrast, holding a fixed mindset, wherein a person believes that individuals are born with certain traits (e.g., “I’m good at writing, but not good at math”), limits one’s potential. These mindsets carry over to creativity: If you believe that some people are inherently creative and others aren’t, it reduces your chances of ever becoming more creative.²⁴ A creative growth mindset, paired with a self-efficacious attitude, means that you believe you are capable of learning creativity. If you believe you can become more creative, you set yourself up to become so.

ON THE RELATIONSHIP BETWEEN CREATIVE
AND ANALYTIC THOUGHT IN RESEARCH

“But wait!” you might say. “Doesn’t doing good research require a rigorous, objective analytical process?” Yes . . . and it takes creativity too.

In the mid-twentieth century, Nobel Prize-winning biologist Peter Medawar wrote *Pluto’s Republic*, a treatise on the scientific endeavor. In it, he argued that science is both ideas (“imaginative and exploratory . . . a great intellectual adventure”) and critique (“a critical and analytical activity”).²⁵ In other words, you have to have a great idea and then actually implement that idea. Research is both intuitive and analytical. This same pattern was shown in interviews of innovative scholars from diverse fields at Stanford University. When asked how they develop research projects, they emphasized the interplay between the imaginative, lateral thinking that goes into developing a good research question and the rigorous analysis necessary to test that question.²⁶

Indeed, the interaction between idea generation and critique extends beyond research into other creative domains. Brain imaging