The Energy Code

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Foreword

Ever noticed the mood you wake up with in the morning can have an effect on your whole day? Ever wondered if maybe how you felt when you woke up actually created the events of your day, that somehow your inside was affecting your outside? Ever wished you could change?

This book is all about providing you with the answers.

In *The Energy Code*, Elisabetta shares the compelling science behind mood, energy and performance and provides some common sense tools to help make the most of our genetic and energetic potential. But don't be fooled, this is no dry science primer, or head-in-the-clouds self-help book. Elisabetta has the knack of taking complex science and explaining it in a way that is compelling, easy to understand and practical.

Drawing on her 30 years of experience as an international speaker, trainer, consultant, and performance expert, Elisabetta makes sense of the latest scientific breakthroughs coming from quantum biology, peptide chemistry and neuroscience and reveals how this information can improve your health and performance in all areas of your life.

Elisabetta will share with you:

- how to utilise the way your mind and body works to overcome any unwanted habit
- the 16 Personality States and how they influence brain function, focus and energy levels
- the 4 Modes of Performance and how to harness them to be more productive
- the 7 keys to activating your DNA and how these can improve performance

Whether you picked this book up for yourself, a loved one, or to help you manage others better, you will find yourself coming back to these principles again and again. As you read each chapter begin to apply the

ideas to your life, your work, your community, and you'll be amazed what happens.

Elisabetta is one of those individuals who spans the world of science and business, with a key understanding of what makes people tick and how to bring the best out in them. A highly creative thinker, Elisabetta's ideas will help you stay ahead of the competition by getting more out of your existing resources and fostering innovation.

Acclaimed by individuals and organisations alike, The Energy Code will revolutionise the way you think about your mind and body, and the way you relate to others. Supported by a workbook and YouTube videos, the Energy Code is easy to implement. Be warned, however, this book will make you think and may even change your life.

Here's what people have to say about Elisabetta's books, keynotes and training programmes:

"E*xcellent ideas."*

Susan Day - Bankwest

"Mind blowing! Noetic sciences are what I need to learn more about."

Samantha Jackson - NSW Dept. of Education and Training

"An inspiring and thought-provoking book."

John Duffy - ROV

"Great models, strong IP. Refreshing and great to bring science to real case study examples. Great ideas. Congrats."

Sharonne Phillips - trainer

"A great job taking some technical issues and making them palatable. The bucket metaphor was very powerful."

Gary Ryan - Organisations That Matter

"Original, fundamental, awe-inspiring. I can really use these ideas and will be actively encouraging many clients to refer to Elisabetta for energy audits and workshops."

Hugh Todd - Todd Coaching

"Articulate and well woven presentation. Awesome approach to bring science and data to a topic often based and spoken on without giving the why to it. Great job. Well done."

Mike Doughty - The Knowledge Gym

"Yes, I get it. Great to hear someone articulate the importance of energy. How do you become resilient to the negative energy of others."

Priscilla Campbell-Wilson - Mercer

"Loved it! Really positive messages."

Donette McIvor-Stone - Freemantle Media

"Very easy to listen to - lot of clear information. Loads of research that was presented well. Very relevant to education."

Kerry Knox - - NSW Dept of Education and Training

"Love your link flow - science to day to day. All makes sense yet very interesting and entertaining. The Bucket list!."

Trish Hanrahan - Yummy Mummy Inc

"Loved the bucket metaphor and visual. Great impact."

Michael Licenblat - BounceBackFast

"A great job taking some technical issues and making them palatable. The bucket metaphor was very powerful."

Gary Ryan - Organisations That Matter

"Loved it - wanted to hear more. Very captivating and interesting."

John Zaharakis - Stella Travel

"Easy to listen to - topic was very interesting and explains a few things. I definitely think that any business in any industry could utilise the bucket revolution."

Donna Carey - 2 Creative Media

"Great speaker. Brilliant flow and confidence."

Jacqueline Whitefield - Optus

"Smart, detailed, inspiring. You remind me I create the future. Thank you."

Michael Heaylon - MCME

"Articulate and well woven presentation. Awesome approach to bring science and data to a topic often based and spoken on without giving the why to it. Great job. Well done. 20 Minutes went quick."

Mike Doughty - The Knowledge Gym

"Great speaker, really insightful message."

Amy Bird - Fitness Network

"Great to see a strong female speaker with original and compelling content."

Tamie Stephens - Saxtons

"Loved it, loved it, loved it. Talking my language baby. Slides and talk matched really well. YAY!"

Ivan Waters - Love Your Body

"Nice build up and flow - liked bucket concept - works on so many levels. Stimulating."

Michael Neaves

"After 50 or so years of corporate management and doing several of these processes (both organisational restructuring and management training) - this is by far the best. I fully endorse the process and Elisabetta's excellent facilitation skills. It is not confronting yet it gets you to the intersection of your individual purpose and the organisations mission. Our team has benefited enormously from this exercise in gaining clarity about where each fits and how their individual purpose fits within the organisation. The organisation as a whole has benefited by having its core purpose, mission and brand clarified. Elisabetta is vibrant, has an exceptional ability to work with people, and addresses issues with practical and knowledgable wisdom. We will be working with her into the future."

Antony Coote AM, Founder, The Mulloon Institute, Angus & Coote

Elisabetta is the author of The Infidel (2013), and the soon to be released sequel - Veritas (2014), the musical D'Arc - The Legend of Saint Joan (1998), and non-fiction self-help books - The Energy Bucket (2010) and The Energy Code.

Elisabetta has a BA in Modern Languages and Psychology, a Masters of International Relations, and is a Master Trainer, Personality Profiler and Clinical Hypnotherapist with over 23 years experience.

About the Author

I was born with a rare and normally fatal genetic condition – an extreme form of Hirsch Sprung's Disease. When my parents were given the diagnosis just before my first birthday, they were told that there was nothing that could be done and to take me home to die. Instead, they began a quest to find a cure. That cure took us half way around the world from Australia to the Mayo Clinic in Rome, and a year of painful experimental treatment to save my life.

I was fortunate to survive the treatment, which was later discontinued due to its abysmal success rate, and I returned to Australia with my parents. It took years for me to catch up physically to other children, but by the age of eleven, if you didn't look too closely, you couldn't tell the difference.

Then tragedy hit again. I suffered four strokes within a six month period, three of which were misdiagnosed. My doctors did not expect me to recover, and predicted I would be in a wheel chair by fourteen, and if no miracle cure was found, dead before I reached 21. Although there was no name for my condition, tests showed that my body couldn't break down protein properly, turning certain proteins into neurotoxins that over time built up to deadly levels. The only thing they could recommend was avoiding protein but since the particular protein – phenylalanine - and the amino acids tyromine and tyrosine are in nearly every food, they didn't believe this was feasible.

I looked to my mother when we were told the shocking news and saw her heart break. That's when I made my mind up to ignore the doctors' prognosis. They had been wrong about me before, so why not this time?

During my recovery and rehabilitation, I was introduced to gymnastics. Though the process to regain strength and coordination was

difficult, my tenacious attitude pushed me to stick with it, despite feeling clumsy and oafish beside the petite, accomplished gymnasts in my club.

But I gained something even more valuable than my physical recovery during this time; I gained my first mentor – my gymnastics' coach John Straatsma. It was this relationship that was to shape my professional career decades later. Because I had spent much of my childhood bed-ridden or in hospital, I had missed out on many developmental milestones, and was clumsy and uncoordinated. I had no natural ability to catch a ball, jump, skip or even use a swing. I had not developed the mind-maps for these skills at the appropriate developmental stage, so John had to figure out how to teach me these things at a much older age. John taught me how things worked by breaking down the biomechanics of a skill, demonstrating the components, and then repeated rehearsal. Once I understood something, I found I could learn it. For me, demonstration alone didn't work, because I didn't have the mind-maps for the components; I didn't have the requisite biomechanical language to understand what I was seeing, decode it and repeat it.

At the same time, I developed an insatiable curiosity about my condition and anything I could get my hands on about protein, the brain and genetics. With dieticians' help, and through trial and error, I discovered that diet, exercise and attitude played an enormous role in my wellbeing, and started to listen carefully to the things my body was telling me. Because my condition affects one in 22 million people, and is usually fatal during infancy, doctors had no idea how to treat me, or what my prognosis was. I had to figure it out - pretty much on my own - and become really good at working out what warning signs would indicate that my protein levels were becoming toxic. I discovered that exercise was a fool-proof way to reduce my toxic load, as sweating could eliminate the dangerous bi-product of protein ingestion.

The silver lining was that while other teenagers indulged in junk food, I did not, and while my generation became more and more sedentary as they aged, I did not. These experiences set me on a path of discovery about what underpins human performance and the interaction between our DNA, our behaviour, and the environment.

Elisabetta L Faenza

I started my academic career in the field of modern languages and psychology, earning a double degree from Canberra University back in the late 1980s. I went on to gain a Diploma in Hypnotherapy and an Advanced Certificate in Clinical Hypnotherapy followed by a Masters Degree in International Relations from Deakin University.

During my post-graduate studies, I became more and more interested in why individuals, organisations and ethnic groups have repeating patterns of behaviour and how one individual can influence many others. This interest led me to the place where psychoneuroimmunology, quantum biology and the behavioural sciences intersect: epigenetics.

For ten years, I was a keynote speaker in the Direct Sales Industry and trained salespeople on personal effectiveness and productivity, developing training materials and online tools.

I have been a practicing Clinical Hypnotherapist for the last 20 years and have gathered much of the evidence for this book during that time.

For a number of years, I've been coaching CEO and Management level employees within the private and public sectors on the importance of their personal health and energy to productivity and performance. As a mentor, I work with information entrepreneurs to hone their purpose and align their mind-set, and assist leading thinkers around the world to take their big ideas and their passions and communicate them in a way that makes a difference.

Acknowledgements

ACknowledgements

No book project of this scale is possible without the support and generosity of a lot of people.

Firstly, I'd like to thank my partner, John, for his unbending support for my work. You are my confidant, my sounding board, my cheer squad, my love and my best friend. None of this would have been possible had you not come into my life.

To my four beautiful children - Tatjana, Blaze, Logan and Jaz – you are the reason I do this. To watch you grow into the amazing people you are becoming is the biggest gift any parent can ask for. To have your support and respect humbles me.

To my writing buddy – Jenny Boyes – an acclaimed artist and author in her own right; your friendship and counsel has been pivotal in the development of *The Energy Code*. To the team at Motivational Press: Justin Sachs, Mark Stephenson and Janet Carson; thank you for making this easy, and providing the expertise and vision that has brought *The Energy Code* to life.

Finally, to you the reader, thank you for your curiosity, interest and patience. You are the reason I write.

Elisabetta L.

Faenza

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ChApter One
Introduction

When I began studying human performance back in the early 80s, I was full of questions. There was in fact very little published literature on the impact of the environment on DNA, our cells and the brain, and how these influence the way we develop behaviours.

The classical literature in the field treated the brain as a black box (to borrow an analogy from my good friend Dr. Dan Diamond). We had evidence of people's response to the environment in the form of the things they did, and we could ask them about how they felt about their experiences. Behavioural scientists could even predict certain behaviours based upon reflex and the theory of conditioned response. But we had little idea how behaviours linked together neurologically, how habits were formed, or how we could unlearn an old behaviour and adopt a new one. These things were literally hidden from view inside a black box that some believed we would never be able to peer into.

Whenever researchers proposed a theory or created a new therapy to treat behavioural problems, they were often guessing, and hoping that these methodologies would help people and make a positive difference to their lives. As a result, psychology, psychiatry and neuroscience were not considered 'hard sciences' because much of the theory was untestable.

Meanwhile biologists, quantum physicists, psychologists, psychiatrists and neuroscientists, assisted by breakthroughs in the technology of peering into the black box, were gathering two types of evidence:

1. Evidence that all the brain's functions are localised and fixed and therefore would one day be able to be predicted and controlled.

that signalled the brain might be plastic - highly changeable and not fixed, and that our approach to the brain and behaviour might be built on a false premise.

Today, some thirty years later, science has accepted the view that the brain is plastic, and that unlike simple behaviours, complex behaviours, complex functions and memories are not limited to fixed locations, but call on multiple areas of processing in both the cerebrum and mid-brain. The evidence is overwhelming.

This new science is starting to be taught in universities all over the world, although it will be years before high school biology textbooks reflect it. And in the 'real' world where people work and live together, we behave as if the older theory is still intact. We count humans as a cost rather than an exceptional resource, and change as something to be feared and survived rather than embraced.

In our interactions with each other in our homes and workplaces, in our hospitals and communities, many of us labour under the illusion that once injured, the brain cannot heal itself, and that 'old dogs cannot be taught new tricks.'

My own experiences and obsession to understand the deeper biological underpinnings of behaviour has of course influenced my practical work as a hypnotherapist and personal effectiveness expert.

In working to improve the performance of groups and individuals in the workplace, I was aided by my knowledge of the mind, and assisted by productivity and time-management tools.

Over and again, I would be asked by managers to help them teach Stephen Covey's 'Seven Habits of Highly Effective People' to their teams, or embed the ideas in the latest Time Management Blockbuster into the workweek. Books like David Allen's 'Get Things Done' or Tim Ferris' '4 Hour Work Week', contain helpful strategies to more effectively manage the things we do in the limited time available to us.

These strategies cannot and should not be undervalued. They provide useful tips to getting more done in less time.

However, unless we address the workings of the 'black box' of the mind, all we are ever doing is tinkering around the edges of productivity. While it is important to know how to handle the 'stuff' of our lives - the stuff that happens to us, the stuff we experience around us, and the stuff we do - our habits do not change through intellectual realisation alone.

The reason for this is that habits are laid down over time and by repetition. Any new habit has to compete for resources within the brain and is competing with well-resourced, highly entrenched older habits. This is why, for most of us, habit change is a difficult process filled with fits, starts and reversals. It's why our old, bad habits reassert themselves so prominently when we are under pressure and most in need of newer, better ones, and why we resist change in any area of our lives.

It is when our jobs are on the line, our company is in trouble or budgets are squeezed that we should be able to rise to the challenge and demonstrate highly productive behaviours. In my experience, working with sales teams around the world, the opposite is usually the case.

Ten years ago, I met Matt Church, the founder of the 'Thought Leaders' community, and he encouraged me to turn my passion for understanding the 'black box' of the mind into a practical guide for individuals and managers. 'The Energy Code' is the end result of that process.

My purpose then in writing this book is to provide a practical guide for the layman: extending the influence of complex multi-disciplinary fields like epigenetics, neuroscience, quantum biology and concepts like brain plasticity into our homes and workplaces and into our schools and hospitals, so we do not miss the opportunity to revolutionise the way we work together, the way we heal after trauma and build resilience into our personalities.

The Energy Code is a very practical book designed to help people to understand how the mind works and how three things determine behaviour:

1. Our genetics

2. Our environment
3. Our energetic health

Business health on the other hand can be defined by the health of three factors:

1. Capital 2.

Staff

3. Market

At the end of the day, however, all three of these factors are about the energy of people:

1. Capital is just frozen energy, created by the endeavours of people, either earning it, exchanging it, investing it, saving it or leveraging the capital of others.
2. The quality of staff is determined by the energy they bring to work, how they are managed, the environment in which they work, and how they are rewarded.
3. Markets are just the number of people willing to buy your product or service for the price your organisation is willing to sell it. In other words, it's the amount of energy the market is willing to exchange for your product or service.

So, the second goal of this book is to demonstrate how energy health is crucial; not just for individuals, but also for organisations, communities and the planet on which we all live.

It is my sincere wish that you, the reader, embrace the ideas and concepts in this book and question them, test them and prove them for yourself. If out of that comes a positive change in the way you interact with your family, work colleagues and community, my purpose will have been met.

Chapter two
The Possibility of Energy

Ever noticed how the mood you wake up with in the morning can have an effect on your whole day; how some days you wake up easily and jump out of bed feeling energised and positive?

On the way to work, all the traffic lights go your way, you get the perfect parking spot and get to work to find you've just got a promotion. Other days, you wake up under the weather, realising you slept through your alarm, mouth tasting like the inside of a birdcage.

You stumble outside, dressing as you go, because you're pitching to a prestigious client and can't afford to be late. You get into your car only to find your battery is flat and there's an hour wait for roadside assistance.

You finally get a taxi but an oil tanker's broken down on the freeway and you're an hour and a half late for work. That important presentation you were making to your boss has been done by your office nemesis, the long legged, silky haired, brown-eyed Evelyn.

Everyone is looking at you like you've got something contagious; you could cut the air with a knife. You can't get a decent cup of coffee to save your life, and you wonder if everyone else has gone bonkers, then you realise your shoes don't match and the back of your skirt is tucked into your underwear.

Ever wondered if maybe how you felt when you woke up actually created the events of your day; that somehow your inside was affecting your outside?

Well I've been wondering about this stuff my whole life and for a long time there was no scientific evidence to provide the answers, but lately that has changed...

Now just hold that thought for a minute, because I want you to imagine a future where we are able to manage our day by managing our moods.

Imagine a world where we are not time poor and we focus on the things that really matter; a world where we live our lives congruently and on-purpose and have a sense of integration [1] between work and our private lives.

Imagine a world where our businesses are highly productive and profitable; where the workplace is not just a nine-to-five job but satisfies a need for purpose and meaning for both ourselves and our organisations; and where this attitude extends beyond our homes and businesses into the way we interact with the planet, so we manage the earth's resources with care and awareness for the longer term.

Well, this book is about providing you with answers. I'll share some compelling science with you that will prove that your moods and emotions are just a form of electromagnetic energy; that this energy is created by, and interacting with, your mind and your body to mould your life - inside and outside, at home and at work.

I'll conclude each section by providing you with some common sense tools that you can use to understand and manage this energy to improve your life and move into a future that is beneficial for all: our families, our workplaces and our world.

Balance

We all struggle with balancing energy...

Because here's where most of us find ourselves now: time poor, stretched resources, guilt ridden, feeling like the standards we are meant to live up to are unattainable.

If you're a single woman, you've got to get involved in a cause to show you do care about the poor, the homeless, the sick and the future of the planet. You're expected to be 'gaga' over your friends' children and never forget their birthdays or Christmas.

You're meant to be a party girl with a wardrobe to make 'Sex in the City' look drab, but you've also got to have a career, be financially responsible and plan for the future.

You're in a relationship but, according to the experts, the fellow you're with in your twenties is not the one you will settle down with, and that guy is definitely not likely to be the one you retire with in four decades time.

Oh and by the way, statistically you're all getting more and more beautiful while competing for older, uglier men.

If you're a woman of my generation, you probably feel like you're expected to be a superwoman in the workplace, a chef and dietician in the kitchen and a siren in the bedroom, at the same time as being an involved parent and good daughter.

You're expected to juggle a thousand tasks a day and do them all well and on time. Oh, and did I mention you're not allowed to succumb to the middle-aged-spread - you've got to live up to the images of air brushed models who haven't had a life yet.

And forget the time management tools, you're meant to be the walking personal organiser for every other member of your family.

It's no better for you guys. If you're a single man, you will need to be well read, on a career path, own a string of investment properties and be a successful stock market investor in your spare time. You're meant to know about wine, be well groomed, but still be a real bloke.

You know how to cook modern Australian cuisine and care about what is happening in Tajikistan. You're not meant to expect sex on the first date, but you are meant to call her back the next day. And if you've not settled down by thirty, apparently you have commitment issues.

If you're a family man, it's no longer enough to be a good provider or faithful partner.

You're meant to be supportive of her needs and do more than just help out in the home. You've got to remember to put the toilet seat down and flush.

You can't play poker with the boys unless your partner can come too, and you absolutely have to look genuinely interested at the school music recital and remember your children's friend's parent's names.

It's not enough to visit your parents at Christmas and call them on their birthdays and anniversary; you've got to "be there for them." Oh, and by the way, they're not leaving you anything in their will because they just joined the "spend it all before you die club."

If you're looking down the barrel at retirement, you've probably realised you haven't got enough money stowed away and will have to work until the age of 90 and then die quickly and inexpensively. And by the way, your thirty-year-old son is not moving out; he's got it too good at home.

Your aging parents have either got Alzheimer's and keep wandering off from the nursing home or you're having to give them the 'safe-sex' talk because their nursing home has had an outbreak of you know what...

We've got more stuff and more choice than ever before, but studies show we're unhappier than we've ever been.

We've divided time up into smaller and smaller units, but we've got less time than ever for living. Work-life balance for most of us has become an unattainable myth.

So whether you're a man or a woman, single, divorced, married, straight, gay, young or old, it's no wonder some days you feel drained, exhausted and confused.

The Effect

It's inevitable that this has an effect on others, including our families and co-workers, draining resources, time, money and energy. Just think of the last time you walked into a room and felt something had just happened. Nobody says anything, but you literally could cut the air with a knife.

It turns out it wasn't your imagination and it didn't require you to have extra-sensory perception. What you sensed was real; we just haven't had the ability to detect it or measure it scientifically until recently.

In thinking about the effect moods have on our day, I had an image of a bucket with holes in it. I realised that our bodies, our relationships and our workplaces are just containers for our individual or group energy, and managing these containers is a bit like managing a bucket of energy.

Thinking about energy like this helped me to imagine what's going on inside my body and how it effects what shows up in my life.

The Evidence

As I was pondering the implications of this idea, I came across an article in Science Daily that shed some light on how we are affected by each other's emotional energy. I tracked down the original research and it led me, via the work of Gregg Braden,[1] on a very fascinating journey.

So here's what I found out...

There are some scientists who spend their lives trying to figure out what consciousness is and how energy turns into stuff.

Funnily enough, a lot of this research began during the Cold War. Both the US and the Soviets were trying to work out if they could harness psychic powers for spying or as weapons.

Back then, they did some top secret, fringe experiments on people who showed paranormal abilities, including the ability to influence the thinking of others.

While some of these subjects did amazing things, neither the US or Soviet scientists could figure out how they did them, and therefore it's debatable whether any government was ever able to harness this effect. There have been a lot of conspiracy books written about this topic as well as a few well-known TV series and movies.

Fast forward 20 years and we have a whole new branch of science called the Noetic Sciences. With the advent of quantum biology, the study of energy and the sub-atomic particles of our biology, and

psychoneuroimmunology, how our mind, nervous system and immune systems interact, we are starting to get a much better idea of how the non-physical affects the physical. It seems it all comes down to energy - something we all have.

One of the modern generations of quantum biologists is a scientist named Dr. Vladimir Popponin.

Dr Popponin

Dr. Popponin is a quantum physicist who is recognised worldwide as a leading expert in quantum biology, including the nonlinear dynamics of DNA and the interactions of weak electromagnetic fields with biological systems.

He is the Senior Research Scientist at the Institute of Biochemical Physics of the Russian Academy of Sciences (RAS) and is currently on loan from the RAS to the US, working with the Institute of HeartMath (IHM) in Boulder, Colorado on a collaborative research project between IHM and the RAS. Now, in 1995 Vladimir wrote a paper entitled 'The DNA Phantom Effect - Direct Measurement of a New Field in the Vacuum Substructure.'[2]

Basically, he was trying to explain why when someone loses a limb they still feel as if the limb is actually there, which is known as the Phantom Limb Effect. He and other scientists speculated that something inside the human body was continuing to create an electromagnetic imprint of the missing limb.

A similar effect in a cut leaf had been photographed using electromagnetic imaging and measured using a spectrograph and had been named the Phantom Leaf effect. What the imaging shows is that the electromagnetic field of the leaf remains intact even when the leaf is cut or damaged. What scientists couldn't work out was why this occurred.

Below is a diagram of the layout of the experiment he and his team were conducting using lasers.

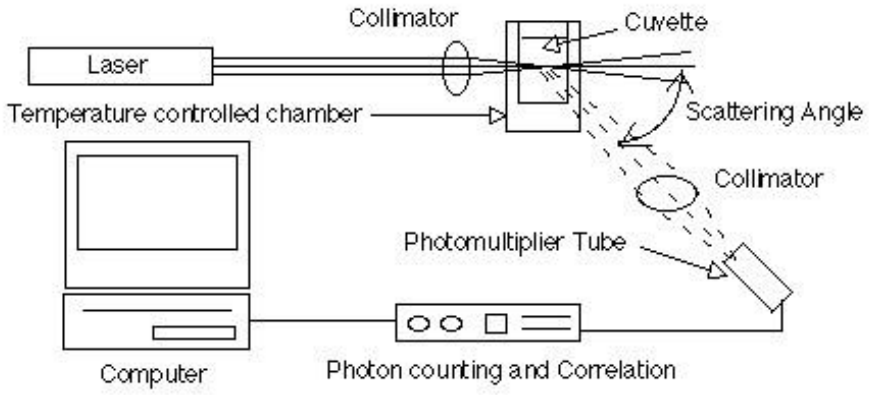


Figure 1. Illustrates a simplified block diagram of the laser photon correlation spectrometer used to detect the DNA phantom.

@ 1995 Institute of HeartMath, Boulder Creek, CA

A laser fired light through a Collimator[3] into a Cuvette (vacuum) and the contents of the vacuum would scatter the light through another Collimator where the effect could be magnified, then finally, the photons were measured and correlated and all this automatically fed into a computer for analysis.

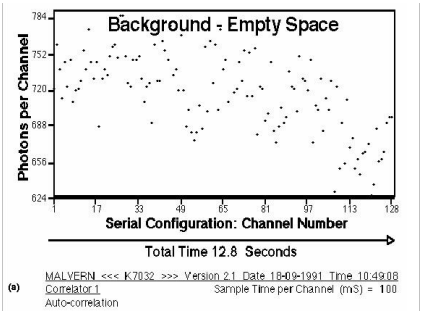
Now back to the story...

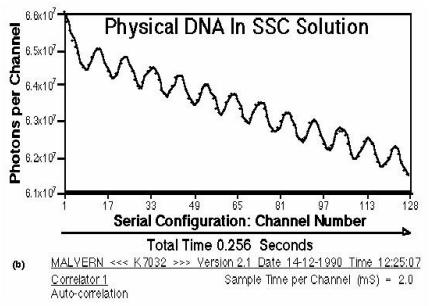
So I want you to picture this: A cold, dark night in a lab in the middle of the rugged Colorado mountains. Popponin and his small team had spent months trying to see if they could alter the patterns of light in a vacuum by introducing human DNA. They wanted to see if something in the DNA was responsible for the Phantom Effect. It took time to get the scatter lasers calibrated and the background Electro-Magnetic Field (EMF) isolated.

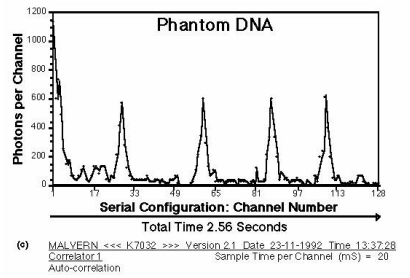
Now you know what DNA is: it's the stuff the investigators on CSI use to nab the bad guys. It's what uniquely identifies each and every one of us, and it's in all our cells. So basically, Popponin had light in a box and put the tiniest identifiable bit of humanity into it.

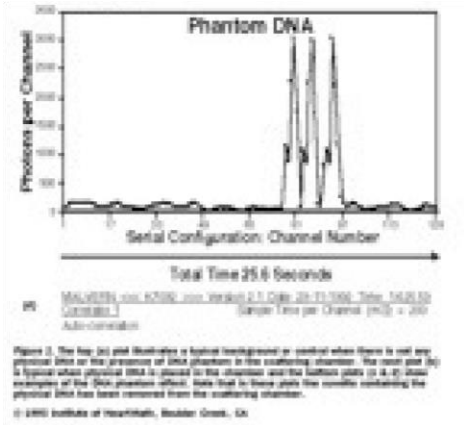
Popponin was trying to figure out what causes particles to organise into patterns. He decided to use light particles, or photons, in his experiment, as they are the only types of particles ever left in a vacuum

after everything has been sucked out. In this way, Popponin could eliminate any other quantum effects from elements like Carbon or Hydrogen, which are the basic building blocks of all known life.









He and his team recorded light scatter diagrams of the vacuum before, during and after DNA was introduced, as shown above.

- Figure 2a shows the background plot before either DNA or a Phantom Field was present.
- Figure 2b shows the DNA in solution and figure 2c shows the plot of the light while the DNA was present in the chamber while figure 2d shows the Phantom Field after the DNA was removed from the vacuum.
- The difference in figures 2c and 2d show that the effect the DNA has on the photons is not a replica of the effect it has when present.[4] Rather it shows the DNA has changed the field.

They repeated the experiment over and over, and each time, they found that the photons lined up in an ordered way and aligned with the DNA placed inside the vacuum. In other words, the physical DNA had an effect on the photons.

It appeared that the light clung to a scaffold created by the DNA.

Popponin and his team measured how long this Phantom Field could be sustained and discovered it could be detected for up to one month after the DNA was removed. This series of experiments were confirmed by similar experiments in Moscow and at Stanford University. The following is Dr. Popponin's conclusion:

"According to our current hypothesis, the DNA phantom effect may be interpreted as a manifestation of a new physical vacuum substructure which has been previously overlooked. It appears that this substructure can be excited from the physical vacuum in a range of energies close to zero energy provided certain specific conditions are fulfilled.

"Furthermore, one can suggest that the DNA phantom effect is a specific example of a more general category of electromagnetic phantom effects. This suggests that the electromagnetic phantom effect is a more fundamental phenomenon, which can be used to explain other observed phantom effects including the phantom leaf effect and the phantom limb."[5]

On a basic level, what this means is that our cells are affecting stuff outside of us.

So how did the DNA affect the particles? It turns out it was energy - a blueprint of electromagnetic energy created by human DNA.

So what does this mean?

It means that the tiniest piece of us, our DNA, affects matter. That who you are affects the world around you. Just like the mass of a planet and its gravity bend space-time, our DNA shapes light. It means you and I, right now, are affecting and creating our reality together.

Now we all have some natural resistance to the idea that we are responsible for the things that happen in our lives, especially the negative repeating patterns.

As a hypnotherapist for the last 24 years, however, I have to say the empirical, that is, observed evidence, is pretty compelling. But, as a mum, it's a different story. If there is anyone who doesn't want this to be true, it's me.

Believe me, there are some mornings when I'm running late to get the kids to school, my mobile phone's not working because I've forgotten to pay the phone bill and my publisher is on my case because I'm late with the final edit of my manuscript, when I wish I could blame someone else for my life, but according to Popponin, I can't!

The flip side is that once we accept we are creating our lives at a really deep molecular level, we gain the power to change them. We're no longer victims of a vengeful god, or random acts.

A second study dovetails perfectly with the first. The second experiment, reported in the journal 'Advances', was performed by the United States Army in the tradition of similar experiments conducted by Cleve Baxter.[6]

This time, it was a bunch of military scientists experimenting on army recruits to see the effects of emotion on DNA.

Sound a bit suspect? Well it's not as bad as you might think:

The US Army on DNA

Army researchers got a group of recruits to volunteer their white blood cells so they could monitor their DNA. They placed the DNA into chambers so they could measure the electrical changes of the lymphocyte DNA they extracted.

What happened next is extraordinary...

While the scientists were in one room monitoring cells in petri dishes, the army volunteers were in another room watching movies. Now some of the images they saw were designed to make the volunteers feel sad, angry, anxious, aroused or tired.

Both the cells and their donors were monitored simultaneously and as the donor exhibited emotional peaks or valleys, the DNA in the cells

showed the identical responses at the exact same time as measured by an atomic clock.

The military wanted to see how far away they could separate the donor from his DNA and still get this effect. They stopped testing after they separated the DNA and the donor by 50 miles and still produced the same result.

In an interesting footnote to these findings, the experiment's designer Cleve Baxter went on with the experiment after the US army stopped measuring data. Baxter stopped testing at 350 miles, still finding there was no weakening of the effect or delay in transmission despite the distance. It was always instantaneous - no lag time, no transmission time.

Recap

So let's recap:

In the first experiment, scientists proved DNA affects matter; in the second, a different group of scientists proved that emotions affect DNA. This research is continuing all around the world and has led to some fascinating discoveries.

Most of these experiments involve DNA. Over the last ten years, we have taken substantial leaps in our understanding of DNA codes and we've been surprised by how few humans actually have. For a long time, it was believed human DNA would be many times more complex than say the DNA of a plant or virus.

But it turns out the material of our DNA is not nearly as complex as we anticipated. It now seems the complexity of a human is caused by a combination of codes being switched on or off, rather than individual codes for each trait. More recently, we've also learned that our DNA serves at least two purposes simultaneously: dictating the translation of proteins, as well as transcription factors that regulate the flow of information to RNA. This makes our DNA more like an app and less like a document.[7]

Chapter three
The Double Helix

Biologically, DNA is the common language of every living thing. By opening up the cells of any organism - bacteria, plants, fungi or ourselves - we find DNA controlling every activity. A close look at DNA shows that humans are remarkably similar to the rest of the living world - sharing about 98% of our DNA with chimpanzees.

While the DNA of almost all organisms is distinct in its fine detail, the overall structure of the DNA found in every living organism is the same. Even the differences are not as big as you would think. For instance, we share 60% of our DNA with a banana.

The 'rungs' of the twisted 'ladder' of the DNA Helix are made up of pairs of bases. There are four different bases: adenine (A), thymine (T), cytosine (C) and guanine (G). An A will only form a complete 'rung' if it can be matched with a T and vice versa. In the same way, a C will only match up with a G, or a G with a C. It is the bonds holding these A-T and C-G pairs together which are quite weak and easily split down the middle. This makes it easy to split the molecule and is the basis of replication.

But the simplicity doesn't just rest with the bases or rungs of the DNA Helix ladder. The human genome has been decoded and it appears humans have only 64 potential codes (combinations of bases) in their DNA made up of amino acids based on the elements Carbon, Oxygen, Nitrogen and
Hydrogen. However, we only have 20 of these 64 codes active.[18] So

what switches DNA codes on and off?

Epigenetics - the how and why of gene switching...

Recent advances in epigenetics are filling in the gaps in the DNA switching puzzle.

If you think back to high school, you may have a vague memory in biology about the difference between DNA and RNA. In recent years, DNA has become the celebrity of the two, making headlines as the 'code behind all life.' Some reports have even implied that we've 'cracked the code.'

The truth is far more complex and recently, RNA has started to grab the headlines. The RNA molecule's job is to assist in the copying or transcribing of a gene, so that proteins can be made. Proteins are the basic building blocks of all bodily functions and cells. So this process is crucial to life.

What has been discovered is that RNA is also involved in the silencing of genes. Scientists have been trying to figure out how the cell knows which genes to silence and when. At any given moment, a huge amount of our genetic material remains silent, with only selected genetic material being transcribed.

In the two articles cited below, scientists explain how the body produces specific enzymes to methylate or silence genes. These enzymes attach themselves to specific letters in a DNA sequence, preventing the code from being read, and thus silencing that gene temporarily. As I've discussed previously, it seems that a large amount of our non-coding or 'junk' DNA is involved in the signalling of what should or shouldn't be silenced.

In a separate pilot study published in the ACNEM Journal (Vol. 29, No 3, Nov 2010), researchers found a relationship between methylation and mental illness, including addictions, depression and anxiety. This relationship had been studied previously, however, because the genetic mechanisms were not understood, the results of previous studies were often sidelined.

Extracts of the study - The Effectiveness of Targeted Nutrient Therapy in Treatment of Mental Illness, a pilot study by Richard Stuckey, MB.BS., DRCOG; William Walsh, PhD; Brett Lambert - are quoted below:

"A clinical outcome assessment was performed on 567 consecutive patients followed up for one year after initial consultation. The data covered patients interviewed between March 2004 and June 2007. Established diagnoses included Autism, ADHD, Asperger's, Anxiety, Bipolar Disorder, Depression, Schizophrenia and OCD. All patients had an established verifiable diagnosis and most were receiving conventional pharmacological therapy. Patients were instructed not to change any treatment (pharmacological or physical) unless on the instruction of their usual treating practitioner. Treating practitioners were also informed of the additional targeted nutrient program."

Specifically, what the researchers found was that both over and under methylation creates serious behavioural problems.

For example, over methylation creates a high tolerance to pain, resistance to certain drugs, mood swings, poor sleep patterns, poor dream recall, racing thoughts, poor organisation and alcoholism. In extreme cases, these individuals may be treated for ADHA, hyperactivity, depression or bipolar disorder.

Scientists have identified abnormalities in methylation in these conditions. It is also likely that the genes being silenced by the overmethylation are involved in the production of brain chemicals like serotonin, dopamine, oxytocin and endorphins. We know that an imbalance in the production of these brain chemicals may lead to poor focus, despite intelligence, and therefore, poor performance academically.

The natural high and calm our brains are supposed to feel in joyous situations may be blocked for these individuals, leading to serotonin seeking behaviour - a craving for carbohydrates through eating sugary foods and consuming alcohol.

Under-methylation is associated with anxiety, low pain threshold, low muscle tone, aversion to sunlight, addictions, perfectionism, obsessivecompulsive behaviours, high academic achievement, low social

skills, arrogance and competitiveness. In extreme cases, it may be associated with sociopathic behaviours. Under methylation may be related to an inability to silence certain genes, leading to too many genes being active at once.

What is exciting about this pilot study is that the researchers used nutritional therapy to correct the methylation abnormality.

"Compounds were individualised for each patient according to the nature of the imbalance, the degree of deficiencies and the age and size of the patient. Doses were well in excess of recommended daily allowances.

"Decisions were generally made according to the biochemical profile, but in cases where this was indistinct, decisions were made on the clinical diagnosis. Note from the schematic representation of the methylation pathway (see Figure 1) there may appear to be some logic in using methionine, or SAMe, in undermethylators and B3, foliate and B12 in over-methylators.

"It is noted that 'over-methylation' may not necessarily be a literal overactivity of methylation but alternatively a block in the adjacent folic acid pathway. The two enzymes implicated are Methylenetetrahydrofolate reductase and Cathchol-O-Methyltransferase.

"Patients exhibiting symptoms and pathology correlating with undermethylation were administered Vitamins C and B6, Pyridine-5-Phosphate (P5P), Methionine, Calcium, Zinc and Magnesium.

"Those exhibiting symptoms and pathology correlating with overmethylation were prescribed Vitamins B3 (Niacinamide), B6, B12, C and E, P5P, Folic acid and Zinc. Patients exhibiting elevated urinary pyrroles (and symptoms of Pyroluria) were prescribed Vitamins C, B6, P5P, and Zinc, while patients exhibiting Copper/Zinc imbalance were prescribed Zinc alone or in combination with Vitamin C."[9]

What has my interest is that it appears that nutritional deficiency is at the heart of many clinical mental disorders, and may be at the root of the chronic unhappiness that is epidemic in our lives.

Outcome Measures

"The interview process for the treatment program began with 567 patients of whom 492 commenced treatment with 382 complying for 12 months. 110 discontinued for a range of reasons (22.4% non-compliance). 75 of those interviewed did not commence the program and respondents to a questionnaire in this group were assigned to the comparison group.

Of the 382 that completed one year of the program, 221 (57.9%) stated major improvement, 91 (23.8%) partial improvement and 70 (18.3%) nil improvement.

"It is understood that there are methods to 'objectify' improvement by questionnaires designed specifically for some of the diagnostic groups, but there are none that would encompass all the diagnostic groups in this study. The outcomes according to diagnosis are represented in Table 2."

Clinical Notes:

"There was a marked reduction in hospital admissions during the 1st year of treatment as compared with the year prior to nutrient treatment.

"There was a reduction in doses of prescription medication in 22.3% of the patient group. Antidepressants and anxiolitics were occasionally withdrawn but antipsychotics were not.

"Most patients with the best results used a combination of both pharmacological and nutritional interventions. The relative percentages of improvement and non-improvement were remarkably similar in each of the three groups."[310]

All of the nutrients supplemented in this study used to be common in our diet thousands of years ago when we hunted and gathered. The rapid transformation of society through farming and later industrialisation has resulted in a modern diet that is inadequate in providing the nutrients we need for health.

It is no coincidence that the artificial and highly processed foods that fill our shelves have been associated with an increase in physical diseases like diabetes, heart disease and cancer. It is now clear that the lack of

nutrients in these foods may also be fuelling the mental illness epidemic now gripping the developed world.

Finally, we are starting to understand why, and it is all about the interaction of our environment with our DNA. And what's most exciting is that nutritional therapy can reverse the damage.

Some food for thought?

Our Intelligent Cells

In his seminal work, 'The Biology of Belief', Lipton introduces the concept of Epigenetics or the science of the effect the environment has on switching genes on or off.[11]

Lipton is a Cellular Biologist and former Professor at the University of Wisconsin School of Medicine. After some 20 years as a pre-eminent biologist, pioneering the cloning of cells, Lipton realised that the cell tuned itself to its environment, and it was the environment, not our DNA, that determined our evolution. He realised that the environment provides the cues that a cell uses to determine which codes to switch on or off. Even more startling, Lipton provides proof that cells actually assemble new DNA in response to environmental conditions.

Perhaps most startling of all, Lipton shows that cells borrow DNA from other species, and that the human body is actually a community of differentiated cells, working and cooperating with foreign species - like the bugs in our gut - to do more than survive.

All of this goes hand in hand with what quantum biologists are discovering about the way DNA codes are affected by emotions, behaviour and environmental conditions.

What Lipton adds to the debate is that every cell in our body is listening to our thoughts, feeling our emotions and responding to the thoughts and emotions of others. Like ripples in a pond, the DNA within our cells organises itself according to the needs of the cell and then broadcasts this response into the environment.

Now the ramifications of this growing body of science are astounding. There is a revolution occurring in the world of the evolutionary sciences.

Darwin is no longer pre-eminent with his 19th century doctrine of survival of the fittest, and the determinism of the genes. Darwin's contemporary, and the first to publish a theory of evolution - Lamarc - was long pilloried for his belief that cells are more than factories at the whim of flight or fight responses. His thesis that an organism evolves through co-operation is at long last being considered by modern science. In the battle for hearts and minds in the scientific community where nature seemed to triumph over nurture, the tide has turned. Nurture now seems to be the determining factor in what gets expressed by genes.

What all evolutionary scientists, cell biologists and geneticists agree upon, however, and what is often not conveyed to the general public, is that our genes are how we store and transmit the memory of our experiences from one generation to another. Our DNA is a portable library, one where new books are being written, old books re-read, and others edited. Our genes are the memory of our cells.So what does this mean for you and I?

It means that we are not at the mercy of our genetics: that unless we suffer from one of a small handful of genetic conditions like aplastic anaemia, our genetic make-up is far more mutable than previously publicised. The environment we live in, the experiences we have and the choices we make about our environment, behaviour and thoughts determine what gets switched on or off, or indeed constructed in our DNA.

As someone who was born with a potentially fatal genetic condition, I have experienced the power of choice in my life. The choices I have made around healthy food, to exercise regularly, avoid alcohol and tobacco, pharmaceuticals and recreational-drugs has helped me to beat the odds. However, the decision to manage my thoughts and emotions has been even more profound.

By focusing on positive outcomes and committing my energy, intent and actions to the steps that will make these outcomes a reality, I know I have changed my destiny. I did not perish at three years of age, from bowel disease, although I was diagnosed with it. I did not die at 12 as a result of the four strokes I suffered. I was not in a wheel chair at fourteen or dead before adulthood. I am now nearly 50 years old, the mother of

four healthy children with a full and productive life. I have outlived my mother, who died at 44 of breast cancer.

In short, I have made the best of a bad lot. What the future brings is anybody's guess. What I do know is that I have choices, and I will continue to exercise my ability to choose as long as I draw breath. I will continue to thank the collection of 50 trillion or so smart cells that make up my being, and send them supportive, healthy messages through the physical, emotional and mental choices I make; and I will acknowledge the messages they send to me, and interpret them in context, choosing the most appropriate response.

For me, the quest to understand our biology and how our DNA, environment, behaviour and emotions interact is extremely personal. However, you don't need a genetic condition for this to matter. It is in the interest of all of us on this planet to ask ourselves a simple question each day.

"What have I cast my vote for today? Through the choices I have made, did I vote for health and a productive, useful life, or did I vote for something else?"

This is what I have asked myself every day since I was twelve years old and a doctor gave me a death sentence. Through my choices, I believe I proved him wrong. Thanks to scientists like Lipton, I can begin to understand why.

Now back to the research…

DNA as Energy

Another fascinating study released in 2009 by Quantum Physicist Pjotr Gariaev also shows that our DNA does a lot more than we first thought. It apparently absorbs light and stores it, which interestingly, might explain the so called 'aura' phenomenon. Gariaev and his team also showed that DNA can be coded by life experiences and by light and sound. This leading scientist and his team used light and 150 Mhz radio waves (the frequency of DNA) to change, re-code and splice DNA.

They proved that the 90% of our DNA previously referred to as 'Junk DNA', is not junk at all. It's part of a complex system for protecting and updating DNA.

Gariaev joins a chorus of other geneticists who believe our DNA interacts with our emotions and environment in a far more complex way than first thought. DNA is no longer seen to be only about how a particular genome interacts with protein to create a chemical reaction. Gariaev suggests it may be that the DNA is actually where our mind is.

How Genes Are Selectively Silenced - the App Analogy

Our genetic material is often compared to a book or a library. However, it is not so much like a novel to be read in one piece, but rather like an app on your smart phone you might use to shop for and prepare the ingredients for your favourite recipe; only in this case, the recipes are to make certain kinds of proteins. The cell reads only those recipes which are to be cooked at the moment. The recipes are the codes in our genes, 'read' within our cells so that the DNA app creates RNA copies, which will then be translated into proteins.[12]

The cell uses highly complex, sophisticated regulatory mechanisms to make sure that not all genes are read at the same time. Particular gene switches need to be activated and, in addition, there are particular chemical labels in the DNA determining which genes are transcribed into RNA and which others will be inaccessible, i.e. where the book literally remains closed. The biological term for this is 'epigenetic gene regulation.'

As discussed in the previous chapter, one of the better known epigenetic mechanisms is the silencing of genes by methyl groups. A specialised class of enzymes called methyltransferase attach methyl labels to particular 'letters' of a gene, blocking access to the whole gene.

"One of the great mysteries of modern molecular biology is: How do methyltransferases know where to attach their labels in order to selectively inactivate an

individual gene?" says Professor Ingrid Grummt of the German Cancer Research Centre (DKFZ).[13]

Grummt and his team have come much closer towards unravelling this mystery. She has focused on studying those text passages in the genetic material which do not contain any recipes, often referred to as 'junk DNA.' Nevertheless, these texts are transcribed into RNA molecules in a controlled manner.

"These so-called noncoding RNAs do not contain recipes for proteins. They are important regulators in the cell which we are just beginning to understand."

In her most recent work, Grummt and her co-workers showed, for the first time, that epigenetic regulation and regulation by noncoding RNAs interact. The scientists artificially introduced a noncoding RNA molecule called pRNA into cells. As a result, methyl labels are attached to a particular gene switch so that the genes behind it are not read. The trick is that pRNA exactly matches (is complementary to) the DNA sequence of this gene switch. The investigators found out that pRNA forms a kind of plait, or triple helix, with the two DNA strands in the area of this gene switch. Methyltransferases, in turn, are able to specifically dock to this 'plait' and are thus directed exactly to the place where a gene is to be blocked. More than half of our genetic material is transcribed into noncoding RNA.

This prompts Ingrid Grummt to speculate:

"It is very well possible that there are exactly matching noncoding RNA molecules for all genes that are temporarily silenced. This would explain how such a large number of genes can be selectively turned on and off."

A Piano analogy...

Meanwhile, Japanese and U.S. scientists, working independently of Grummt, have come to an identical theory to explain how specific genes are silenced and others are not. Because this effect can be reversed, they

propose that it might be possible to devise therapies for cancer and other diseases using this information.[14]

The NOVA U.S. public television program described epigenetics as "The Ghost in Your Genes." Like keys on a piano, DNA is the blueprint for all the proteins that cells produce. Epigenetic information provides additional dynamic or flexible instructions as to how, where and when the blueprint will be used.

"It corresponds to a pianist playing a piece of music," said Kohzoh Mitsuya, Ph.D., postdoctoral fellow in the School of Medicine at The University of Texas Health Science Centre, San Antonio.

The team found that a small RNA pathway is required to establish an epigenetic modification -- called DNA methylation -- at a gene that codes for mammalian proteins. As discussed above, DNA methylation adds chemical tags called methyl groups to specific genes, usually silencing their expression.

"DNA methylation marks are reversible, so there is great interest in devising therapeutic strategies, for instance in cancer biology, to epigenetically reactivate silenced tumour-suppressor genes or inactivate specific oncogenes in human cancer cells,"[15]

Environment and cancer

If we acknowledge the growing body of evidence, it is clear that beyond being reversible, DNA methylation is susceptible to environmental influences. Many cancer biologists now agree that changes in DNA methylation might be as important as genetic mutations in causing cancer. There are far more epigenetic changes than genetic changes found in the majority of cancers, and research into epigenetics is proving to be important to understanding cancer biology.

"It is critical to identify the entire complement of factors that affect gene silencing. This was the rationale behind this study examining DNA methylation in mice that I began in 2004. The study adds information about one set of factors. A finger on the piano."[16]

The researchers compared a group of normal mice with a group lacking the small RNA species. The team found that DNA methylation was markedly reduced at one of four genes tested in the small RNA-deficient mice. Dr Mitsuya believes:

"This is the first demonstration that small RNAs can act in this way. It shows how one note is played on the piano."

Epigenetic activity is a previously unseen dimension of biology that may enable clearer detection of disease, monitoring of progression and improved treatment, and may provide entirely new biomarkers of disease susceptibility.

"The symphony has only just come into view. We can hear it, but we need to learn how all the parts are being played."[17]

Dr. Mitsuya is a member of the Centre for Pregnancy and Newborn Research in the Department of Obstetrics and Gynaecology, School of Medicine, at the UT Health Science Centre San Antonio and is engaged in epigenetic studies of placental function.[18]

Now it is time to turn our attention away from gene expression for a little while, and turn back to emotion...

The Role of Emotion

There was a time when emotions were thought to arise only within the 'lower' limbic system within the brain. It was fervently believed that the more evolved prefrontal cortex could not possibly be involved in anything so base as emotion formation. We now understand that many evolved brain areas, like the prefrontal cortex, are implicated in the production of emotional responses, and that this involvement can be mapped using EEG and fMRI.[19]

In mapping the waveform of emotions, it has been found that all emotions are simply variations of the two main emotions humans can feel: fear and love. For example, the waveform of fear is a long, slow wave of energy.[20] Researchers have been able to map the interaction of

the fear waveform as it touches sites on our DNA helix. The long, slow waveform of fear touches relatively few sites.

In other words, DNA remains switched off when fear is present. Perhaps that's why people often report feeling frozen by fear.

By contrast, love is a shorter, faster frequency wave. It interacts with DNA at many more sites, switching on more codes. Perhaps that is why feelings of love are associated with possibility, hope and potential.[21] Whatever the interpretations of this growing body of data are, it is clear that we now have a hard link between thought and physical matter, and that link is emotion.

So what does that mean to you and I in our lives and in our workplaces?

It implies that physical health - the wellbeing of our body is as affected by our moods - what we feel - as it is by our environment and what we consume. In the workplace, it means that how well we perform - our productivity - has more to do with managing our moods, intentions and energy levels than just to-do lists and personal organisers.

In the late 20th century, neuroscientists added even more information to our understanding of the physics and biology of feelings and emotions, when they discovered that peptides (information molecules made of amino acids) transfer information from the sensory processing centres in the brain into the DNA. Dr. Candace Pert[22] discovered that the body produces natural opiates, known as endorphins that provide a natural high when they connect to certain cells within the brain. Now, endorphins are just one category of peptide, with peptides defined as any chain of aminoacids greater than one and less than seventy (after which time they are classed as a protein).

Candace's work prompted a revolution in our understanding of how information is passed from the brain to the body, paralleling our nervous system. What Candace and her team also soon discovered was that this is not a one-way process. Our immune system, nervous system, gut and endocrine system all produce peptides, with many receptor hubs (think of a bus interchange) for these information molecules throughout the brain and body, especially surrounding the spine, gut and lymph nodes. When a peptide docks on a receptor, it transfers information deep into

the cell and DNA. When receptors get blocked by toxins, for example, sodium or calcium molecules, the peptide information molecules can't dock, interfering with or preventing the process.

What Dr Pert came to understand was that these information molecules are the source of our feelings - like pain or pleasure - and our emotions. She came to call these 'molecules of emotion', for their dual function as conveyors of information and feeling. We feel our peptides as they deliver messages of pain or pleasure, sadness or joy, excitement or fear, and we feel their absence when their pathways have been interfered with in the form of the absence of feeling or emotion, often labelled depression. Just as a photon (packet of light energy) can be simultaneously a wave or a particle, so information can be mapped as a molecule (configuration of particles in the form of a peptide) or a wave-form, depending on the instrument used to view it. When a scientist uses advanced tools to identify the amino-acid chain that makes up a peptide, they 'see' molecules, whereas we are aware of our peptides through the wave form of feelings and emotions running through our cells.[23]

Many drugs act as antagonists for these important peptides by mimicking the molecular structure of the peptide and taking its place, by docking in the receptor. These artificial analogues fit perfectly, but they do not carry information and so nothing is transmitted to the cell. Now this is great when you want to block a message from reaching the cell, but unfortunately, every peptide has numerous purposes in the body, and these also become casualties. While endorphins might create feelings of joy when docked into a brain cell, they may tell the immune system to stand down when docked onto an immune cell, or that you are full and don't need food when docked into a gut cell. This is how many peptide antagonist drugs end up creating a host of side effects, including having an effect on memory, mood, appetite and immune function. This explains why when we are medicated, our memory doesn't work so well and our mood feels repressed; the emotional/information network has been compromised.

Emotion and DNA Switching

The Institute of Heart Math

This brings me to another experiment - this time performed by the Institute of Heart Math. In this experiment, 28 pieces of human DNA were given to 28 researchers who had been trained to generate strong emotions on demand.

Researchers wanted to see if the findings of researchers like Popponin and Baxter could be extended to explain how our emotions affect each other. What was observed was that the DNA changed its shape according to the feelings of the researchers. When the researchers felt gratitude, love and appreciation, the DNA responded by relaxing and the strands unwound. The length of the DNA became longer, codes switched on. But when the researchers felt anger, fear, frustration, or stress, the DNA responded by tightening up. It became shorter and switched off DNA codes! Then, when researchers again felt love, joy, gratitude and appreciation, the shutdown of the DNA codes was reversed and the codes were switched back on.

So if you've ever felt "shut down" by the negative emotions of others, you now know it wasn't your imagination.

We've always known that our feelings and attitude can have an effect on the people around us, but the scientific discoveries about the effects of emotion on our DNA leads us to a very interesting observation; what I like to call the DNA Interaction loop. We all know that our feelings affect our emotions, but science is now telling us that our emotions cause our DNA state and that our DNA transmits energy, which communicates with our feelings. The implications, particularly for business, are astounding.

If fear and related negative emotions like frustration and anger switch off our DNA, then working in an unsafe environment can potentially cause individuals and entire workplaces to be productively shutdown or more likely to become physically ill.[24] Specialist armed forces like the SAS use resilience training to fortify their recruits so that fear doesn't paralyse

them in battle. Their entire squad become an impenetrable fortress of focused positive intent and brotherhood. Now we know why this works. Interestingly, later studies show that there is a magnification effect when more people are involved or emotions are stronger.[25]

So when one person strongly affects the emotions of another, there can be a cumulative effect that can spread throughout a group. This is how one person in your workplace can have a negative or positive effect on a whole group of people. The impact of an individual with strong negative emotional states and unresolved anger has long been discussed as a source of workplace stress and has led in the past to stress leave and law suits. At the extreme end of this behaviour is what has come to be known as the workplace psychopath.

DNA as Memory

You've probably heard the term 'muscle memory' before.

Well it turns out your muscles literally have a memory, along with every other cell in your body. The same researchers that discovered that our DNA processes light and sound waves have discovered that each cell in our body has three Gigabytes of memory storage.[26] They believe that what we have termed the 'subconscious mind' is actually the function of the DNA in every cell of our bodies. This memory holds our inherited and learned behaviour patterns, memories, experiences, beliefs and skills. It's like a massive database of information that makes us, well *us*... It makes each of us unique.

Now, it is estimated we each have up to 70 trillion cells in our body, so with three Gigabytes of memory per cell, that equates to some 210 thousand, trillion Gigabytes or 210 Zettabytes of memory per human. That's 210 with 21 zeros after it worth of memory storage in your body.

In 2013, the world's computers were estimated to have reached 4 Zettabytes of combined storage capacity, less than one fiftieth of the storage capacity of a single human being's DNA. And what is even more amazing is that just like a computer, we are able to switch the biological codes on and off and re-programme the behavioural software within this DNA database. Now we know our DNA is used in multiple ways,

doubling or even quadrupling the amount of information that can be simultaneously encoded.

This appears to be the reason humans don't need nearly as many DNA codes as was previously believed to be necessary to account for our complexity. It's the infinite potential of DNA's interaction with our experiences that makes us so complex.

In a recent study by Emory University School of Medicine, in Atlanta, it was shown that experiences can be inherited biologically through chemical changes in DNA. During the experiment, mice were repeatedly exposed to the smell of a cherry blossom which was paired with a fear inducing experience. It was found that both the DNA of sperm produced by the mice after the experience, and subsequent generations of offspring, contained genetic changes consistent with increased sensitivity to phobias, and the live offspring demonstrated a fear response when exposed to the cherry blossom odour.[27]

"Such a phenomenon may contribute to the aetiology and potential intergenerational transmission of risk for neuropsychiatric disorders such as phobias, anxiety and post-traumatic stress disorder[28]... Our findings provide a framework for addressing how environmental information may be inherited trans-generationally at behavioural, neuroanatomical and epigenetic levels."[29]

What this means is that experiences become integrated into the DNA, and can be passed onto subsequent generations. These findings reveal how phobias can be passed on from generation to generation, and the amazingly dynamic and plastic nature of our DNA.

Programming DNA Memory via the Cell

Bruce H. Lipton, in *The Biology of Belief,*[30] describes how, as a professor of Biology, he often found himself at odds with the mechanistic view of the body, and came to recognise that the *cell* is a complex and intelligent organism, a homologue of a computer chip. In 1997, Lipton's hunch was born out by an Australian research consortium, headed by B. A. Cornell. Their research, published in *Nature*[31], involved isolating a cell membrane and attaching a piece of gold foil under it. The team then flooded the space between the gold foil and the attached membrane with a special

electrolyte solution. As the membrane's receptors were stimulated by a complementary signal, the channels opened, allowing the electrolyte solution across the membrane.

"The foil served as a transducer, an electrical pickup device, which converted the electrical activity of the channel into a digital readout on a screen. This device, created for the study, demonstrates the cell membrane not only looks like a chip but also functions like one. Cornell and associates successfully turned a biological cell membrane into a digital-readout computer chip."

This demonstrates how receptors in the cell allow the cell to process and interpret information, act up on and then pass on the message to the relevant *organelle*, or deep inside the mitochondria to the DNA. Lipton extrapolates that like computers, cells are programmable. Secondly that the programmer comes from outside the cell - that is the signals from the environment do the programming. The cell acts as the processor, while the DNA holds the software, some of which is *read-only,* while other codes can be overwritten. Furthermore, the unused substrate (junk DNA) can be assembled into new code and added to the DNA software as a new app (software application).

Our lifestyle, the things we think to ourselves, say out loud and believe all contribute to programme the DNA via the receptors on the cell membrane. Those molecules of information and emotion are the vehicles for these thoughts to enter the cell and reinforce or re-programme our DNA, creating the person you will be tomorrow.

Altruism: a Genetic Advantage?

The idea that our genes are selfish and the concept of survival of the fittest as the only genetic imperative, has been seriously questioned by recent studies into genetics and behaviour. As more of our so-called 'junk DNA' is understood, it appears that this area contains very complex molecular protections, and is also more mutable than long believed. It appears that these junk codes are influenced by triggers from the environment and as such, are subject to change.

It seems that when behaviour offers an adaptive advantage, it is encoded and passed on through the genes. One possible explanation for

this phenomenon is that massive amounts of DNA codes sleep silently and act as a kind of substrate of potential that can be drawn on under the right conditions. In some cases, it seems this substrate can be taken apart and re-combined in new codes, sometimes mimicking codes copied from viruses, or other cell invaders.

The amount of code in the substrate makes up 90% of our genetic material. Each cell in the human body contains about 2 meters of genetic material, with a storage capacity of about 3 gigabytes of information. As discussed above, it has been estimated that the average human adult has 210 trillion bytes of storage capacity, and that is mainly thanks to this junk DNA.

Quantum and molecular biologists are now referring to this junk DNA as the Dark Matter of the genome, because of its volume and potential. It's almost like an internal 'Akashic Library'. Psychology and Quantum biology are now forced to overlap, as it seems each behaviour has its roots in the domain of our DNA, and is switched on and off by environmental exposure; that is the influence of family and society.

We have choice when it comes to expressing our behavioural potential, and we have choice in the way we nurture our children and each other to bring out the best in them.

I think this is my favourite part of all the research, because it's increasing our ability to understand ourselves. It also shows us that we are 'co-creators' in the deepest sense. Not as some New Age fluffy throw-away jingle, but at the root of who we are and who the generations to come will choose to be.

DNA as Personality

Which brings me to the subject of personality and how that interacts with our DNA.

We all have one, though some people seem to be more pronounced than others. Maybe you've been described as having an outgoing personality, or are considered reserved or shy by others. So what is a personality?

There are many ways we can define personality. In fact, philosophers and behavioural scientists have created a number of personality categorisation systems down through the ages. One of the earliest systems was developed in Ancient Greece, and is still in use today. It describes personalities as 'Humours'. More recently, we have the personality systems developed by business consultants. You may have heard of the DISC and the MyersBriggs Personality Inventories.

A child's personality is inherent, but becomes obvious somewhere during the first 18 years of life. Some children have a distinct personality from the moment of birth, while others emerge more gradually. What we now know is our DNA carries the full range of potential available to us. Inherited from both sides of our family tree, the personality in our DNA is activated or shut down by life experience. Therapy and personal development also enable us to become conscious of our personality and choose how we want to behave from the range of options available to us. In other words choosing which DNA we switch on or off or strengthen.

Personality Types

I have found that teaching people about personality styles can be really empowering.

It helps us to realise why we behave the way we do, and why other people may react very differently in the same situations. Basically, regardless of which system you use, there are four main personality types, which can be broken down into smaller and smaller subsets or preferences.

While we all have aspects of at least two or more of these personality types, one tends to dominate. When you look at the personality descriptions, you might start to recognise these traits in yourself, family and friends.

I recommend Personality Profiling as a tool for personal growth, team building and leadership development. To get a comprehensive personality profile requires time. For now, I'll just provide an overview. Later, I'll show you how to do a simple estimate of your dominant personality traits. There are no 'good' or 'bad' personality types. Every

personality type has its strengths and weaknesses and we need a mix of personalities in any team for any project to work. For instance, in a play or movie, not everyone can be the star, or in a soccer team, not everyone can be the striker. Many roles need to be fulfilled for any project to succeed. Each personality type also has a positive and negative side to it.

Background:

In the 1920s, Swiss psychiatrist Carl Jung wrote *Psychological Types*. His work formed the basis of what became one of the most widely used personality models in the world today: Type Theory.

You might be familiar with the Myers-Briggs Type Indicator® (MBTI®), a self-report questionnaire that helps people locate where they best fit in Jung's theory. After decades of published studies, researchers have confirmed sixteen basic personality types, each of which can be named by a four-letter Type Code ("INFP", "ESTJ", etc.). Each personality type can also be represented as a cluster of related themes.

Dario Nardi PhD has created a mobile phone App that[32] allows you to quickly assess which of the Sixteen Types fits best for you or an acquaintance, and provides useful information about each Type such as: contributions to teams, what kind of input gets a positive response, and so forth. So if you've never had your personality profiled, I would recommend this as an affordable and convenient way to start.

Why are there sixteen Types?

Here is the full story:

First, Dr. Jung identified four mental functions - today known as cognitive processes. We focus our attention and gather information using Sensing ("S") and iNtuiting ("N"), and we organise our experiences and make decisions using Thinking ("T") and Feeling ("F"). These are technical terms; for example, "feeling" here does not mean emotion - it refers to cognition based in values.

Jung then described how each of these four processes plays out in a person's "internal world" ("I") of thoughts, feelings, memories and

imagination; the "external world" (E) is one of actions, people, tools and organisations. Thus, there are eight cognitive processes:

- Extraverted Sensing
- Introverted Sensing
- Extraverted Intuiting
- Introverted Intuiting
- Extraverted Thinking
- Introverted Thinking
- Extraverted Feeling
- Introverted Feeling

By the way, people are familiar with the term "extroversion", but Jung coined the term and originally spelled it "extraversion" - a spelling still used by practitioners today.

People have potential access to all eight cognitive processes, but in practice, develop a preference for only two. Everyone can perceive and make decisions; everyone also has a conscious experience of their personal, internal world as well as the external world around them. A minimum of two processes is needed to cover all of these bases.

For example, someone might have a preference for "Extraverted Thinking" and "Introverted Sensing" - the Thinking process affords decision-making while Sensing affords perception; together, the person has both an Extraverted and an Introverted side. Of the two preferred processes, one is Dominant: it plays the lead role. If the Dominant process is Extraverted, then the person tends to extravert; if the Dominant process is Introverted, then the person tends to introvert.

When we take into account the presence of a Dominant process, the result is sixteen personality Types.

In the 1940s, Isabel Myers and her mother created a pencil-and-paper questionnaire to help identify which of the Sixteen Types best describes someone. To keep it simple, the Myers-Briggs Type Indicator® asks people to select from two options along four dimensions of personality, like this:

- Extraverting or Introverting?
- Sensing or Intuiting?
- Thinking or Feeling?
- Judging or Perceiving?

Myers created the Judging/Perceiving dimension in order to locate which cognitive process a person preferred to show to the outside world. If a Type has a "J" in its Code, then the Type shows either Thinking or Feeling to the outside world. Conversely, if a person has a "P" in their Code, then the Type shows either Sensing or Intuiting to the outside world. Since the original questionnaire, many professional statisticians and psychological assessment designers have improved it, creating what is now the most-used assessment today. As of 2008, there are over sixthousand published research studies on Type Theory.

An example of Type:

Here is an example that explains the "INFP" Type Code:

- The middle two letters in the Code ("NF") indicate a preference for the Intuiting and Feeling cognitive processes.
- The first letter ("I") indicates that the Dominant (Lead) process is Introverted (kept to oneself).
- The fourth letter ("P") indicates the process shown to the world is Intuiting (Extraverted Intuiting).

Thus, INFP's dominant cognitive process is: "Introverted Feeling".

Types share commonalities and differences. As you read about each Type, you will sometimes find similar language. For example, both "ISFP" and "INTJ" share a preference for Introverting; this is apparent from their four-letter Type Codes. You will also find qualities that go beyond the Code; "ISFP" and "INTJ" both take a pragmatic approach to problem solving and feel free to do "whatever it takes to get the job done" - for both, accommodating others' standards and expectations

takes a backseat to getting a useful result. Commonalities are bridges to getting along better on teams and one-on-one.

Myers hoped that improved self-knowledge would allow people to better choose a job they would enjoy, creating a climate suitable to a more peaceful world. Today, counsellors, consultants, educators and managers all around the world use Type Theory. The ethical use of this theory demands that people view Type Theory as only one data point about themselves, rather than as a "box" or a "label".

Improved knowledge of others and ourselves encourages several positives:

- ♦ we spend less time expecting others to be like us
- ♦ we spend less time trying to be like others
- ♦ we spend more time being ourselves, doing what we do best
- ♦ we find we can flex more often and grow more easily

Remember: everyone is unique. Type Theory is just a model -- a convenient fiction. It provides a language or a lens; a start to better understand someone - even when that someone is you!

Type is genetic and considered an emergenic trait – that is your personality is not determined by one gene, but by a cluster of gene types that make up the whole you. Your personality emerges somewhere during childhood and adolescence. People's personalities don't change, but they can develop skills to improve areas they feel are less developed. The goal is NOT to become an all-rounder. The most successful individuals have distinct personalities and know who they are, what they like and don't like, and how to thrive, but they also know how to get the best out of others.

Personality traits are being shown through extensive research to align with certain career paths, and patterns of brain resource usage; there are exceptions of course, and sometimes those exceptions revolutionise their profession or industry.

In helping people understand personalities, I like to use characters in children's literature. Every story will have a range of the major personality

types for it to ring true. We naturally relate to personalities similar to our own.

As I run through the needs and values of each personality type cluster, the positive and negative traits, think of characters in movies or books that demonstrate these. If you do not know your 4 letter MBTI type, I recommend using Dr Dario Nardi's App before proceeding: http://www. personalityapps.com/Personality Types/Welcome.html then read the description for your type.

The Catalysts

INFJ - the foreseer developer:

Luke Skywalker from Star Wars / Amelie Poulain from Amelie / Frodo Baggins from The Lord of the Rings / Rose Dawson from Titanic / Albus Dumbledore from Harry Potter **INFP - the harmoniser clarifier:**

Fox Mulder from X-Files / Anne from Anne of Green Gables / E.T. From E.T: The Extra-Terrestrial / Edward Scissorhands from Edward Scissorhands / Simba from The Lion King

ENFJ - the envisioner mentor:

Jules Winnifield from Pulp Fiction / Bilbo Baggins from The Lord of The Rings / Charlotte from Charlotte's Web / Pocahontas from Pocahontas

ENFP - the discoverer advocate:

Ariel from The Little Mermaid / Will from The Fresh Prince of Bel-Air / Bridget Jones from Bridget Jone's Diary / Anakin Skywalker from Star
Wars

Needs and Values

These types crave significance, authentic interaction, unique identity, and both personal and human meaning. They are driven by ethics and values and cannot thrive in circumstances that compromise this.

Selfactualisation is the driving motivation within this cluster of personalities.

The Improvisers

ISTP - the analyser operator:

Maggie Fitzgerald from Million Dollar Baby / Han Solo from Star Wars / Wolverine from X-Men / Black Widow from The Avengers

ISFP - the composer producer:

Manny Ribera from Scarface / Harry Potter from Harry Potter / Jenny from Forest Gump / Jake Sully from Avatar

ESTP - the promotor executor:

James Bond from 007 Movies / Ellie Driver from Kill Bill Vol. 1 / Vincent Vega from Pulp Fiction / Marty McFly from Back to the Future

ESFP - the motivator presenter:

Tim Taylor from Home Improvement / Kelly Bundy from Married with Children / Thor from Thor and The Avengers / Donkey from Shrek

Needs and Values

The improviser cluster of personalities enjoys adapting to the moment, having the freedom to act 'now', thrives on making an immediate impact, recognises opportunity and needs variety.

The Stabilisers

ISTJ - the planner inspector:

Bruce wayne from Batman Begins / Darth Vader from Star Wars / Maximus from Gladiator

ISFJ - the protector supporter:

Dr John H. Watson from Sherlock Holmes / Melanie Hamilton from Gone with the Wind / Dobby from Harry Potter

ESTJ - the implementer supervisor:

Tony Soprano from Sopranos / Princess Leia Organa from Star Wars

ESFJ - the facilitator caretaker:

Rabbit from Winnie the Pooh / Monica Gellar from Friends / Dorothy from The Wizard of Oz

Needs and Values

The stabilisers rely on tradition and have a strong sense of duty and obligation. They thrive on group membership, require safety and security and are gifted at working within structures that produce stability.

The Theorists

INTJ - the conceptualiser director:

Mr Darcy from Pride and Prejudice / Gandalf from Lord of The Rings and The Hobbit / Clarice Starling from Silence of The Lambs / Spock from Star Trek

INTP - the designer theoriser:

Brian Griffin from Family Guy / Dr Susan Lewis from ER / Sherlock Holmes from Sherlock Holmes / Fiona from Four Weddings and a Funeral

ENTJ - the strategist mobiliser:

Jordi LaForge from Star Trek:The Next Generation / Beatriz Kiddo (the bride) Kill Bill Vol. 1 / Magneto from X-Men / The Oracle from The Matrix

ENTP - the explorer inventor:

Q from 007 Movies / Dr. Emmett 'Doc' Brown from Back to the Future / Mia Wallace from Pulp Fiction / Tony Stark from Iron Man

Needs and Values

Theorists pursue knowledge and competence; they are known for their expertise and their desire for self-mastery. They are driven by progress, and rely upon proven concepts and principles for success.

No matter which personality preferences are yours, remember that every personality has its strengths and weaknesses. Knowing these helps us to understand and cooperate with each other, as we make allowances for the differences between us.

Personality, Energy and Emotion

There can be no doubt that humans are emotional creatures. Our emotional circuitry and chemistry is deeply ingrained, as we have seen in previous chapters. These circuits link the amygdala and other regions of the limbic brain, like the hypothalamus, providing us with valuable information arising directly from the senses (both internal and external) and sometimes fuelling destructive impulses out of context. Neuroscientists estimate that the average adult has finished hardwiring the circuitry linking the limbic (emotional) brain with the neo-cortex (reasoning) by age 24, allowing these regions of our brain to engage in a continuous dance, receiving and sending information, scanning the environment through our senses and channelling our instincts. Mostly, this happens below the level of conscious awareness, but occasionally, during periods of high stress, the mechanism becomes more apparent, as we experience a '*flight or fight*' response to a perceived danger.

The neo-cortex's job is to mediate the information coming in, whether these are signals of pain or pleasure, or molecules of emotion. Dr Dario Nardi, in his book - Neuroscience of Personality - discusses the seven most important regions of the neo-cortex involved in emotional intelligence and their functions:[33]

- Left Prefrontal (Fp1): Ignoring or denying bad news in order to enjoy happiness
- Right Prefrontal (FP2): Dwelling on bad news, introspecting and experiencing sadness
- Right Temporal (T4): Noticing other's motives, perhaps getting angry and acting out

- Left Rear Temporal (T5): Being sensitive to other's feedback and trying to please them
- Left Parietal (P3): Being acutely aware of, and protective of, our personal boundaries
- Left Frontal (F7): Imagining other's experiences and maybe feeling as they do
- Right Frontal (F8): Harbouring strong likes and dislikes and feeling devoted to these

Dario Nardi's research with university level students, wired to EEGs and completing a wide range of physical, mental and visualisation tasks revealed that different personalities use their brains uniquely, and that there is a statistically valid correlation between patterns of brain resource usage and personality. While some personality types revealed more ability to introspect, others were more able to push-through, reject feedback and persist to achieve their goals. While some personality types revealed brains that were highly sensitive to body language and interpreting non-verbal cues and tone of voice, others were less adept.

Dario and his team also noticed that some personalities had extremely efficient brains that stayed at a low level of activation until something worthy of attention fired the brain up, while the more creative personality types tended to light up like Christmas trees for extended periods of time and burned up a lot of energy. Some personalities were energised by being with others and out in the world (Extraverts), while others were exhausted by this and required time alone, in reflection and not-doing (Introverts).

Your personality is thus a great window into the brain, allowing you to understand why your brain does what it does, its strengths and weaknesses, and what you need to do to fuel it, rest it and what stimulates it. Dario Nardi explains:

"Personality shows up in multiple ways, including 1) Threshold of activation (how much stimulus is needed to get a region going), 2) A synergy of motivation and

competence, 3) Speed of response time to various tasks, and 4) Whole-brain patterns such as what sends us into a state of flow."[34]

So, if you haven't taken the time to complete a personality profile, what are you waiting for? Go to http://www.personalityapps.com/Personality Types/Welcome.html and learn more about you, download the App and discover your personality preferences.[35]

It's now time to turn our attention to how we use our brains and personalities to develop thoughts into beliefs and behaviours...

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