

SECTION 1

An Introduction to the Intersection of Science and Creativity

Is There a Secret to Creativity?

What's the one feature of humans that makes us stand alone in the animal kingdom? Some might say it's our innate ability to problem solve ... close, but not quite. It's our ability to *imagine possibilities* ... and to imagine requires creativity.

Creativity is the most fundamentally human of qualities and a unique trait of our species.

If that's the case, why are some people so amazingly creative and why do so many of us think we're just *not* creative?

Is it because many still associate creativity with artistic prowess, the ability to paint a great portrait or compose a great musical piece? Is creativity something special in your genes or a divine gift from God? Or do they have their brain wired in a particular way?

Let's explore this through a story of someone who was said to possess creative genius.

This young boy started on a musical journey at a young age and was composing music at the age of five, giving public performances as a pianist and violinist by eight, and went on to produce more than 600 works. Some regarded him as a 'treasure of Western culture'. He was said to play with the facility that seemed impossible for someone so young and was able to accurately identify musical notes, what's now referred to as 'perfect pitch' – an exceptionally rare talent.¹

Crowds flocked to see the child prodigy who could play multiple musical instruments with ease. He's still among the most enduringly popular classical composers, with his contemporaries regarding him as a talent the world would not see again for 100 years.²

From an early age the boy was given intensive training by his father, who was also a famous composer and performer in his own right. The live-in teacher was well qualified for this role, and by the time of his son's birth had published an authoritative book on violin instruction. He had developed these training techniques by testing them with his older sister, who by age eleven was also described as playing the piano and harpsichord equal to professional adult musicians.³ It's also known that the father was a "domineering parent who started his son on a program of intensive training in composition and performing at age three".⁴

We know that the father worked closely with his son on his early compositions,

editing them before they were viewed by others. He encouraged him to be inspired by other composers, and the boy's early compositions reflected this by not containing original music. Instead his compositions were rearrangements of works from other composers. The boy was borrowing from the masters, imitating their musical structures, developing both his neural pathways and creative muscles.

By age twenty-one, with eighteen years of deliberate practice behind him, one-to-one mentoring and endless feedback, he had already written 271 compositions and produced his Piano Concerto No.9, regarded today as a masterpiece. But his best work was yet to come, and according to critics was produced in Vienna just before his premature death at the age of thirty-five.⁵

Can you guess who this boy was? It was, of course, Wolfgang Amadeus Mozart, with his father Leopold and sister Anna Maria, a story so familiar that it could be the most widely retold to describe creative genius.

Mozart's extraordinary talent was recognised early, and due to his remarkable productivity, he occupied the spotlight throughout his lifetime. It's now understood that, while he was clearly prolifically talented, a myth has evolved beyond merely a musically talented child, to someone borne with an extraordinary and divine gift.

Some of these stories surrounding Mozart are exactly that, myths built up over time. We know for example from surviving manuscripts that rather than composing wholly and perfectly conceived works in his mind, "Mozart was constantly revising, reworking, crossing out and rewriting whole sections, jotting down fragments and putting them aside for months or years. Though it makes the results no less magnificent, he wrote music the way ordinary humans do ... Any divine spark that Mozart may have possessed did not enable him to produce world-class work quickly or easily, which is something we often suppose a divine spark will do. Mozart's method of composing was not quite the wonder it was long thought to be. For nearly two hundred years many people have believed that he had a miraculous ability to compose entire major pieces in his head".⁶

Since that time, we've also learnt more about perfect pitch, that far from being a gift bestowed to the lucky few, it is an ability that pretty much anyone can develop with the right exposure and training.⁷

Mozart's story is one that resonates strongly. There are many who still cling to the belief that creatives are born and not created, through some mystical special power or genetic endowment.

It's still important because it perpetrates a myth that only a special few can be brilliantly creative. As long as this misconception is out there, limiting the way we think

about and define creativity in this narrow range, people will believe they'll have a sound excuse for not exploring their own creative selves. They'll conveniently believe the need to be born with creative genes and continue to place themselves into the 'I'm just not the creative type' basket. In doing so they'll miss out on benefiting from a fundamentally essential strength of being human.

While Mozart was an exceptional musician and composer, there's no mystery as to how he became so. He may have been born with a particularly flexible and adaptive brain, but his talent was enhanced with years of practice that developed a capability far beyond those around him. While this may have seemed like a divine gift to those who did not possess these skills, it's also clear he got there with the creative advantage that comes from dedicated hard work, a supportive environment and many years of effective and deliberate practice. Both his brain and his environment were at play, refining his skills and his creativity to what we recognise today.

Fast forward to today's modern neuroimaging scanning techniques that have transformed our view of the brain. Researchers are providing greater insights into what's going on in the brains of highly creative thinkers and practitioners, as well as the power of brain plasticity. The brain turns out to be far more adaptable and, with the right sort of triggers, can rewire itself in various ways. New connections are made between neurons, while existing connections can be strengthened or weakened.

Creativity is a whole-brain activity, and the more we understand this, the better we can enhance our own and others' creative abilities. Combined with the information and technology explosion, the modern world has transformed the way we think about creativity. If you're still inclined to think that creativity is just associated with artists like Mozart, consider these recent findings:

An Adobe Systems poll of five thousand people on three continents reports that **80%** see unlocking creative potential as the key to economic growth:⁸

- ◆ Most Fortune 500 companies employ creative consultants to provide an important competitive advantage.⁹
- ◆ Business schools offering courses in creativity have doubled since 2010.¹⁰
- ◆ Chief human resources and strategy officers from leading global employers think that creativity will become one of the top three skills workers will need.¹¹
- ◆ Creative skills and behaviours are found in successful athletes, business leaders and entrepreneurs.

Creativity is, of course, not confined to music, the arts or dance. All disciplines – science, mathematics, economics and business – can gain an advantage through embracing creative approaches.

It's the most important asset we have to negotiate through this rapidly changing world. From the way we manage our work life and conduct business, to how we learn a new skill, model behaviours for our children and shape the way we age to express our unique selves, the creative brain has no limits.

The neuroscience points to the growing understanding that while most of us may be born with more or less the same brain, our capacity to use it can be strengthened by the way we utilise our creative abilities. Modern neuroimaging techniques are providing greater insights into what's going on in the brains of highly creative thinkers and practitioners, as well as the power of brain plasticity. The brain turns out to be far more adaptable than previously thought and can be rewired.

This book seeks to reveal the science that's building our understanding of why some of us are more creative. What happens at the intersection of science and creativity is no longer a mystery or based on myth. Of even more relevance, creativity is a skill that can be learnt and practised, with studies showing that creativity is close to 80% learned and acquired.¹²

By broadening the applicability of creativity and recognising how it can elevate us both personally and professionally, we can start to realise the enormous reach we can have as parents, leaders, educators and in everyday life. We can establish the foundations of the creative advantage.

The objective of this book is to lay out the science behind creativity, to not only appreciate our creative potential but to give us all the motivation and the tools to obtain a creative advantage in all aspects of life.

About the Creative Advantage

Creativity is an exciting and growing field of research that grew from the 1950s, primarily with a focus in psychology, with academic interest in fields ranging from anthropology to neuroscience.

Since then it has been popularised by many authors, including educational thought leader Sir Ken Robinson through his TED talk *Do Schools Kill Creativity?* and his many books.¹³

Creativity is now its own field of research, spurred on by many studies stressing the need for organisations to unleash their employees' creative potential to enable innovation and to recognise that creativity is an indispensable economic resource.¹⁴

The Creative Advantage will demonstrate that we're all born to be creative. It's a

necessary ability, with an evolutionary basis that natural selection has favoured, to enable us to mix things up to stay on top of what life can throw at us. Like any ability, while we have a certain capacity, we can learn and improve in this area.

My vision is for the reader to unlock the amazing potential that lies within your brain, to demonstrate that once you understand the elements that contribute to creativity, you can transform the way you engage in the world. To turn off your autopilot, be actively engaged rather than a passive observer of other's creativity, and learn what you can do to live a creative life.

This book is divided in to five sections, and my suggestion is to read the book sequentially:

- ◆ Section 1 provides an understanding of the changing world we have entered and why we need to develop creative thinking skills, particularly in young people.
- ◆ Section 2 provides a foundation to the many aspects of what creativity is, why it developed in humans and the elements we can influence to build our creative capacities.
- ◆ Section 3 highlights how we can create the conditions that enable creativity, particularly those we can influence from today.
- ◆ Section 4 has identified the key areas that enhance both our brain health and its capacity to be creative and then how we can introduce these into our daily lives.
- ◆ Section 5 provides tools, activities and a way of creating your own personal creativity roadmap.

This book also aims to build your confidence to proactively guide you to have the self-assurance to make better choices, a more nuanced approach to problem solving, and overall to stay curious to possibility, to enable you to set off in new directions. The resource section is filled with references that will open wide this topic and enable you to follow your own curiosity.

Ultimately, creativity is as much about what we do as it is about how we do it, and this book will reveal the patterns of how people make things. It explores how creativity can lead to the powerhouse of innovation, helping you to use these learnings successfully in both your personal and professional lives to influence organisational cultures and, more broadly, society. But creativity is also visible in those seemingly small decisions we make daily, and this 'little c' everyday creativity can be influenced with the creative techniques outlined in this book.

It's curated from the latest research from the world's most renowned experts and

thinkers in the fields of neuroscience, cognitive psychology, social science and psychology, to provide an understanding and practical set of tools to help you successfully create an advantage where you work, live, play, and as you age.

The good news is that anyone can learn to be creative, incorporate creative thinking into the everyday life choices and learn to resolve the challenges of doubt, failure and mediocrity that may limit their potential. The secret is there are no tricks or magic formulas but there are strategies, tools and a mindset that, if you stick with them, can set you apart to create a distinct advantage.

This is personal: The declining health of the environment and its relevance to all aspects of sustaining life has given me a sense of urgency. The world needs imaginative solutions driven by creatives and supported by teams of innovators to solve the economic, environmental and social challenges we face and to create viable, equitable and sustainable communities. This book is my contribution to reach a broad audience, to build creative capacity and a focus on the task at hand to effect that change.