WEAVING MIND FROM BRAIN:
Understanding Consumer Behavior
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A NEW MINDSET FOR RESEARCH

Advances in neuroscience, psychology and behavioral economics have changed our understanding of our minds over the last 10-20 years. This white paper provides a comprehensive picture of what makes us what we are, and what this means for marketing and market research, incorporating the latest understanding from across many disciplines.

Market research still largely depends on approaches invented more than 50 years ago (although there are some exceptions), and while the technology used to collect questions has changed dramatically, the questions themselves have remained largely intact. It’s time to catch up! We believe that you can only fully interpret human behavior if you understand the underlying emotions, the behavior itself and the context in which it takes place, along with the more traditional research data of attitudes and opinions.

We all interpret our memories and experiences in light of our motivations, tasks and contextual cues, and good market researchers should do this too. This implies interpreting the underlying motivations and emotional expressions of consumers, observing their behavior and the problems the behavior seeks to solve, and doing this in the real-life context of the consumer’s life, before finally asking them their feelings and opinions about the behavior we seek to understand.
BRAIN EVOLUTION AND UNIVERSAL TRAITS

What Does It All Mean?
Man has been interested in the workings of the brain since history began, seeking understanding through the arts, sciences and, in recent years, the development of technologies for scanning the activity of the brain, and the study of brain abnormalities and injuries has identified some profound (and sometimes counter-intuitive) insights into how our brains function and how this is manifest through our interacting minds. And it all starts with Charles Darwin’s discovery of more than 150 years ago.

What do we all care about most in our lives? Our main concerns are family, health, house, food and clothes. Only after these come meaningful work, relationships and social esteem. Thus, the drivers of our key goals are around survival and reproduction! Until the very recent past, these were the only things it was worth worrying about.

Charles Darwin argued that all living species arrived at their current biological form through an historical process involving random inheritable changes. Some of those changes are adaptive, and
increase an individual’s chances of survival and reproduction. Changes like this are more likely to be passed on to the next generation, and changes which reduce the chances of survival and reproduction are likely to be lost.

The evidence for Darwin’s theory is overwhelming: man’s use of artificial selection (seen in genetic modification and selective breeding of domestic animals), family trees of animals, the development of human embryos and the rich fossil record including our own.

**The Evolution Of The Mind**

Although we think of evolution as a theory in biology, it has also been successfully applied to understand the development of human minds, societies and culture. Evolutionary psychologists such as Steven Pinker argue that human morals, like more basic human emotions such as fear, have an evolutionary basis and a selective advantage. And the discipline of evolutionary psychology has provided great insights into human motivations, emotions, preferences and relationships. You can’t watch the TV or walk past a newsstand and not miss the number of popular programs and magazines talking about many of these ideas.

So what makes us “smart-arse” humans different from other animals? Steven Pinker argues that four key traits helped us to get where we are in the world today (largely dominating our fellow creatures):

1. Visual perception
2. Opposable thumbs
3. Richer diet
4. Sociability

Related to these traits, psychologists have shown that we are driven by four key motivations:

1. Defend
2. Acquire
3. Bond
4. Learn

These strategies lie at the core of the various motivational models used in market research, and are related to universal human traits, emotions, metaphors and meaning that come later.

**Getting Ahead**

These traits and drives help us to get ahead in life. We are social primates who survive and reproduce with the support of family, friends and mates, and in order to get that support we have to offer desirable traits, which fit the needs of those around us. The traits evolved on the savannah, but we now live in a very different environment with very different challenges. Our fundamental traits have not changed as fast as our environment!

The most common and widely accepted system for measuring these personality traits is known as the “Big 5”, developed by Beatrice Rammstein and Oliver John. The five traits are openness, conscientiousness, extraversion, agreeableness and neuroticism (referred to as OCEAN). We all need a little of each of these to get along in life, but we all differ depending on our life experiences and relationships. The traits can be measured with a few straightforward questions.

These traits are expressed in the brands and products we buy as well as the way we interact with others. As well as fundamental personal drives they are also the way we “signal” our desirability to others and make our way in the world (often very successfully). They are the basis of our behavior, and that of the consumers we seek to understand.

The most important theory for any marketer or researcher to understand is the Theory of Evolution!
THE ANATOMY OF EMOTION

The Growing Brain
The most obvious evidence for the evolution of the brain is its structure. Firstly, our brain is quite large, but not as large as some other animals. However, relative to our body mass, the brain outweighs all our fellow creatures! Interestingly, one of the common threads between those animals with relatively larger brain sizes is that they are all very social animals.

As our brain has grown in size, it has also become more divided, with very separate left and right hemispheres. There are clear evolutionary advantages to having two separate focuses of attention in our brain (which is otherwise massively inter-connected).
Three Brains
Although the brain is divided in half, the more important anatomical distinction is between the three evolutionary stages of the brain. At its core, linked directly to the brain stem, the oldest part of our brains comes from our reptilian ancestors, controlling our most basic functions such as breathing. On top of our reptile brain, is our mammalian brain, including the limbic system and amygdala. This is the seat of all our basic emotions (animal drives), and its centrality in the brain indicates its importance.

On top of this sits the newest part of our brain, which provides the distinctive folded and grey appearance (the folds are simply to maximize surface area and mental capacity). Our brain is not a single system, but a bundle of different parts, plumbed together over time. It has been described as a kluge (a word used to describe computer fixes and patches which are inelegant but work!).

Energy Efficient
And the brain does work very well. It is hugely efficient, running on the energy of a typical light bulb, which is why it focuses on making as much of our behavior as possible automatic and “thoughtless”. Our brain systems are constantly learning and adapting to the environment, finding the easiest and quickest shortcuts to maximize rewards, driven by universal human goals.

Emotions are fantastically efficient short cuts for us, helping us to navigate the world quickly, safely and pleasurably (while avoiding the more unpleasant and sometimes dangerous things which litter our paths). In fact, we cannot function properly without emotions, and Antonio Damasio and others have demonstrated that they are essential to decision making. Those who experience damage to their emotional systems are often incapable of taking decisions, and brain scans have shown that feelings and emotions precede our more rational thoughts (which are usually afterthoughts, late arrivals long after the event).

While we all enjoyed watching Dr Spock in Star Trek, and his uncomfortable relationship with his more emotional colleagues, the reality is that humans would be unable to function effectively with his biology!

Getting Emotional in Research
Much of traditional research, even in qualitative work, assumes a very rational model of how consumers make decisions and process information, but the evidence is overwhelmingly that this is false. Most of our conscious processing is post hoc, trying to make sense of what we have done. Such conscious processing reflects a tiny proportion of our daily behaviors and decisions, which are overwhelmingly habitual and instinctive reactions to our environment.

There are many sophisticated ways to try and access consumer emotions, and new tools are constantly developed in marketing and market research. However, brain scans (for example) are often impractical in the context of research. There is one tried and tested approach which researchers have been using from the beginnings of the industry!

Words Lie, but The Face Doesn’t
The key for research is to rely more on observation and less on the words that participants use: facial expressions and body language can usually tell us much more than verbal responses about underlying feelings and sentiment (something which experienced moderators do instinctively). Paul Ekman has spent his life codifying the 43 facial micro-expressions, contributing to seven universal human emotions, which can be read by all of us (across cultures and demographics). The seven universal emotions are fear, anger, sadness, disgust, contempt, surprise and, of course, happiness.

We are all remarkably skilled at reading these signals in others (and often then reflecting these back with empathic response). These, along with body language, and the timing (and pauses) in verbal responses can provide a very rounded picture of what participants really think of a new concept, brand advertising or recent service experience, but they naturally depend on being physically present to see the participant (rather than remotely reading a transcript or processing a survey response).

Don’t Lie to Me
So often faces reveal the hidden truth of behavior, just as in the TV drama series Lie to Me, which is based on the facial coding system developed by Ekman. The system has also been applied extensively in market research, most notably by Dan Hill, who details a number of different applications of reading faces in his book Emotionomics.

Our limbic system is also active in learning (we remember much better when new information has emotional resonance). So we make decisions, remember events and learn through our emotions. Emotions are truly at the centre of the human mind!
LIVE WIRES AND PHYSICAL CONNECTIONS

We are all ‘Live Wires’
How does the brain make connections? Brain scans show areas of our brain ‘lighting up’ when we make decisions (although beware that more activity doesn’t imply the decision more important). But what is really going on?

There is a huge amount of activity (electrical and chemical) going on within our brains. That’s why neuroscientist Jose Delgado was able to stop a raging bull with the switch of a button on a remote control! The bull was racing towards him, and with the flick of a switch, stopped and turned away. Although neuromarketing is now more sophisticated than planting an electric signal in our brain, the principle is the same. In order to change behavior, marketers need to change the physical connections in consumers’ brains.
**Constellations of Connections**

The building blocks of the brain are nerve cells (neurons), which are connected at junctions called synapses through which they communicate. The connections are at the ends of wires (axons), through which pass small currents of electricity, which trigger the synapses at the end of the wire to release neurotransmitters, in turn triggering the next cell along.

The reason for the brain’s complexity is the number of such neurons, and the vast number of interconnections between them. Recent estimates put the number of neurons at 100 billion, and the number of connections at 100 trillion (greater than the number of particles in the known universe).

**Dynamic Connections**

These connections are constantly changing and evolving. This demonstrates that our brain is much more dynamic than previously thought (even when we get old and our memories start failing). Our brains are plastic and memory is dynamic, with the ability to constantly rewire if needed. Indeed nerve cells are also subject to natural selection, and the more we use them, the more likely they are to create new connections. All this activity in the brain is democratic and with no central command, and from this emerge our behavior and consciousness.

Learning new behaviors is about establishing new patterns among the synapses in our brains. And, of course, the more we repeat these patterns, the more established the connections become, so behaviors can be more easily repeated in the future.

When we are young we have few established patterns and connections, and so forming behaviors is like skiing in fresh snow and we are ripe for learning. The older we get, the more established the patterns in our brains become, and learning new things becomes more like skiing on old snow - we have to squeeze the new connections into the existing patterns. Thus, establishing new patterns of behavior takes time and repetition, in order to burn the new pattern into our brain. Learning is made easier when the new pattern is as congruent as possible with existing patterns in the brain.

**Getting Connected**

Any new stimulus (like a brand) creates a firing cell, and links are established between cells when they fire together, creating chain reactions (‘fire together, wire together’ is the neuroscientists’ chant!). In this way the same stimulus produces the same thoughts, and importantly when a stimulus creates multiple connections in the brain (from rich associations), there is a bigger chain reaction. The downside of this is that when brands introduce new connections not linked to previous associations (when they change strategy or advertising), then it is more difficult for the brain to link the new connections to the existing patterns.

When we have a set idea of a brand (or a political viewpoint), it is very difficult to overwrite those connections. It is difficult and expensive to change beliefs that have been built over time (and hard wired). The lessons for marketing are to respect consumers existing connections and make sure that new ideas can fit within existing patterns. And long-term building of connections takes constant repetition with consistent imagery (ask Coca-Cola or Marlboro).

**Astonishing and Dynamic**

The astonishing hypothesis from Frances Crick is that “your joys, sorrows, memories, ambitions, sense of personal identity and free will are in fact no more than the behavior of a vast assembly of nerve cells and their associated molecules”. Neuroscience shows how dynamic our brains are: a universe of cells making connections all the time.

This means that brands cannot simply photocopy themselves into our heads, but need to build real physical connections over time. This is best achieved by respecting existing connections and by repeat, repeat, repeating the message consistently.
INSTINCT AND THE UNCONSCIOUS

On autopilot
Imagine a busy housewife, with impatient kids in tow, walking through the supermarket to find fishcakes and chips (or perhaps noodles and vegetables) for the evening meal. Her mind is focused on the task in hand and finding the right items, along with trying to listen to descriptions of the school day just gone. All of us do many things (arguably most things) in our day via an internal autopilot. Whether it’s brushing our teeth, driving to work, or buying our evening meal, much of our behavior is learnt and unconscious.

The film *Inception* is based around an attempt to access someone’s unconscious mind through ‘dream space’. In the film, inception is much more difficult than extraction, the main character’s usual job, because of the difficulty of staying unnoticed. Dom Cobb seems to have four ways to create the inception safely: creating the context of the victim’s thinking (through artificially created worlds), leveraging unconscious emotions, establishing a credible source for the new idea, and finally delivering the idea itself.

Under the surface
We all want to make better decisions in our lives: quit smoking, lose weight, think more positively or be more relaxed. The basis of hypnosis is to make your mind more open and suggestible, and to relax your mind’s guard. Because we are all creatures of habit, even if we consciously want to achieve something it can be remarkably difficult to achieve it, unless we can convince our more conscious brains to let down the guard to our unconscious. Most estimates place unconscious behavior as 95% or more of all that we do.

So it seems that Sigmund Freud was right about one thing (despite his other mistakes and over-blown analyses). A large part of the brain is not subject to conscious control.

Blindsight
So much of what we do, we are unaware of, and therefore unable to properly explain. In *Blink*, Malcolm Gladwell talks about how tennis players can’t explain how they play tennis: they are experts at playing, but unaware of how they play. He gives an example of the topspin forehand, which every player describes in a way that firstly is simply wrong, and secondly would result in a wrist injury. But boy, can they hit a topspin forehand well! And this is true for much of consumer behavior. We all know how to drive to work or brush our teeth, but would struggle to describe how we do it to someone else.

Some people who have damage to their visual cortex, and therefore can’t see, still have the ability to find objects in the environment, even though they are not consciously aware that those objects exist (a condition known as ‘blindsight’). Our unconscious minds exist. More importantly, our unconscious minds often trigger behaviors long before we become consciously aware of them. We act (and feel) first, and think later.

Extraction and inception
The challenge for researchers is to extract the relevant information from the consumer’s mind. This means a greater use of observational research tools and analysis of behavioral data. For marketers the challenge is the inception of new ideas, which means lowering the guard of the conscious mind, by using relevant contexts and credible information (and respecting existing connections).
MENTAL SHORTCUTS TO SUCCESS

Home Economicus or Homo Sapiens?
The majority of human behavior is controlled outside consciousness, in contrast to the classical models of economics which assume a model of man as Homo Economicus; entirely rational, always knowing what (s)he wants and capable of calculating the precise consequences of any action. We all know that this is nonsense, and recent economic events have highlighted the inadequacy of such models both for economics and further afield.

Homo Sapiens is much more human as psychologists such as Daniel Kahneman and Amos Tversky have shown repeatedly. Emotion often destroys our self-control and we frequently don’t know what we want. We are unable to calculate consequences precisely, and in fact are influenced much more heavily by losses than by gains. We are sometimes irrational and incompetent, and often inconsistent in our decision-making. This applies to financial analysts watching multiple computer screens as well as you and me!

Can we have too many Choices?
We are not always good at using information to determine the consequences of actions. In fact, more information can make us less informed (and less happy) about the choices we make. Barry Schwartz has written about how the modern consumer faces more choices than any other group of people in history. But this greater freedom and autonomy has not brought any psychological benefit, and in many cases we are less happy than we have been before. Moreover, sometimes too much choice leads the modern consumer to make the easiest decision of all, and choose nothing!

Imagine an intergalactic alien landing his spaceship outside Walmart (or equivalent). (s)he is in a hurry and needs to quickly buy some toothpaste for his/her travel bag. With no information on the different brands and varieties of toothpaste available, how would (s)he decide what to buy? What advice would you or I give the alien? Maybe (s)he could go for the most popular brand (most shelf space?), the one closest to the brand from planet Zog (same color or name?), or the one nearest the entrance (time is short).

Is there a Shortcut?
We all use mental shortcuts constantly, usually for very good reasons. The upside of mental shortcuts is that they help us to save time and effort (our brains are energy conscious). The downside is that they sometimes make us act “irrationally” (to coin Dan Ariely), and the field of behavioral economics has investigated many of the mental biases that influence our behavior. Looking across all the work, there seem to be five common shortcuts (or biases depending on your viewpoint), all ultimately related to our drive to maintain positive self esteem (and avoid cognitive dissonance).

One of the most common, and earliest studied, is loss aversion. We all like to stick with the status quo and losses can weigh twice as heavily on our decision making as gains.

We often focus on one trait or a single piece of information, which is usually the first or earliest context we have, and use this to anchor later information. Anchoring bias is sometimes called Framing bias, and is also related to Priming which is an implicit memory effect. Framing is used commonly in setting price structures and menus (for example in fast food restaurants). It is also a common trick of estate agents to show you the best (or sometimes worst) house first before the home that you finally choose.

We are always over-optimistic about our own abilities and about the future (a very good thing generally!). Why else can we believe that house prices will continue going up forever?

We predict frequency based on how easily we can bring an example to mind, and Availability bias is a common issue in branding and communication research. Representativeness bias is similar, leading us to evaluate risk based on strength of emotion as well as pure probability.
Lastly, we like to follow the crowd, and Herd mentality is the next section of this paper.

Nudging in the Right Direction
If you have watched The Adjustment Bureau, you will have seen a group of bowler-hatted ‘angels’ (or perhaps devils), watching over humans and making small interventions when needed to nudge people in the right direction (making sure they kept to ‘the plan’). In life we are often faced with difficult choices, and incomplete information, leading us to sometimes make poor choices not in our long-term interests.

Some social scientists argue that governments and other institutions should leverage our mental shortcuts to encourage us to make better choices. One of the best-known examples is organ donation. In many countries, organ donors “opt in” and make the decision to carry the card, while in other countries it has been decided that those who do not wish to donate their organs must “opt out”. Unsurprisingly in opt out countries more than 90% of the population become organ donors, whereas in opt in countries it might not reach 10%. Similarly, school canteens might place healthy meal options closer to eye level, and many corporations make pension provision simpler with default options for employees which significantly increase uptake and help them choose more appropriate plans.

Good or Bad?
Mental shortcuts can help us make good decisions faster and with less effort, which is usually a very good thing. Organizations can also leverage these shortcuts to encourage particular choices, including brand choices (for example, by framing price options).

In market research these shortcuts sometimes lead to bias, and we have to be careful of mental shortcuts in designing questionnaire flow and wording to avoid bias (and also of the impact of herd mentality when we talk to participants in groups).
HERD MENTALITY

Following the Crowd
Humans are susceptible to social bias (or herd mentality), as this is usually, but not always, a good indicator of the right thing to do. Our mind does not work by itself alone, but through interactions with other minds in the immediate environment or more remotely through culture and shared values. Much of what we do is under the influence of others, often without realizing, with important implications for marketing and research.

In 1971, Philip Zimbardo started an experiment at Stanford University. The experiment quickly spiraled out of control, and is now one of the classic studies in social psychology and the subject of his book *The Lucifer Effect*. The study was an attempt to understand the psychological effects of becoming a prison guard or prisoner, using students chosen for their ‘normal’ behavior.

The students quickly adapted to their roles, well beyond the expectations of Zimbardo and his colleagues, leading to physical and mental abuse from those playing the prison guards, and passive acceptance of such behavior from those playing the prisoners. Zimbardo admits that he lost control of himself as the prison superintendent, leading to some participants walking out, and the experiment coming to an early halt after six days. Films of the activity in the prison are disturbing, and eerily reminiscent of more recent abuses at Abu Ghraib prison in Iraq.
The Person in the Situation

The experiment is controversial, but shows the powerful effects of situation on behavior, creating strong influences that overcome our more basic traits and instincts. In particular, social hierarchy and authority are highly persuasive, encouraging us to conform to stereotypical roles within specific social contexts (something also seen in Stanley Milgram’s experiments).

These are not isolated examples of bad outcomes, but rather extreme cases of our inherently social behavior. We are all subject to such influences every day, wearing different clothes to work than at home, choosing different brands with different companies, and learning from and adapting to the people around us. Why else are more than 500 million people on Facebook and is there behavior on Facebook influenced by the comments of others? You bet it is. Holding up a mirror to ourselves.

Evolution has selected human beings as highly social creatures, and neuroscientists have already found a hyper-developed mirror neuron system in our brains. This system is linked to a variety of social behaviors such as mimicry and empathy for others, with similar brain activity both when we experience a particular event or emotion, or when we see others experience the same thing. Thus, we are genetically programmed to engage with each other via reciprocity (you scratch my back, I’ll scratch yours), sympathy and attachment to groups. Truly, ‘no man is an island’.

Our concept of “I” is an illusion, and the Stanford prison experiment shows that social context can make people do things that they never thought they would do. In Asian cultures with an emphasis on collective behavior, such ideas are more accepted than in Western societies with their emphasis on individualism and independence, but we are universally subject to these influences. And if social nature is our prime characteristic then brands must seek to be understood within that social context.

The Importance of Context

Traditional marketing and market research however, still focuses squarely on the individuals. The vast majority of current market research assumes, wrongly, that individuals make their decisions on their own, and rarely reflects the fuller context of human behavior. To truly understand human behavior we may need to study the true social context in which it operates, at three different levels.

At the individual level we have motivations, emotions and unconscious (learnt) behavior. At the micro-social level we have subcultures, tribes, social interactions and learnt practices. And at the macro-social level we have classes, lifestyles and above all culture. Very little has been done in research to understand interactions between individuals (focus groups are just an artificial illusion of consumer to consumer interactions). Writers such as Malcolm Gladwell have highlighted the need to understand such systems of interactions and tipping points as non-linear processes (for example, the diffusion of new ideas).

Tipping Points

Peer-to-peer communication has become increasingly enabled via social media websites, and new technologies can provide clients with the ability to listen to conversations that are happening over the internet. A common lesson is that “influence” is everything, and measures of influence reflect the number of people listening to you and your perceived authority and reputation within an area of discourse. This is one reason why companies seek to engage with influential bloggers and opinion formers.

The degree of influence in social terms can be a function of attractiveness, expertise, the extent to which we seek to gain reward or identification with the group, and the extent to which we need to believe our beliefs and actions are remaining consonant over time. If you are in any doubt over the power of emerging systems and tipping points, look to the middle east’s jasmine revolution!

A Word in your Ear

When it comes to brand selection, past experience and word of mouth consistently rank far more importantly than advertising, and it is increasingly important to understand peer to peer influence above traditional advertising influence, as we trust our friends more and more and traditional authorities less and less. This has inspired the drive for many brands to engage on an equal footing with consumers and customers, and in some cases create communities of customers to help them co-create new products and services.

Market research needs to understand more about mass behavior, and go beyond basics of monitoring online “buzz” to understand the underlying mechanisms and how they work (for example, looking at social interactions and use of social media as part of a customer’s profile). Our species is first and foremost a social one and mass behavior is often a result of social mechanisms hidden to the individual. Interaction is everything, and understanding of the simple rules governing human interactions under different conditions would be a great advance for research. Remember that the greatest influence on people is other people. Businesses come a very poor second.
Making Sense of the World

The senses are our connection to the outside world, through which we build a store of memories to help us predict and control our futures. The unique value of the human mind is that it makes our behavior context sensitive, and the context is determined by what we sense around us.

Classically there are five main senses, but in fact our senses are subtler than this. Although we refer to smell, taste, hearing, vision and touch, several of these senses comprise of multiple feedback systems and ultimately they are all integrated within our brain and checked for patterns we have experienced before. For example, vision is built from motion, color and luminance (brightness), while touch includes pressure, temperature, pain, vibration and movement (called proprioception, which works via nerve endings in our muscles and joints). And not forgetting that our ears help us keep a sense of balance as well as hear the rhythms of life.
Primal and Emotional
Smell is the oldest of the human senses, originating in chemical detection systems found in our early ancestors. It’s the only sense with a straight line to our emotions, as the olfactory bulb is directly connected to the limbic system (the centre of our emotions). Although we are very poor smell detectors compared with other animals (such as many of our pets), the system is still sophisticated and we have the ability to detect 10-20,000 different odors, meaning that most of us don’t have enough vocabulary to describe each of the smells we can come across!

Dumb Waiter
By contrast, our sense of taste is limited to five varieties, although our experience of food comes from the combination of taste and smell (with smell dominating). As well as sweet, sour/acid, salty and bitter, umami (Japanese for tasty) is the fifth taste. Each of these tastes reflects a basic detection (or warning) system for the things we bring into our bodies: sweetness indicates an energy source, saltiness comes from mineral salts that are important for body regulation, umami from protein rich food. On the warning side, sourness is associated with food which is unripe or ‘off’ and bitterness with many of nature’s more poisonous creations. Newborn babies already know which of these to approach and which to avoid (and we all have to learn to love the bitterness of beer and coffee).

The Rhythm of Life
Despite much publicity, the Mozart effect doesn’t exist (I would love to believe it is that easy to become more intelligent). However, it is true that music has a profound influence on our physiology and, in the case of Mozart and others, music which makes us happy makes us more creative, and faster and more accurate at mental tests. If you go to the gym, you will notice that music with a faster beat influences the pace of your exercise (you run faster). Retail stores use these effects commonly, to make us get in and out more quickly in a fast food restaurant, or to linger longer (and spend more money) buying wine for our dinner guests.

Our ears help us to keep balance and to monitor movement and acceleration, but their most important function is to help us keep tempo with the rhythm of the world around us. Some experiments have shown that the way we interpret music is directly related to the way we evaluate time. Hearing helps us place events in the outside world into order, and therefore to understand cause and effect.

The Dominant Sense
Vision dominates the other senses, accounting for more than two-thirds of all sensory processing in the brain (and by some estimates about half of all the brain’s activity). It has been demonstrated that what we see also dominates our memory of events. For example, the majority of your audience’s memory of your next presentation will be based on what they see (your body language etc), and less than 10% on what you actually say (the words you speak and show). Vision works from a number of feedback loops, integrating information about motion, shapes, colors, lines and gradients into an object recognition system.

Above all, vision has evolved to recognize other people, and their feelings. We are all experts at facial recognition (and emotional coding), and are drawn to faces immediately when we see them in our environment. We recognize faces much more quickly than any other objects, and even very young babies prefer looking at anatomically correct facial drawings (and can spot their mother’s face on video within 4 days, which is pretty impressive given that their visual perception is still relatively under-developed). Even with very little information we are able to ‘decode’ the key features and spot a face.

The Touch of Reality
Your body’s largest organ (by some stretch - pun intended) is the skin, which encompasses the whole body. Touch is the only sense with which we have direct contact with the outside world. Our mental sense of our body’s map is vitally important to navigating the world. Along with hearing, touch is the first sense to develop in the womb, and young babies grow faster and healthier if more regularly touched.

Touch comprises a number of different sensory systems, and information is processed in an area of the brain known as the somatosensory cortex, which contains a complete map of your body. Importantly, the amount of brain processing devoted to each area of your body depends on the density of touch receptors, with some ‘vital’ areas more dominant than others (including hands, feet, lips and tongue). These areas will create much greater impact on your customers’ perceptions of your products (which is why Apple’s touch screens so much more ‘sticky’ than a keyboard).

The Subtle Senses
The senses are our connection with the outside world, the people we love, the objects we treasure and the pleasures we experience. Smell is a direct route to our emotions, while taste simply helps us eat the right things (and drink the right things too once we train it). Our ears help us sense the rhythm of life, and our eyes connect us to our fellow humans and their feelings. Finally, our skin helps us to keep touch with reality.

The senses connect us to the world, and are the most powerful marketing tools you have when used effectively.
**PERCEPTION FROM THE TOP DOWN**

To Perceive is To Act
Perception is all about action. What we perceive is not just based on input from our senses, but also based on our expectations in a specific context or situation. Our senses work very well, but our brain integrates, interpolates and interferes with the information coming from the senses to fit the data to pre-existing models of what it thinks should happen (based on a vast databank of previous experiences).

We learn in two ways. Firstly, by trial and error, just as scientists develop and test hypotheses, we reach out and touch things, push them, manipulate them and above all learn about the order of events (with our sense of time) to understand the causes and effects in the world. The second way we learn is through our imagination, by using counterfactual thinking to explore alternative scenarios and build mental models of future possibilities (something that adults sadly become much less adept at as they grow older).

From the Top Down
Although our senses provide the bottom up information to help us identify objects and events, our brain is constantly trying to second-guess what will happen next (shortcuts are energy efficient!). In many of the brain’s feedback systems there is higher information flow back to the senses from our perceptual system than there is from the source. Incoming data is simply checked against the memory bank for relevant similar experiences, which are then used to frame the interpretation of new data. So expectations play the leading role in how we experience the world.

For example, the feedback from different parts of the body’s skin covering are mapped in the brain, and when we touch something it influences our other perceptions. Sitting in a softer, more comfortable chair makes us ‘softer’ in negotiations, and giving us a warm drink makes us ‘warmer’ towards an interview candidate.

Any information that our brain has (especially that which comes first), is used to frame expectations. This can include brand, name, prices, source and what other people have told us. That’s why wine costing $100 tastes so much better than wine costing $10 (even when it’s the same wine)! Dan Ariely shares many compelling examples in *Predictably Irrational*, including the impact of vinegar on the taste of beer (it tastes better until you know it’s there), and of the price of energy drinks on mental tests (we are faster and more accurate when the drink costs more).

Context provides the mental frame of reference for the memories we check and how we interpret events.

Vision Dominates Again
Our brain’s most trusted source of information is visual perception (with good reason - on the savannah it was always way ahead of the other senses). That’s why most visual illusions work, and how magicians manipulate our expectations. In the McGurk effect, our lip reading
skills distort how we hear sounds, and adding red color to white wine can even fool wine experts into tasting a ‘well rounded and full bodied’ drink!

In fact our brain uses very little of the incoming data stream to make predictions. Potentially there are millions of pieces of information per second coming from our senses, but by some estimates we can consciously process about 40 per second. So our brains have to filter and take shortcuts.

**The Gorilla in the Room**

This filtering is the basis of the ‘invisible gorilla’ trick (check it out on YouTube before you continue reading if you haven’t seen it). Our brain has to focus on what is important to the goal in hand, and therefore ignores most of everything else that is happening. In the invisible gorilla experiment, eye tracking has shown that our eye is looking in the right place, but this makes no difference to whether we spot the gorilla, which depends on where our ‘mind’ is paying attention. [Which is one reason to be very careful when interpreting the results of eye tracking studies].

However, the most important lesson of all is not that our brain filters out information, but it also makes it up! There is a blind spot in the middle of our eyes (where the nerve fibers go back and into the brain’s sensory system) where there are simply no receptors. This means that we cannot see in one (quite central) area of our visual field. So how do we know what’s there? Firstly, our eyes are constantly jumping from place to place to make sure we have a more complete picture (our vision is actually quite narrowly focused and very blurred in the periphery). More importantly, our brain interpolates and ‘fills in’ the missing gap based on what we see around that hole. Our perception is truly a virtual reality system!

**It’s all about Managing Expectations**

In summary, our mind integrates the senses, interpolates the gaps, and interferes with sensory feedback where it thinks it already knows the answer. Context is the key driver of our perceptual processes, shaping our expectations and informing our interpretation of events. Although our senses work from the bottom up, our map of the world is driven from the top down.

For marketing and market research, if we don’t manage expectations our customers and participants will provide their own. Providing the right context is as important as providing the right stimulus and asking the right questions. ■
METAPHOR AND MEANING
**Sensory Thinking**

The senses inform much of our language, as the dominant source of our experiences. We all use words related to different senses to express ourselves (I can see your point, I hear you, I was touched by a thought), and some theories (for example, NLP) claim that we have different preferences for the sensory modalities (I hear what you’re saying vs. I see what you’re saying). Thus, the senses truly help us to create our everyday expressions.

The interactions between the senses are also deeply connected to our creativity. Some of you reading this article are synaesthetic (by some estimates synaesthesia is experienced by 1 in 23 adults), and everyone is likely to have experienced synaesthesia as a young baby. More importantly, synaesthesia is much more common in artists and creative people than in the general population. Wassily Kandinsky was synaesthetic, as was Richard Feynman (one of the most creative scientists I know), who once said, “When I see equations, I see the letters in colors – I don’t know why. As I’m talking, I see vague pictures of Bessel functions, with light-tan j’s, slightly violet-blush n’s, and dark brown x’s flying around. And I wonder what the hell it must look like to the students.”

**Specialization means less Connectivity**

Latest theories suggest that we are born with many more connections in our brain than we eventually have as adults. There is much more cross-wiring when we are born, but as we get older many of these connections are cut, focusing our brain on specific sensory inputs in specific areas. That is, our brain does not start specialized, but only specializes as we grow older, creating hard wiring of important behaviors. Those with synaesthesia perhaps have less drastic reduction of these connections, or find some use for them (in the creative sphere).

People who take psychoactive substances such as LSD can also experience some of the similar “trip” like experiences of synaesthetes. Synaesthesia is cross-activation between different sensorial areas of the brain, literally a blending of the senses, with a strong emotional component linked to such connections.

**We are all Synaesthetes**

If you are like 99% of other people (across cultures), you will prefer to name sharp, pointy shapes with sharp, pointy names, and soft, rounded shapes with soft rounded names. This is just one example of the way in which we all retain some mixing of the senses, and constantly use analogies (metaphors) in our speech. We talk about loud shirts, hot tastes, bright sounds and sweet music, and synaesthesia sheds light on some of the most basic qualities of human thought and creativity.

Cross-sensory integration is important, and junctions within the brain bring together information about touch, hearing and vision to enable the construction of ‘higher level’ concepts. For example a cat purrs and is fluffy, it has a certain appearance, and fishy breath. All of which are evoked by the memory of a cat.

**Metaphorically Speaking**

There are even connections between the sound and shape of words and their meaning in normal language, perhaps showing a sense of the history of how language developed. Latest theories of the mind indicate that we learn (and create new things) by making connections or analogies across domains. In fact, metaphor is the basis of our mental operations, our memory and how we predict. Our minds search for common patterns and use these to predict and control our environment.

More practically, metaphors are often used in marketing to communicate the fundamental values of brands. Deep Metaphors are unconscious “structures of human thought”. They manifest themselves in surface metaphors used in everyday language. Deep metaphors can be used in a marketing context to help us communicate more effectively to consumers about a brand, product, or topic with the same viewing lens.

Gerald Zaltman uses metaphors as the basis of his research to understand deeper beliefs and thinking patterns, and has written about seven (7) fundamental metaphors which are commonly used across cultures and categories: balance, transformation, journey, container, connection, resource and control. These metaphors have a strong connection to the universal human traits. Our love of stories, myths and movies is simply a love of extended metaphors.

**Mixing and Matching**

Our senses are constantly blending to create patterns, which form the basis of creative thinking and of the metaphors that help us to tie many different thoughts and ideas together into a useful information and prediction system. Metaphors are part of our everyday language, but also reflect our deepest emotions and the highest levels of our conceptual thinking, making them a powerful marketing tool and in important lever for researchers to access the most fundamental drivers of human behavior. ■
The Persistence of Memory
The bases of new memories are new physical connections in the brain. The more elaborate the connections, the more meaning they have, and the more specific the context, the stronger and more long lasting is the memory.

Although it’s easy to believe that our memory for the important things in life is accurate, vivid and persistent, the reality is a little more uncomfortable. Even the memory of key events in our lives is subject to change over time, as we make new connections, which are linked back to existing experiences.

The retrieval of memories, triggered by any event, leads to a new interpretation in the light of present circumstances, leading to subtle changes when those memories are placed back into our mental filing systems. Over time, this can lead to a very different memory of an event than the original experience. And we know that some memories simply cannot be accurate. For example, when we remember seeing ourselves running through fields or playing with friends - out of body experiences are real and important phenomena, but the memories of them are a fiction of our mind!

The Seven Sins of Memory
Daniel Schacter names seven sins of memory, each of them common to all of us.

The first is the sin of transience, the gradual decline of a specific memory over time (we can all remember more recent events better than those further in the past). The second is the sin of absent-mindedness, such as forgetting appointments and misplacing keys, which happens when our attention is not focused enough at the moment of remembering something. The third sin is blocking, which happens when different memories interfere with each other
(such as the ‘tip of the tongue’ moment) so that we recall something we are not looking for. This is often caused when we use the wrong context or prime to trigger the memory, which we will discuss in the last two articles in the series.

The fourth sin is misattribution, a sin of commission rather than omission, when we recall the right piece of information but the wrong source, which is a common problem in criminal investigations when witnesses remember descriptions and details of the crime which they have seen alter the event but alter the memory of the event itself. The fifth sin is suggestibility, which is very similar to misattribution, and is the effect of subtle (and sometimes subliminal) influences on aspects of a memory caused by the suggestions of others. The sixth sin is bias, where our current feelings and perceptions distort our interpretation of past events, especially when they fit our current emotional state.

The final sin is the sin of persistence, when we cannot stop recalling information and we would prefer to forget (because of its emotional resonance). This can have powerful psychological effects when persistent and linked to highly traumatic experiences.

Meaning makes Memory

Work in advertising suggests that these sins are very important for the impact of advertising, and they provide important lessons (consistent with the way that our memory circuits work):

• Messages work better when consistent with previous understanding
• Visual messages are far more powerful than verbal ones
• Consistency and repetition increase recall

Memory depends both on what happened, and on how we make sense of what happened. When we remember things we extract the ‘meaning’ of what we perceive rather than the specific details. After all, our brain makes memory, like all functions, as efficient as it can. This is important, as memories are held in your brain at the places where the information is encoded (for example in the different sensory areas of the brain), which can be in many places at once depending on the complexity of the information. In fact, the more places the better, especially when the individual pieces are consistent and linked to a strong emotion.

The Magic Number Seven (again)

There is, of course, more to memory than this, and an important broad distinction is between short-term memories (working memory) that are recorded acoustically (a number of pieces of information in time), and long-term memory that is recorded semantically (by association to other relevant experiences or information) or procedurally (through learned behaviors). Our short term working memory is limited, arguably to about seven (7) ‘chunks’ of information according to one of the most quoted papers in psychology written by George Miller.

Short-term memory is typically conscious, but much of long-term memory is unconscious. For example if I ask you to remember a phone number, then you are consciously aware of the information (which is held in your short-term memory). If I ask you how you drive your car, this is a learned behavior where you repeat a sequence of tasks, but not something you have conscious access to (a ‘procedural’ memory).

Contextualizing Memory

Part of our memory of any experience is the context (which is formed of many of the related sensory impressions and emotional cues). Amazingly, but unsurprisingly when you consider it, we recall information much better when we are in the same place as the original experience.

In one very original experiment, it was proved that quality of memory was strongly correlated with place and situation, by giving a group of deep-sea divers a set of words to remember in different places. Those who were under water when told the words, remembered 15% more of the words when asked to recall them underwater, and likewise for those divers who were sat on the beach.

Elaborate, Meaning, Context

Marketing and market research rely heavily on the memories of those we engage, and we need to understand the limitations of memory in order to have our advertising remembered and our questions answered (more) accurately.

Three important building blocks of human memory are:

• The more elaborate the experience (the more senses are engaged), the stronger the memory
• The greater the personal meaning of the event, the longer the memory
• The more relevant the context of the event, the greater the likelihood of recall

These are also great rules for sharing information in presentations or learning situations. Engage as many senses as possible, make ideas meaningful, and contextualize information. And the key to longer-term memory is to repeat, repeat, repeat (at regular intervals)! ‘Practice makes perfect.’
**Pulling the Trigger**
Have you ever had the experience that something was on the ‘tip of your tongue’ but you couldn’t quite remember? That’s likely because you know the information exists, but you can’t quite find the right connection to trigger its recall. That’s why such memories sometimes come back later when triggered by a more relevant (but often random) stimulus.

Our brains and memories do not work in a linear fashion. Although when we talk or write, we put together ideas in sentences or lists, which are linear. In business this is also true, especially with the tyranny of PowerPoint.

**Do you remember my Associate?**
Our memory (specifically our long term memory) works by association. That is, we connect new information to existing memories, and to the experience, emotions and context that they are associated with. So then when we try to recall information, we need a stimulus which triggers the right experience, emotions and context or which has a direct connection with the memory.

Our brains are highly creative and multi-dimensional, and can process information that is non-linear. Just think of the complexity of the sense information that comes into your brain every second, and especially the richness of visual information.
While this is a demonstration of some of my own very specific experiences (and some might say downright weird), I am sure everyone else would come up with a similarly idiosyncratic jumble of associations all stemming from a unique set of life events.

Words are Not Enough

Most of these associations can be verbalized, but they are not themselves words. Rather they are experiences and sensations (often complex ones too, which are difficult to put in simple words). They are certainly not a linear list of items! The reality is that if you want to remember more, it is important to write down less and focus only on key ideas and themes and how they connect to each other.

I use mind maps, along with many others, to help me to capture the richness of my memories around a specific topic, or to help me recall the important points on a phone call or during a meeting. Mind maps allow us to do this and are based on how our minds work. Rather than write down lists or sentences, we actually remember much more if we keep a record of key associations, allowing us to focus on what is important and how ideas are related.

Like my own map, they are built up stage by stage. You can think of it as ‘radiant thinking’ and it’s much more natural than bullet points!

We Think in Maps

Tony Buzan has started a whole industry around mind maps (see references), and there has been a recent resurgence in business books around the use of ‘visual thinking’ (Dan Roam’s is one of the best I have read about using pictures as problem solving and creative tools). The reality is that these approaches are all based on the way we think naturally and, with a little practice; we can all make use of visual tools to enhance memory, creativity and problem solving (even when you are a terrible artist like me).

Memories are easily triggered with right cue, but can remain on the tip of the tongue if given the wrong stimulus. Our minds are not linear, but work in maps, based on associations (based on analogy and metaphor), between ideas. For researchers to ‘extract’ someone’s associations with a brand, product or service, they need to think more flexibly than a list of questions and answers, and think hard about the right triggers. Marketers should focus more on building strong coherent networks of relevant connections.
THE CONTEXT OF CULTURE
Context in Mind
We have already talked about social bias, and the human tendency to follow the herd as one of the mental shortcuts we all use to guide our decisions more quickly and efficiently. We have also seen how context is a critical trigger of memory, and how different contexts can lead to very different behaviors even when our basic needs or goals are the same.

In any situation, there are multiple contextual cues influencing us at many levels: the environment, the people we are with, the social occasion, and cultural norms and values (including those of geography, tribe, religion and politics). These contextual cues change our perception profoundly, setting our expectations and anticipation of outcomes and priming us to behave in particular ways, just as visual context changes our perception of the same stimulus.

The Dependency of Thought
So how we interpret events, depends completely on context, which gives us many of the most valuable ‘clues’ as to what we should expect next. When you are asked a question, how often do you want to say, “It depends?” Although it can be infuriating to get such an evasive answer, the reality is that it’s a sensible one. When we ask someone a question, the answer they give depends on their perception of the context, and if we don’t provide one, then it’s up to the other person to provide it (and are we sure that it’s the one we intended?).

More mundanely, in many research studies we ask about brand choices, which are dependent on other contextual variables. Key drivers of airline brand are very different if travelling on business or leisure, choices of hotel brands depend completely on the company we travel with, and the beverage brand we drink will change with the weather, time of day and company.

Frames of Reference
The relevant consideration set and our preferences change every time the context changes. The most important of these contextual cues, and the most deeply embedded, are cultural norms, which operate as shared ‘understandings’ of how to behave and react, but at heart remain mental shortcuts shared across large groups of humans (based on some geographic, ethnic, belief system or other common connection).

These shared ideas shape the way we think at the deepest levels. Richard Nisbett reveals some of these influences in The Geography of Thought, focusing on how East Asian cultures differ from Western cultures in the US and Western Europe. For example, Western cultures are likely to group information based on attributes or categories, whereas East Asian cultures are more likely to group based on relationship. In a similar vein, Japanese babies learn more verbs than nouns in the early stages of language acquisition, whereas American babies learn more nouns than verbs.

The Culture of Research
Cultural research is only a small part of the industry, but is fundamental to the understanding of human behavior. It tends to be explored either at a more superficial and short-term level with trends research (try www.trendwatching.com and others) or at a very academic level with semiotic analysis. A few inspired marketers and researchers have applied semiotic tools in more understandable ways to address practical marketing issues, including Virginia Valentine and Grant McCracken, but there is a huge need to bridge the gap between the academic discipline and the practical needs of business.

For marketers to successfully build and maintain great brands, they need to constantly understand the pulse of culture, both in terms of short-term trends, and more importantly in terms of longer-term shifts in popular tastes, influences and mindsets. Researchers should also pay more attention to the context of consumer behavior. This surely means more observational research, and also making questions more relevant and specific, framing them with more focused competitive sets and better defined occasions.

Most importantly, we must always seek to understand the cultural influences driving human choices. Culture is research’s shortcut to the broadest frame of reference for all behaviors.
There are 12 key insights into what makes us who we are:

The Hardware of the Brain
1. Our brain has evolved over millions of years to guide us towards universal human strategies to defend, acquire, bond and learn and thereby maximise our reproductive success.

2. Our brain’s evolution is revealed in its modular structure including three key stages of development and the central position of emotional drives at the heart of everything we do, including decision making and learning.

3. We make connections through billions of neurons engaged in constant electrical activity, and in order to make an impression in the mind, we must first change the physical structure of the brain.

4. 95% or more of our behaviour is controlled by our unconscious brain, through learnt patterns of behaviour that efficiently guide us to our goals while minimising the need for conscious thought.

5. Our learnt patterns of behaviour make *Homo Economicus* a poor model for predicting behaviours that are based on mental shortcuts much more than complex economic models.

6. Our most important mental shortcut is to follow other people, and while this sometimes leads us astray, our sociability is overwhelmingly a successful strategy for mutual success.

The Software of the Mind
7. Our senses provide us with a bottom up picture of the world around us, enriching our mind with the emotional trigger of smell, the rhythm of the world, the touch of reality and the sight of friendly faces.

8. Our mind integrates these fragments into a single worldview, by integrating information, making inferences, and managing expectations from the top down.

9. The blending of our senses creates common patterns and higher-level concepts, which are used by our minds to link ideas into a coherent and useful predictive system and are the basis of the richness of metaphors.
Learning the Research Alphabet

Human behavior is a rich tapestry of influences and outcomes, and good research always uses multiple perspectives to understand the consumer.

While some companies have developed sophisticated tools for measuring emotional responses (for example through facial coding), the basic tools of watching faces and body language, and listening to pauses and tone of voice continue to provide clear feedback on the feelings of participants as well as their more conscious (verbal) responses. Although this is more challenging in a world of remote (and efficient) data collection tools, all research benefits from additional face-to-face real world feedback. There is also a need for research to make more use of non-verbal stimuli and especially images, which have more powerful and immediate resonance than words.

Behavior itself is always best understood through direct observation, which should seek to see the reality of our interactions with products and services covertly (where possible), before digging below the surface of the behavior with more interactive engagements with consumers. Observation is best conducted in realistic environments and scenarios reflecting real-world situations. Research can and should make increasing use of behavioral data sources (including social media, transactional databases and others) that can provide evidence of real behaviors when combined with smart analytics.

Context is critical to seeing the reality of typical behaviors, as well as to stimulating more accurate and relevant responses to questions. This means observing behaviors in situ where possible, and framing questions such that consumers understand the right context, social situation, competitive choices and cultural influences which would be important cues for actual behavior (including conjoint and other experimental approaches). In all research, context should be an important part of the feedback and interpretation of any study.

The data of consumer attitudes and beliefs, can then be sensibly interpreted in the light of the underlying consumer motivations, the reality of the behavior itself and how it relates to the consumers overall goals and their context. Importantly, emotions and context always precede action, and all come long before the rationalization of behavior based on opinions and beliefs that are the last link in the chain of human behavior.

As humans we rely on affect, behavior and context to provide the clues to tell us which data from memory is relevant to predict the right outcomes. Marketers and researchers need to understand ABC before interpreting their Data too!

10. Our memory is fallible, and is strongest when remembering multi-sensory information with personal meaning in the same context as our previous experiences and learning.

11. Our mind is based on associative learning and works best with maps and visual images, which increase creativity and problem solving skills and help us to find the right trigger for memory.

12. Our mind is primarily a system to make us context sensitive, and all our behaviours depend on the people around us, the type of occasion and above all the cultural norms embedded deep in our memory.

The ABC of Human Behavior

The research business is the business of predicting human behavior, which can only be fully interpreted if we understand:

A. Affect - the emotional motivation underlying our behaviour
B. Behaviour - the 'job to be done'
C. Context - situational cues along with important cultural and social influences

With understanding of ABC, we can begin to interpret D, the data of consumer memories and experiences. These data make up our individual conceptualizations of the world, but are only brought to mind if they help predict outcomes with reference to specific affective states, behaviors and contexts.
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