



Beau Lotto

Beau Lotto is a globally renowned neuroscientist who specializes in perception research, and has for years wowed the world of science with work that blurs the boundaries between neuroscience and the arts. As well as bending the science of perception, he is also trying to transform the way people think not just about themselves but also about the world around them.

The focus of Beau's research is perception, but his interest lies as much in a philosophical as scientific understanding of how humans see the world around them. Perception underpins creativity, and therefore innovation; even education is, in principle, the creation of perception. His research encompasses not just human vision, but bee and robot vision too. Beau goes even further by breaking down boundaries not just within his own discipline but between disciplines, by collaborating with artists, musicians, fashion designers and others anyone who has an interest in exploring different ways of seeing (and doing) things.

Beau's center of perception research, known as **Lottolab**, has become a hybrid science lab-art studio which, as well as undertaking highly controlled experiments resulting in papers published in the top international scientific journals, produces stunning visual illusions and installations that have been included in exhibitions at the Hayward Gallery, the Serpentine Gallery and the Science Gallery in Dublin, among others. His illusions are used by many other scientists, artists, teachers and science museums internationally.

Beau has lectured on perception for TED, the RSA series, the BBC, and UK WIRED Magazine's Annual Conference. He has also given talks to banks, governments, and universities such as Harvard. He is an inspiring and motivational speaker and uses illusions, games and interaction to engage his audience. Many of his talks focus on how the brain creates perceptions of oneself and one's world towards a better understanding of self. He also discusses how to foster innovation by offering a new route into uncertainty and thus a deeper understanding of creativity and learning.

His organization **Lottolab** finished its two-year residency in May 2012 at the world's best known Science Museum (in London), where they created new paradigms and programs for engaging small and large audiences with new ways of thinking about science, art and culture. Among other results were two BBC 2 Horizon programs, two programs with National Geographic Channel, the world's first science paper authored by primary school children, which itself resulted in a freely accessible science education curriculum predicated on creating real science through play.

In Spring 2013 **Lottolab** created *The Experiment* in San Francisco with the Peter Baumann Foundation and other investors from Silicon Valley. *The Experiment* will be a pop-up laboratory space that truly explores what it means to be human in a highly controlled but wholly creative environment that is a night-club, cabaret and laboratory. The result will be a truly unique experience that blurs the boundaries between science, art and culture, with the aim of shining new light onto human nature. Additionally, Beau launched start-up **Beautiful Mind**, a company that brings together the latest knowledge in neuroscience, behavioral science and design thinking to offer brands a new way of looking at customer and client behaviors.

Speech Topics:

Data

There is no inherent value in any piece of information because data by itself is meaningless. Why? Because the brain deals, not with information, but with value. And from the perspective of the brain, information doesn't tell you what to do. Which is why the fundamental challenge that the brain evolved to solve is the inherent uncertainty of information. This is true even at the most fundamental level of our senses: seeing light. Which is why we never see the world in any direct sense, or even patterns that it generates. Instead we construct the value of information according to our history of experience. And it's that historical meaning that we literally see, experience and know. Here we'll discuss - and experience firsthand - how the brain discovers new relationships. In doing so we'll better understand why innovation remains so elusive to most. We'll explore how to see new meaning in data that has always been there, but remained hidden. In short, we'll explore how to discover within not only new spaces of information, but more importantly spaces that we thought we had fully explored.

Leadership

What makes a good leader? When asked this question of a diverse audience, one typically generates a long list of possible qualities that people believe are 'essential'. And yet, there are only three that correlate with the success of a company. What are they and why do they matter? Here we will address these questions in a highly experiential way from the perspective of perceptual neuroscience, and consider a new answer: the quality of a leader is defined by how he/she leads others into uncertainty.

Branding

Imagine having a relationship with someone and treating them as the average man or woman. Not surprisingly, it's not going to work out very well. The value of any relationship is defined by its narrative: the more nuanced, creative and personal the narrative, the more essential it becomes. Branding is nothing more than telling stories that foster relationships. But brands treat people as the average, hence their stories do not foster what they truly need - indeed anyone needs, which is value, meaning and loyalty. Understanding the mechanisms and principles of behavioural neuroscience that enable relationships to start, as well as the relationships that enable them to be maintained (which are not the same mechanisms) is essential to any brand. And key to this is authenticity. So how can brands be authentic? How can they understand themselves and communicate that to their audience? These are the questions with which we will engage in a highly experiential way through the neuroscience of perception.

Education

It's clear that the quality of most of education is measured in terms of one's ability to memorise and reiterate. This is because education is in the service of society and businesses, which emphasizes efficiency over creativity. Schools - like business, then, focus on answers not questions through a competitive - not collaborative - model. Getting the right answer and prosecuting it efficiently through competition is in fact a good strategy in a stable world. But ... our world is not stable. It's complex, uncertain and evolving. Indeed, to succeed in nature requires systems not simply to exploit static phases (intelligence), but to remain adaptable to change (creativity). Which means we must teach children a way of being that enables not just what to see, but how to look?

Here using the neuroscience of perception, we will explore this new way of thinking about education through a concrete example in the world of science education where children became the youngest published scientists in history. Born out of our research on perception, we have created a framework for a new culture of learning, which is based on an openness to uncertainty and discovery that influences not just the way schools educate, but even the very architecture and design of schools.

Conceptual framework

Our framework of 'Seeing Myself See' recognises the importance of perception, of experience and imagination in shaping who we are as an individual – and also has the capacity to foster a different kind of learning: 'this is how you see it now, but with a bit of courage it is possible for you to see it differently'. In this way children are guided away from the admittedly more comfortable black and white view of the world, to the more challenging, but a more enlightening realisation of the greys in between.

The 5 'C's

We have distilled the idea of 'Seeing Myself See' in the context of education into five principles, which we call the 5 C's: Compassion, Community, Choice, Creativity and Courage. These principles provide the intertwined threads of a tapestry, the actual colours and textures of which must be woven by the individual school. We argue that these principles can be achieved only if they become what we call the actual 'ecology of education'. They are as much about teaching as learning, since teaching compassionately teaches compassion; teaching creatively teaches creativity; by guiding children rather than instructing them, they learn freedom and responsibility to choose; and situating one's students in the context of a community enables the learner to become a unique part of a whole.

Risk/Uncertainty

Arguably one of the most dangerous things one can experience in life is doubt. During evolution, if your ancestors weren't sure whether that 'thing over there' was a predator, well ... it would have been too late. Thus, when presented with doubt, we hate it ... and are genetically programmed to do so: Sea-sickness, and indeed most of our mental health problems being direct manifestations of our fear. The deep irony, however, is that anything interesting begins with a question. So taking the risk to step into uncertainty is an essential aspect of adaptation, which we know is at the root of success in all natural systems. What's more, nature also tells us when it's best to risk uncertainty. So how to deal with uncertainty is the fundamental problem that your brain evolved to solve. Here we discuss in a highly experiential way how and why everything is uncertain, and nature's solution to it.

Change

In the case of politics, those currently in power emphasise stability, whereas those seeking power argue for change. But, there is no inherent value in either. Whether change is good or bad is - like everything else in life - context-dependent. Here, using principles in behavioural and perceptual neuroscience, we'll explore those different contexts in order to discover what lives at the heart of change: why it's often essential for success but equally the most feared of human activities. Indeed, to ask questions, especially the question of 'why?' is historically dangerous. Which is why organisation, businesses, religions and - ironically - our education systems are designed to reduce the risk of question-asking. There is one principle reason for this: All revolutions (and revelations) begin with a question. We'll see how and why questions and metaphor are mediators of change; and thus why most questions are useless since they don't confront the most difficult barriers to change; and how change - when properly pursued - has no direction or goal. Change is a way of being that is fostered by one's external, but also one's internal environment. Which means change is personal and - when properly considered - inevitable.

Innovation

There are two parts to innovation: efficiency and creativity: the ability to create novel solutions to a meaningful problem and the ability to realise that solution. In recent decades society has focused - at times almost exclusively - to efficiency. In nature if two animals are set the same challenge, the one that deals with it most efficiently is also the one that is most likely to survive. So if a bus

is coming at you, you want to get out of the way as fast (i.e. efficiently) as possible. You don't want to say ... '... hmmm ... I wonder if there's a different way of seeing this ...'. But at present society behaves as if everything is an oncoming bus.

Creativity is different. Creativity requires questions, not answers, collaboration not competition, noise not sterility. But because of this, many assume creativity is a mysterious, messy and serendipitous process that is accessible only to the 'artistically inclined'. But in fact there's nothing creative about creativity. Rather, creativity is a wholly evolved and innate neurological process that is accessible to anyone. The challenge for creativity is not practical but emotional. Here we will use perceptual neuroscience to discuss in highly experiential the 'way of being' that is essential for creativity.

The CUSTOMER

The success of any business is determined by how well it engages with its 'Customers'. To understand why, one must first understand who the customer is. Usually we think the customer is only the person to whom we sell our goods and services on the shop-room floor. This, however, is not the case. The Customer is in fact anyone with whom one engages, whether between management and manufacturers, between suppliers and service providers ... or even between the board members and their workforce, media and investors. Success, then, of any company is a function of its internal and external relationships at all levels. What is core to human relationships?

Perception.

Perception underpins everything we think, feel, know and believe. It explains why we do what we do when we do it, from the styles of clothes we choose to who we trust and why we trust them. It explains one's ability to find solutions and indeed the quality of the solutions found ... why people who are less empowered find patterns in data where no pattern exists whereas people who feel more empowered, though more comfortable with uncertainty, are also poorer listeners (and why these different ways of being are useful in different environments). Perception explains why successful branding is a narrative that establishes trust, but how trust is perceived differently when one is creating a relationship vs. maintaining one. Finally, understanding perception explains why the two most important obstacles to innovation are ignorance and fear, and why the three descriptors of a leader that are best correlated with the revenue of any company are how the leaders resolves these two obstacles to innovation.

In short ...

People think that the further away from the customer they are, the less they need to bring them to mind when making decisions. This is wrong. A company's survival is wholly dependent on the quality of their relationships with their customer. Without this understanding, businesses fail to foster the level of value, meaning and loyalty at all levels that is essential for the company's long-term success. 'Who is your customer?' is the topic with which we will engage in a highly experiential way through the neuroscience of perception. My aim is that you will doubt everything that you thought you knew about 'The Customer'.

Lotto Lab Master Class: Creating Spaces to See Differently

Overview

Beau Lotto and Lottolab brings together the latest knowledge in neuroscience, behavioural science and design thinking to offer a new way of looking at human behaviour. The lab pioneers understanding of perception and applies it to create transformational experiences. The world is changing at pace and that for many companies this creates the need for constant innovation.

Only in this way can they stay relevant, stay ahead and stay in business. The fuel for innovation is seeing differently. This is what Lottolab does: helps individuals and businesses to see and think differently.