

Quantum leap for Happiness Science Required

By Mike Zeidler, January 2014

Stop people in the street and ask them if they recognise happiness as an important and serious subject, and most would probably say it isn't worthy of the name of science. They'd be wrong of course. Chemists, biologists and neuroscientists have been having a crack at the subject for a long time, and the lead on happiness science has been firmly grasped by the Positive Psychology movement backed by the power of data from brain scanning and computing technology. But where's the physics?

Great physicists have historically had an interest in arts, culture and philosophy, but I've not seen any significant contributions to the science of happiness from this quarter. Noticing a paper called 'The curvature of Constitutional Space: What lawyers can learn from modern physics'¹, I thought I'd see how my knowledge of physics might apply to the science of happiness in order to advance the case for happiness as an appropriate (and in fact vital) subject of political and economic debate.

About the author: Mike Zeidler founded the Association of Sustainability Practitioners in 2005 and the Happy City initiative in 2010. He has worked in leadership, business responsibility and civic development since 1995.

Happy City campaigns for happiness to be taken seriously as a compass for personal, citywide and nationwide economics. The organisation shows how training, projects and tools can grow happier communities at a personal, local and citywide scale to create a story of prosperity people can believe in. Established in 2010, backed by hundreds of volunteers on a pilot in Bristol, Happy City is designed to spread across the UK and beyond. To date, the project has sparked interest in 13 other places in the UK and 17 countries around the world.

The Happiness Spectrum

My analogy² is that happiness is a form of emotional energy which follows the same set of rules as the electromagnetic spectrum. This spectrum is an expression of the ideas about how energy works which we can draw on a piece of paper. Students in the UK learn about the electromagnetic spectrum as teenagers, being taught there are seven types of energy, each with its own use³. We can't see very much of the spectrum, but we've found ways to measure and understand the effects.

The electromagnetic spectrum represents radiant energy, which travels from one place to another in waves of varying length and frequency. **Every** wave of energy has both an electric field AND a magnetic field which work in complete harmony and each field has a range of possibility (strength) between the positive and negative poles.

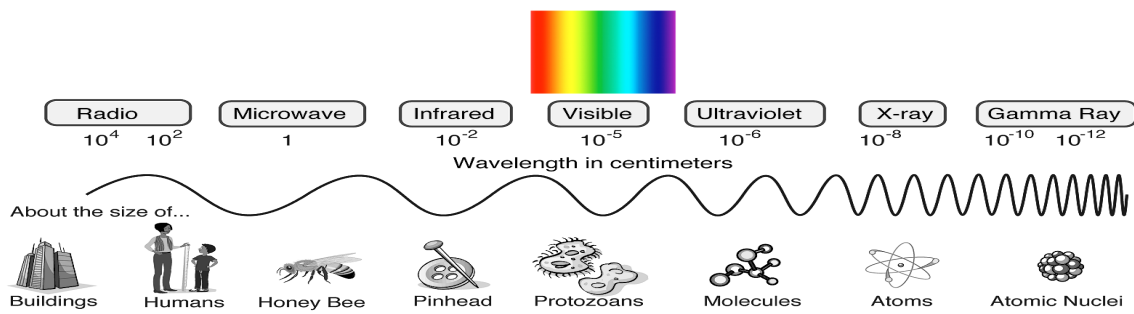
If the energy formed by happiness follows the same rules, there will be different types of happiness, each with its own use that will travel from one place to another. Happiness energy will **always** consist of a social AND a physical aspect. Just as magnetism and electricity perform different kinds of work, I propose the combined effect of a happiness wave will affect our feeling and our functioning, both of which change the way we think.

¹ <http://www.jstor.org/discover/10.2307/1341407?uid=3738032&uid=2&uid=4&sid=21103208724717>

² I'd love to call it a hypothesis, but can't imagine how to test the idea scientifically

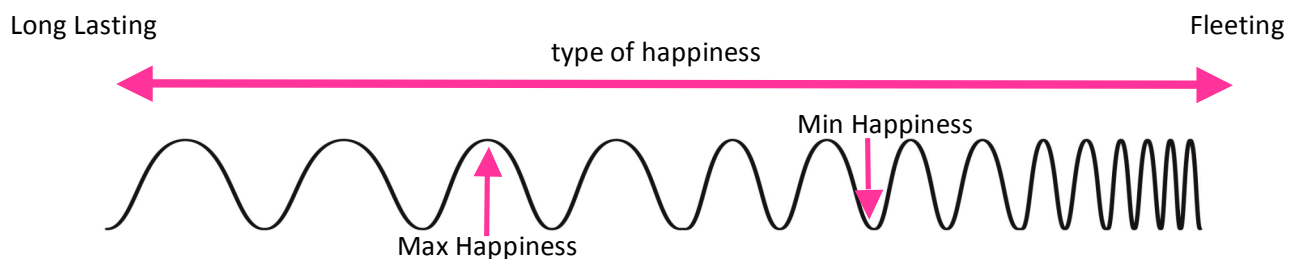
³ <http://www.youtube.com/watch?v=ewdxAafvwhE>

Let's take a diagramme from NASA ⁴, (below) and change it to a Happiness Spectrum.



The vertical axis represents the extremes of happiness ranging from desperately *unhappy* to ecstatically happy. The horizontal axis represents time, so as the waves get shorter, more and more get squeezed into the same amount of time.

Happiness Wavelengths



There's no widely accepted standard for 'types' of happiness, but I think all definitions could be mapped on this spectrum, adding clarity to the meanings of happiness by putting them in a comparable context. For example, in *The Happiness Myth*, Jennifer Hecht⁵ offers three types of happiness as 'moments' (shortwave), 'days' (mid-range) and 'lives' (longwave). Without the Happiness Spectrum, it would be hard to relate Hecht's types with the definition of happiness based on the chemical types of Endorphin (pain), Dopamine (reward), Oxytocin (trust) & Serotonin (importance) offered by neurochemist Loretta Graziano Breuning⁶. Considered as part of the spectrum, the effects of these chemicals can be placed within a relatively narrow frame somewhere below the mid range, a bit like visible light.

Given the axis of time, Shortwave Happiness must always be fleeting whilst Longwave Happiness must always be more enduring. It therefore makes sense that the shortwave end of the spectrum is where we'd find the most intense and short-lived feelings, closely associated with hedonic pleasures and instant gratification.

Pleasure, as described by Matthieu Ricard⁷, is a fleeting, changeable experience dependent on circumstances. He and others have sought to refute the argument that pleasure constitutes happiness with the argument that it soon becomes neutral or even repugnant if continuously experienced without a break. Whilst I agree with the observation about over-extending a pleasure, I would argue that the physics of the Happiness Spectrum insist on the inclusion of a negative scale of

⁴ <http://myasadata.larc.nasa.gov/ElectroMag.html>

⁵ <http://jennifermichaelhecht.com/id2.html>

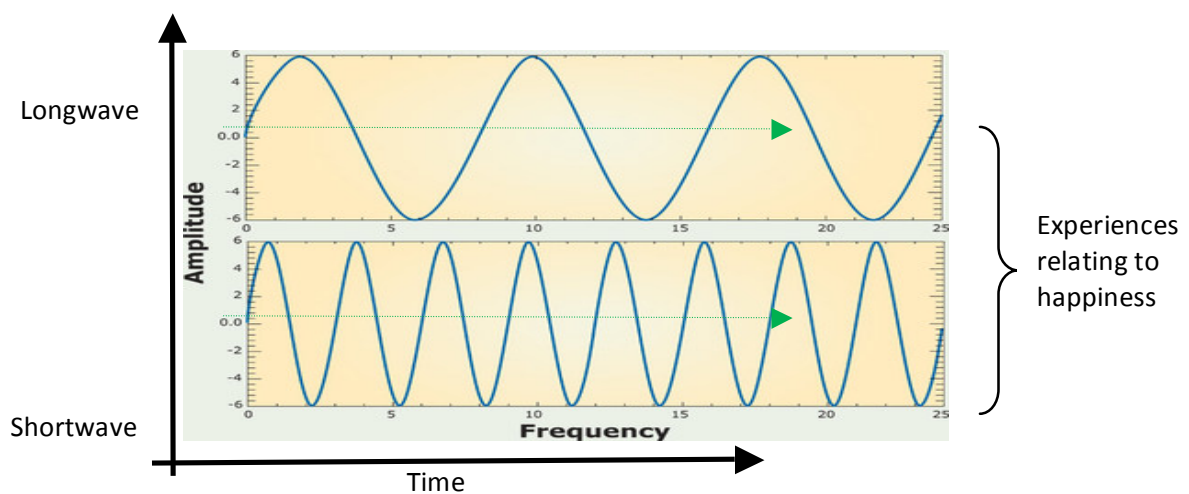
⁶ <http://www.psychologytoday.com/blog/your-neurochemical-self/201107/nature-gave-us-four-kinds-happiness>

⁷ http://www.huffingtonpost.com/matthieu-ricard/pleasure-happiness-difference_b_771048.html

unhappiness. After all, anything describing happiness in purely positive terms fails to describe the whole.

At the other end of the spectrum, we find the most durable meaning and fulfilment. This is where we'd experience our sense of belonging in community, our sense of purpose and direction, and our sense of place in relation to the rest of nature. According to Ricard and others, this is where happiness transforms from being a fleeting experience into a way of being that flourishes and endures with experience.

But it's not a simple case of 'longwave good, shortwave bad'. The Happiness Spectrum also helps us understand how shortwave and longwave happiness influence each other. Just as we know radio waves, light waves and x-rays all exist simultaneously, the various types of happiness are also all at work at the same time. The graph below shows two happiness waves, but there could be any number in action at once.



Whether positive or negative, patterns that repeat amongst the shorter waves will always set the trends of the longer waves. So for example, developing happiness habits⁸ (simple little things we can do regularly to nurture positive emotions) have a significant cumulative effect that builds on our longer term wellbeing.

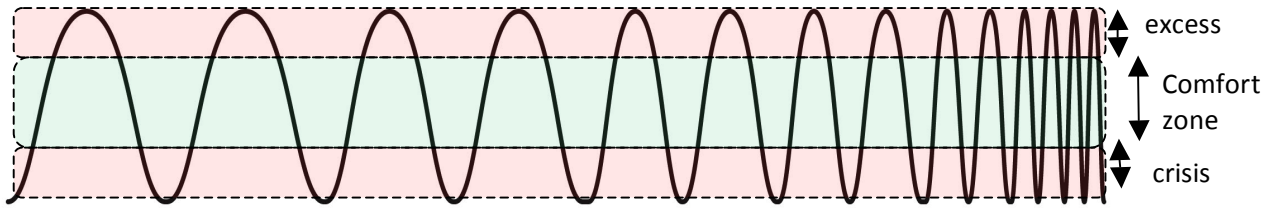
Happiness Dynamics

Just as our heart rate varies with effort, fear, exhilaration or exhaustion, so happiness will also wax and wane. Our lives will always contain both struggle and celebration, with 'good' and 'bad' experiences beyond our control. This is the positive/negative axis of the Happiness Spectrum, and is the area of greatest interest in any public debate about happiness and its effects.

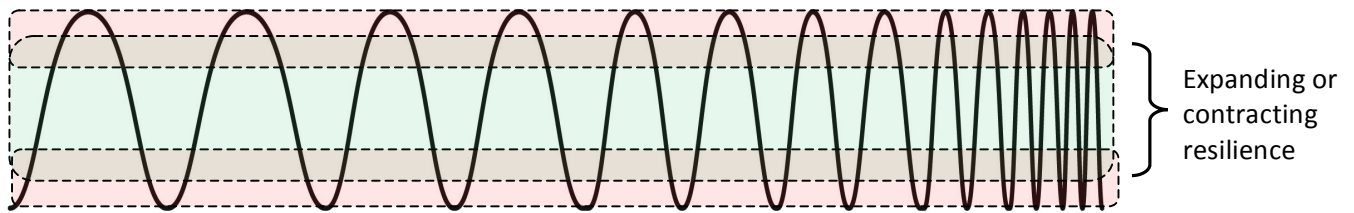
In statistical terms, 'normal' distribution assumes an even spread of measurements across a scale, and the further away from the centre line of this bell-shaped curve you go, the more you deviate from 'normal'.

If happiness were an energy, it would offer a 'normal' range of comfort between extremes of over-stimulation at the positive end of the scale, and crisis at the other. This comfort zone is a reflection of our ability to cope with change, representing overall resilience and wellbeing. If studies can show the significant factors affecting changes in the resilience of a system, then the Happiness Spectrum could become an extremely valuable tool. Here's how changes would show:

⁸ <http://www.happycity.org.uk/training/happiness-habits>



Experiences in the stress zones at either extreme would grow or shrink the range of our comfort zone. The likelihood of increasing or decreasing resilience depends both on individual disposition, and the response of the people around us. Short periods of crisis or excess may provide the learning and development that makes us stronger, but prolonged exposure to stress will always weaken us, reducing the range between crisis and blow-out.



As an energy, happiness can affect individuals, communities *and* the environment. We tend to debate happiness in purely human terms because there's no general agreement about the way any other form of nature experiences life. For me, this is one of the greatest benefits of the idea, because we tend to 'forget' we're simply a bit of nature like everything else in the universe. The Happiness Spectrum is a great leveller, allowing us to see the relationship between human resilience and the resilience/wellbeing of the world we inhabit in the same terms.

The relativity of happiness

When we're asked the question 'Are you happy on a scale of 1-10?', there's a very strong tendency for people (in the UK⁹) to offer a score of 7. This response merely shows that people don't consider themselves to be in dire need, and that they know they could be happier in a perfect world. This doesn't allow for the way the score will change when the comfort zone begins to get dangerously thin and resilience is threatened.

The Happiness Spectrum could offer a better benchmark based on our ability to deal with the ups and downs of life. Personal circumstances obviously have a significant effect, so those forced to be resourceful by a life of hardship and uncertainty are likely to have a wider range of resilience (ability to cope) than those conditioned by pampering indulgence. The problem is that our assessment is affected not only by our personal circumstances, but will also very significantly according to our perceptions, attitudes and beliefs.

For my purposes here, perceptions are what we see, attitudes are how we react to what we see, and beliefs are our understanding of how the world works. All three are inter-related and each can change the others¹⁰. Our perceived sense of 'need', usually depends on our level of comfort compared to those in our social group. This is why the rich benchmarking themselves against the super rich, can feel themselves hard done by, much to the disgust of the poor.

⁹ <http://www.ons.gov.uk/ons/rel/mro/news-release/initial-investigation-of-subjective-well-being---ons-opinions-survey/initial-investigation-of-subjective-well-being---ons-opinions-survey-nr.html>

¹⁰ Seeing new things can change beliefs and attitudes, experiments can change beliefs and perceptions, and a new belief can change perceptions and attitudes.

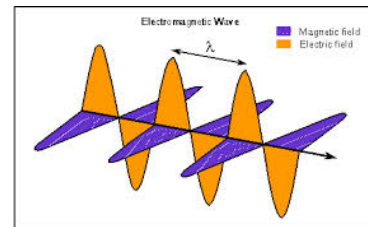
Attitudes dictate the pattern of our behaviour, which can either lift or depress our level of happiness depending on the choices we make. Beliefs dictate assumptions we make about the world, which are a defining barometer of our sense of happiness and wellbeing. If the Happiness Spectrum holds good, then the balance of behaviour which ensures a steady pulse of Long-wave happiness is where true prosperity lies. This must be true when applied to individuals or communities of any size.

So to recap, we've looked at the longwave/shortwave properties and the positive/negative properties of energy over time. The strong binary bias which runs right through Western culture makes us think we're looking at a comprehensive picture, but in fact we're only seeing half of what's actually going on. This is where the Happiness Spectrum begins to get really interesting, because it has significant implications for the political and economic beliefs which shape the way we act in world today.

The third dimension

As I mentioned at the beginning, the electromagnetic spectrum represents two inter-related energies at work in complete harmony, each of them with two dimensions. Every wave always consists of an electric field AND a magnetic field like the one pictured here, and so a happiness wave that's a form of energy must also **always** consist of a social AND a physical aspect.

The electromagnetic spectrum has so far been an accurate reflection of our experience of energy in the real world. So whatever kind of energy we're describing, we need to account for constantly shifting energy acting in two ranges (shortwave to longwave, and positive to negative), and to note there are always a number of waves at work, which are always moving.



My proposal for Happiness energy is that the physical (visible) aspect is 'thinking' and the social (invisible) aspect is 'feeling'¹¹ which together control both the *way* we function and our *capacity* for functioning. So what would it mean if we were to apply these principles to happiness in our lives?

The implications of a Happiness Spectrum

The Happiness Spectrum highlights two major ideas that call into question some fundamentally unscientific assumptions commonly made about the way the world works. The first is about our western bias for binary thinking (assuming things are either one thing or another), and the second is about happiness and its relative value to society.

When we look to decide anything, we do it through some form of internal or external debate. The most common idea of a debate is that there are two sides to an argument defined by an EITHER/OR approach, resulting in a full and final decision. The science of the electromagnetic spectrum illustrates the dynamics of the real world where there's flow and change across a scale and it's possible for BOTH one side AND the other to coexist in some form of harmony.

By simplifying our situations to EITHER/OR, we discount that third dimension which indicates the energy of relationships in systems. We believe we're clearer about the problem because we've discounted complex factors, but in doing so, we remove ourselves significantly from science and from reality.

Since we know life is very joined up and we know there will be 'knock on' effects to pretty much anything we do, we have an instinctive understanding of systems¹² and complexity based on our experiences.

With the help of evidence from neuroscience, we can even say with confidence that complexity is something we're designed to embrace rather than fear. Our conscious mind only uses about 5% of our total processing power, and although we're generally overwhelmed by 7 or more simultaneous bits of separate information, we know the unconscious mind¹³ is well suited to complexity, making us phenomenal problem solvers.

The Happiness Spectrum reflects the evidence that thinking and feeling are deeply interconnected and offers a model for identifying and measuring the 'quantum' field of feelings in terms of the thinking logic we trust.

As the fuel of conflict or collaboration, happiness is a key driver in society, and has been for all recorded time. It features in the earliest writing known to mankind¹⁴ and the conventions of modern day economics assume that prosperity (from the Latin 'doing well' or flourishing, which relates directly to fulfillment and happiness) is delivered by material consumption, supported by an advertising industry designed to sell this idea as well as products.

The speech made by Robert Kennedy in 1968¹⁵ begins with the words 'Too much and for too long, we seem to have surrendered personal excellence and community value in the mere accumulation of material things'. He goes on to highlight the way that GDP measures 'everything, but that which makes life worthwhile'. At the Happy City¹⁶ initiative we go even further, highlighting the **requirement** for people to be *unhappy* in order to feed constantly growing demand to fuel GDP Growth. Besides demanding our unhappiness, GDP Growth has significantly damaging effects in relation to society and the environment.

The search for sufficiently robust ways of measuring what makes life worthwhile has progressed significantly – to the point where UN resolution (65/309¹⁷) passed in July 2011 recommends happiness should guide public policies because it can account better for society and the environment, making it a better measure of prosperity and social progress than GDP Growth¹⁸. Whilst this high-level interest in happiness reflects the rapidly growing bank of studies and commentaries on happiness and the economy, there isn't any widespread agreement about how it should be done. A scientific narrative which brings our observations into coherence is required, and this is where the Happiness Spectrum has so much potential.

The Happiness Spectrum offers a 3D view which promotes the probability of GDP Growth being a *part* of the economic picture¹⁹ so we don't need to choose between either GDP or a happiness measure. In highlighting the missing relationship between thinking and feeling, the spectrum

¹² http://en.wikipedia.org/wiki/Systems_science

¹³ http://en.wikipedia.org/wiki/Unconscious_Thought_Theory

¹⁴ Both Sumerian and Egyptian, the earliest written languages, feature happiness

¹⁵ <http://www.youtube.com/watch?v=77ldKFgXbUY>

¹⁶ <http://www.happycity.org.uk/about>

¹⁷ http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/65/309

¹⁸

<http://www.un.org/apps/news/story.asp?NewsID=39084&Cr=general+assembly&Cr1=#.UGPiWrJITwE>

¹⁹ "Within ten years wellbeing will be the economy's headline indicator and our wellbeing will be the fundamental thing we are measuring, with GDP a subsidiary indicator." Sir Gus O'Donnell, Ex Treasury

corroborates observations of commentators like Wilson & Pickett²⁰ who suggest GDP Growth under current 'rules' also increases inequality, causing problems of both physical and mental health. Change the 'Product' of GDP to include physical and mental health and the relationship with inequality would change.

Economic modelling is based on rational behaviour theory²¹ which allows feelings to be rational if the benefit of doing something which feels good outweighs the benefit of making the most money. The Happiness Spectrum would validate happiness in the physical environment and so challenge the human-centric thinking which underpins our current ideas of economics.

We currently assume the earth supplies 'Free Goods'²² – resources so abundant they can be exploited without any cost to society. This attitude has caused catastrophic ecosystem collapse and species loss so great that it was recognised as 'The Sixth Extinction'²³ in 1995 and it's clear humans have begun to press hard against the Limits to Growth²⁴. Our ideas tend to be expressed in purely human terms because that's how we experience the world and we haven't proved the case for anything living which can't communicate. However, we know humans are a part of nature, not apart from it, and our economic reasoning needs to be better tuned in.

If the story of a Happiness Spectrum is true, then inter-connectedness of thinking and feeling, can and should be applied to all forms of life. The writings of people like Johnstone and Macey (Active Hope²⁵) and Renesch (Great Growing Up²⁶) call for ways of thinking and being that better reflect the intimacy of relationship between our happiness and the health of the world around us.

Their call reflects the progression of the Green movement, which for 50 years has assumed that a focus on the physical effects of human impact on the environment would create a rational change response to change. Unfortunately, the natural behavioural responses to problems on a global scale tend to be Fight, Flight or Freeze'. So some people become activists to fight the threats, some take flight from reality by actively denying there's a problem, and some freeze into inaction, preferring to ignore the evidence entirely.

The Happiness Spectrum offers a fourth response based in a new understanding of the physics of feelings, supported by the observations of neuroscience and the experience of positive psychology. If we embrace our nature and the nature of happiness, sustainability is an inevitable result. A belief in the power of the happiness spectrum with its positive links between happiness and our environment, automatically sets in motion the system effects of remedial action which make change on a global scale a realistic possibility.

The brilliant and visionary Eradicating Ecocide initiative²⁷, which seeks to give the Earth human rights in law shows just how far the 'Green' movement has moved beyond 'Greens'. The beauty of the Happiness Spectrum is that it applies at all levels. The science works to join up global level initiatives like Eradicating Ecocide and the UN resolution 65/309 with national, regional and local behaviours right down to the level of the individual.

²⁰ <http://www.guardian.co.uk/books/2009/mar/13/the-spirit-level>

²¹ <http://www.investopedia.com/terms/r/rational-behavior.asp>

²² http://en.wikipedia.org/wiki/Free_good

²³ <http://www.mysterium.com/sixthextinction.html>

²⁴ <http://www.clubofrome.org/?p=326>

²⁵ <http://www.activehope.info/>

²⁶ <http://thegreatgrowingup.com/>

²⁷ <http://eradicatingecocide.com/overview/ecocide-act/>

In this article, I've linked the natural and social sciences by naming happiness as an applied emotional force which gives clearer definition for different forms of happiness and promotes understanding of the way happiness works as a form of energy, complying with the laws of physics. Energy is a prerequisite for performing work, which physics defines as a force acting through space²⁸, and that's what Happiness does.

The story of a Happiness Spectrum:

- i) Provides clearer definition for the meanings of different forms of happiness
- ii) Promotes understanding of the way happiness works and where its power lies
- iii) Provides a new link between the natural and social sciences
- iv) Supports the case for happiness as an indicator of prosperity

This article has been published for review. I invite people from all disciplines to explore the possibilities of the Happiness Spectrum as part of our research towards a new Happy City Index of prosperity. Happy City has been exploring the power of happiness in communities for the past three years, and is currently working with the New Economics Foundation, Bristol City Council, NHS Bristol Public Health team, the Office Of National Statistics and others on the case for happiness as an indicator of prosperity. Our initiative is being closely followed by people from all over the world.

I believe happiness is the key to developing societies that are healthy, sustainable, diverse and peaceful, because happiness is a natural and universal force. At Happy City, we believe that by working at a city scale, we can marshal the intensely motivating force of happiness well enough to transform ideas of economic and environmental management. Happiness is timeless, unifying, universal and scientific. What do you think?

www.happycity.org.uk

With special thanks to Liz Zeidler & Jon Cartwright for testing my thinking, and to David Randall for his fabulous editing skills.