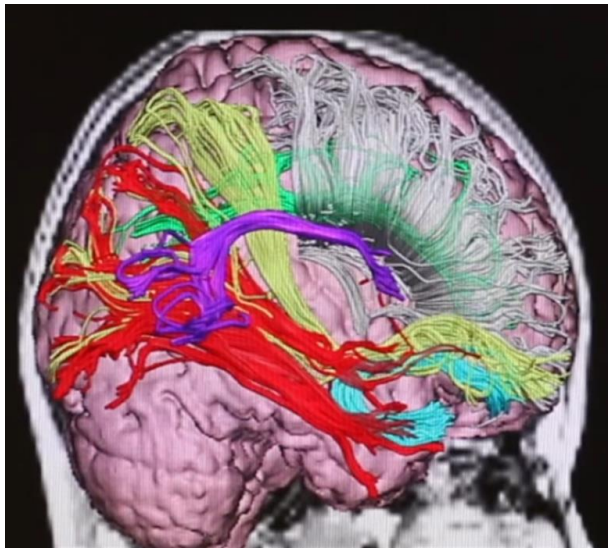
DECODE
Brand Code Management

decode Science Update 1_2017



“Information highways” within the human brain

The missing link between marketing mix and buyer behaviour

May 2017

Welcome to the decode Science Update

Thanks to neuroscience, we have already learned a lot about which parts (or cortices) of the human brain play a role in the brand selection process. We know which areas of the brain are responsible for the decision to turn one's attention to a brand, for brand perception, for brand recognition, for the decision whether we like something or not, as well as for the choice whether or not to buy a certain brand.

There is, however, one thing that research has hitherto not come up with - how all of these components interact with each other within our head, how exactly they communicate with each other and ultimately combine in the final decision (to buy). **Precisely which processes within the human brain ultimately lead the customer to pick up and buy a particular item or brand?**

In this Science Update, we will have a look at the ground-breaking new findings which show how the crucial marketing target areas within the human brain interact with each other to finally trigger a decision to buy. **There is an altogether new discipline of neuroscience, known as *tractography*, which, rather than focusing on the different areas or cortices of the brain has turned its attention to the connections between them (fibre tracts) - which we will here refer to as the "information highways within the brain".** This will yield fundamentally new findings as to how buying decisions are triggered and how we can influence them.

We hope you enjoy reading and discovering these new findings with us!
Your decode Team

Dr. Christian Scheier | Dr. Dirk Held | Associate Professor Dr. Martin Scarabis | Johannes Schneider | Dr. Björn Held | Tobias Eckert | Juliane Matussek | Phil Barden | Dr. Nick Carnagey

Neural pathways instead of areas - A new look at the human brain

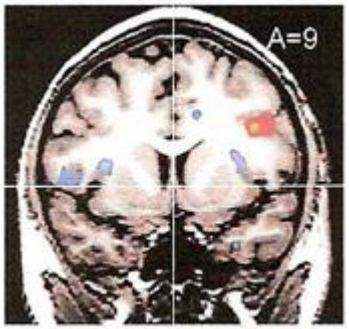
We are familiar with examples of “neuro-imaging” in which certain areas of the brain are shown to “light up”, such as when people are confronted with brands or promotional material during brain scans. Seeing a brand will activate the “visual system”, our favourite brand will activate the “reward system”, the price will activate the “pain centre” and so forth.

For a final buying decision, however, interaction and collaboration between these different areas of the brain, as well as the functions associated with them, is required. And precisely this question has been unanswered up until now: **How exactly do the different areas of the human brain interact? How are they “networked” with each other? What exactly is the underlying logic and what does this mean for the effectiveness of our marketing actions?**

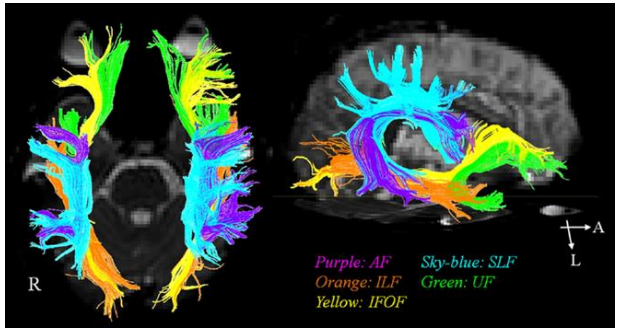
These are questions which tractography will be able to answer. Instead of the *grey matter*, the nerve cells which have been the object of conventional studies of the brain, this field of study focuses on the connections between nerve cells or areas of the brain, which are referred to as *associative fibre tracts* and constitute the *white matter*.

The difference is illustrated by the two following images: On the left-hand side, there is an image obtained by a conventional brain scan (fMRI), showing areas of grey matter “lighting up”, and on the right-hand side we have an image obtained by tractography, showing the connections between the different areas.

Classical imaging shows the activation of brain areas (fMRI)



Tractography shows the connections between areas of the brain (*fibre tracts*)



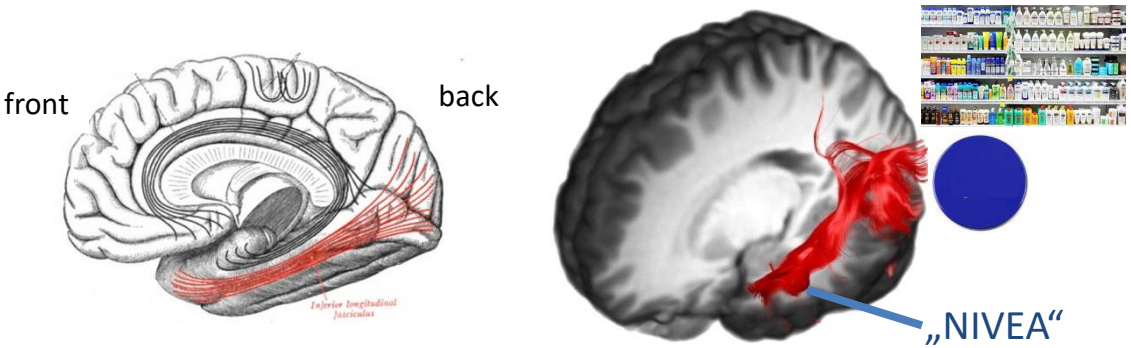
White matter predominantly consists of neural pathways or fibres functioning as cortical interconnections. Now, neuroscientists have managed to unlock the most important of those “information highways” within the brain.

Next, we will take a look at some of the exciting findings concerning these “information highways”, those that are most significant for the effectiveness of our branding and marketing activities.

From perception to brand - The “branding information highway”

Why does our brain activate the NIVEA brand when we see a blue circle? How exactly does this work - the activation of a brand just by seeing a certain colour, hearing a certain music or smelling a certain odour? Or, to put it in more general terms, how does the brain process our perceptions of light, colour, sound, taste, smell or haptic perceptions - for this is the “input” available to the brain - into something as abstract as a brand?

The neural pathway responsible for this process is known by the acronym ILF, which stands for *Inferior Longitudinal Fasciculus*. It connects the areas of our brain which are responsible for perception with those which are responsible for memory - the latter of which are located within the lateral temporal lobe (behind the ears).



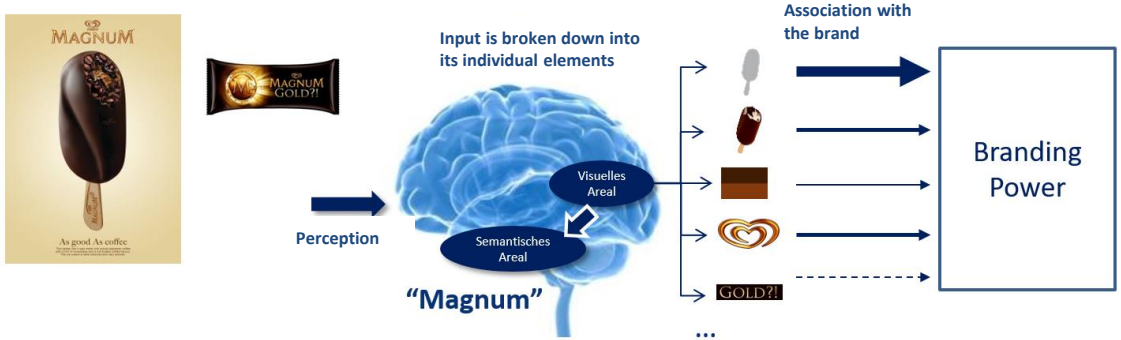
The ILF pathway sends any sensory input - such as the colour blue - directly to those areas linked to the function of memory. This is where our brain avails itself of the mechanism of associative memory, automatically activating everything we ever learned about that colour in this context. The sensory input, thus, activates anything ever associated with it. **If we have learned over time that a blue circle stands for NIVEA within the context of skincare, a blue circle will activate the brand NIVEA within that context.**

It is only this connection which enables us not just to perceive the world around us, but also to recognize what we see, touch, smell, hear or taste. This process takes only a few milliseconds and is totally automatic and implicit in nature - we do not have to make a conscious effort to think about a brand; *the brand is simply there*.

For our marketing efforts, this means that we have several individual channels at our disposal to activate a brand - colours, shapes, music or even individual symbols, marketing claims or testimonials. The possibilities to increase brand linkage and effectively engage the brand thus go far beyond the brand logo as such. All sensory perceptions are potential “brand activators” in so far as they are associated with a particular brand. This turns such elements into *iconic assets* of the brand in question. On the next slide, we will take a closer look at this process.

Iconic Assets -
Negotiating the “branding information highway”

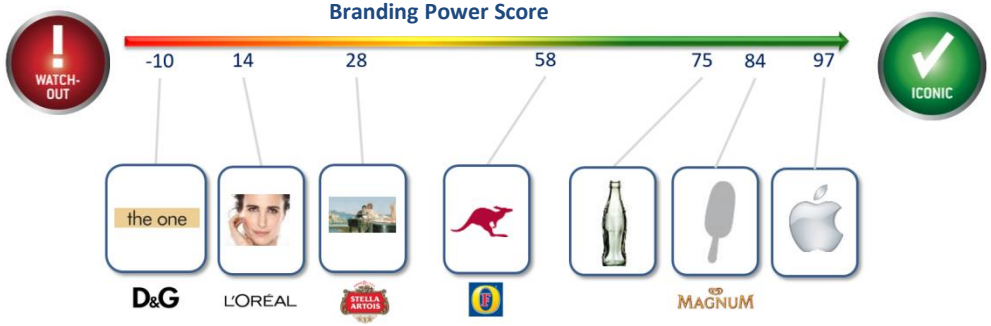
If we omit just one of these assets or modify it too much during a packaging relaunch, we risk confusing the customer in the shop. If we send the wrong codes in our advertising, the advertising may activate our competitor instead. But if we know the iconic assets of our brand and make conscious use of them - such as in traditional media advertising materials, in a pre-roll ad or in digital advertising - then our brand will be activated automatically. **These iconic assets help to increase brand linkage and to efficiently activate the brand without the target group having to consciously perceive the brand logo (which is usually quite small) or to read the written brand name.**



Brand recognition is based on what we perceive, on the input coming in from the various sensory receptors. We hardly ever see “the whole picture”, but each of these receptors reacts to one specific signal only and reports only that to the brain. From these inputs, the brain constructs “our” image of the world. We do not perceive any images, and there is no image memory either. The proof of this can be found in caricatures, in which we recognize the specific people or objects depicted even if we have never seen the picture before.

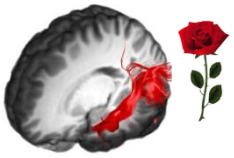
In order to tap into this potential, the marketer must know what exactly it is that our brain perceives, how our brain breaks down our environment into small elements and which of those elements have a strong link to the brand. The focus here is on all “non-verbal” elements of a brand (colours, shapes, contours, key visuals, sounds etc.). Implicit measuring processes have already enabled us to access up to 100 such elements of one’s own brand as well as those of our competitors, and to quantify them in terms of their branding power.

An example of this is shown in the diagram on the right, depicting a result from the decode Iconic Asset Test: Three assets in this diagram are iconic and invested with a high degree of branding power - the Coca Cola bottle, the shape of a Magnum ice cream and the apple icon of Apple Computers. There are, however, also assets which more strongly advertise competitor brands than our own (“Watch-outs”). Our tests have shown that up to 60 per cent of all brand assets have (too) little branding power or even activate competitor brands!



From perception to semantics - The process of creating a brand message

For a buying decision, it is not enough just to recognise the brand we are dealing with. After all, we do not buy every brand that we recognise. Our associative memory does not only help us recognise a brand, but also to decode sensory input into semantics, meaning and a message. We do not only recognise a rose as a rose, but the concept of the "rose" is associated with many experiences which serve as a basis for our understanding of what a rose is and what it means.

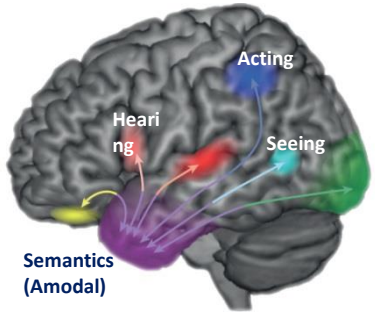


= "Love"

= "Health"
= "Vitality"

Our brain automatically translates all sensory input into concepts. No matter what we see, hear or do, the area of our brain which is responsible for semantics collects all of this input and translates it into meaning. Thus, we do not merely see a rose, but a symbol of love. We do not simply see the picture of a vitamin pill on a shampoo bottle, but a symbol of health and vitality. This is why the well-known behavioural economist Dan Ariely talks about "conceptual consumption" and the Nobel Prize laureate Daniel Kahneman about "conceptual representation".

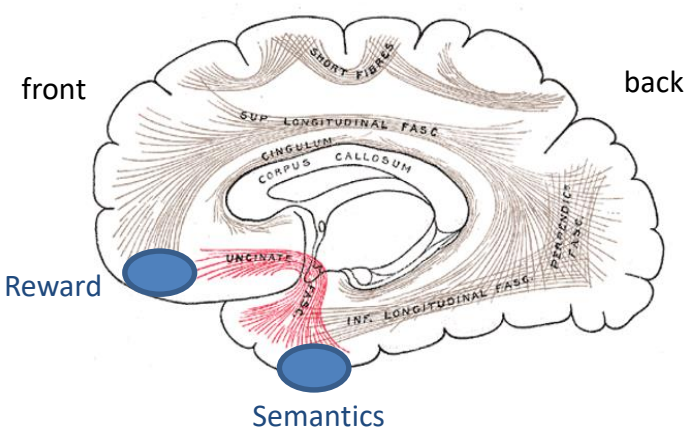
This is also why researchers, in this context, talk about "amodal representation" – **the point is no longer the look or sound of something (the particular modality of perception), but only the meaning it stands for**. "Amodal", in this context, means independent of a particular sensory channel. It is only in this way that the input from the various channels can be integrated into a consistent image and the brain can decode the the message and the meaning of something in a flexible way. This has very far-reaching consequences for the marketing process. **We can use all of these sensory channels in order to transport a message.** We can alter the sensation of taste through colour and texture as well as the sound of the name. Each packaging design conveys a message through colour, shape, smell, weight and the handling experience. These ways of conveying meaning, in particular, are much more effective than language.

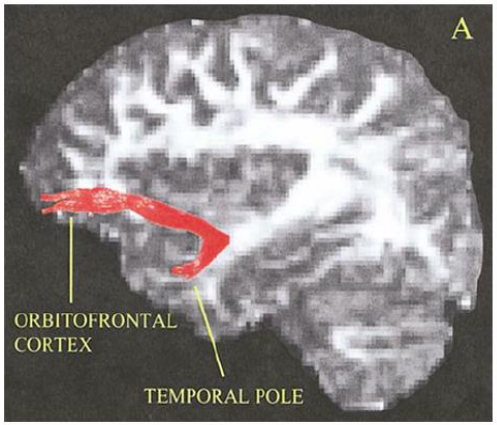


Too often we rely on consumers reading our communications, but the message we convey goes far beyond what we say or write. This is why most innovations fail. The concept of the product was evaluated positively, the relevant benefits were translated into claims and written on the pack, but nevertheless the product will flop. In many cases, however, the idea embodied by the product has only been expressed verbally while all other sensory channels convey a different message which can be contradictory, confusing or even wrong. **In order to be successful, we must know which non-verbal messages are associated with the implementation of a brand, and we must know which codes to use in order to effectively get the desired message across.**

From semantics to a decision to buy – Translating semantics into motivation

So now we know which brand we are dealing with and what it stands for, but this does not mean that the target group will necessarily buy it. This is where the UF pathway (*Uncinate Fasciculus*) comes into play. This is the fibre tract connecting our associative memory with the reward areas of the brain, where the buying decision proper will be initiated. This area of our brain, the orbitofrontal cortex, determines which brand is the best means to achieve our present aims, the so-called *Jobs-to-be-done*. How does this process work?

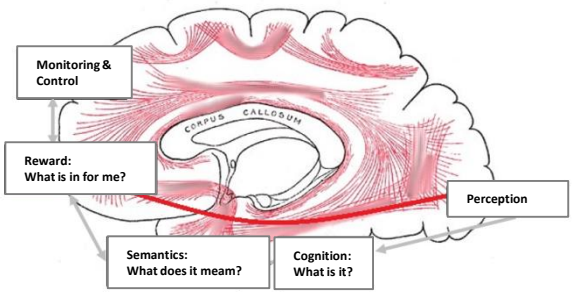


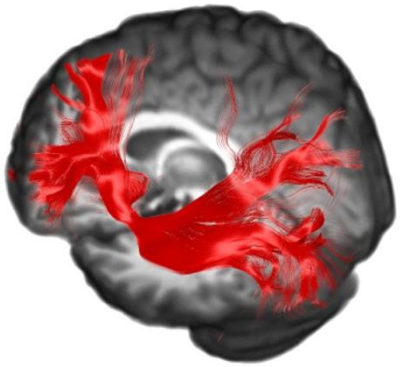


Thanks to the semantic cortex, we know what the brand stands for. The message (semantics) sent to the reward system via the UF pathway. This is the area of the brain where semantics, independently of where it was generated, is matched to our current personal needs. If that match is very close, the brand will be assigned a high reward value, which in turn leads to preference, satisfaction, a high degree of willingness to pay and finally to the purchase.

The IFOF or Why monkeys do not buy brands

The steps just described apply to all kinds of decisions, not just consumption-related ones. And we do not find these steps only in humans. However, it is humans - and only in humans - who have developed a further fibre tract in the brain, which is known as the "Infero-Fronto-Occipital Fasciculus" (IFOF). This is sort of an "information super highway" in which all of these steps take place simultaneously and therefore extremely fast and efficiently. This specifically human fibre tract proceeds from the areas of the brain at the back of the head („occipital“) via the frontal lobes („fronto“) to the reward system, where the decision to buy is made. Along the way, it also transits our associative memory, which converts sensory impressions into amodal semantics. The important factor here is that this process is bidirectional. If our aim is, for instance, to buy a bottle of Coca-Cola , the frontal lobes will be activated first (motivation). This motivation then influences all other processes along the information highway. The content usually associated with "Coca-Cola" is activated in advance so that it can be accessed faster. And this content, in its turn, will then activate all the other receptors matching that association.





Thus, in the case of Coca-Cola , the receptors for red are activated in advance so that anything red in our environment will be perceived faster. Motivation, thus, ensures that we find what we want faster. In the other direction, the process starts with perception: We see something, we recognize it, and our associative memory decodes the message and transmits it to the frontal lobe. In the frontal lobe, then, this perception will be matched to our aims as well as our needs. If there is a match between semantics and sensory impressions, we are much more likely to buy.

In marketing, we should know both directions of the IFOF and use them to our advantage:
1. What are the aims of the customer in the situation at hand, and which codes must I use to activate the semantics to match? If I know that the (psychological) aim of the customer is "power", then I must use other colours and shapes to those if the goal is "a feeling of security". The aims of the customer determine which codes (colours, shapes and so forth) will be effective because they convey the right (often implicit) message.
2. What are the semantics attached to my codes, and which aims can I activate by using them? Each code conveys a message, and it is central to our understanding which messages are conveyed by my codes - and which aims of my customers do they meet.

The triad of *perception-semantics-motivation* is the central chain of decision-making which we must explore and control.

Further reading

- A good introduction to tractography (also known as "Diffusion Tensor Imaging") can be found in this article: A hitchhiker's guide to diffusion tensor imaging
- Short introductory film concerning the subject: Mapping the human connectome

decode Press Review – Articles in German (1/2)

- **Nürnberger Nachrichten**
  Expert statement **Dr. Christian Scheier** (20.4.2017)
  Kunden holen sich ein Stück Macht zurück.
  http://www.nordbayern.de/wirtschaft/kunden-holen-sich-ein-stuck-macht-zuruck-1.6029108?searched=true

- **Kontakter**
  Expert statement **Dr. Christian Scheier** (6/2017)
  Neuromarketing in der Praxis angekommen. Shoppen mit Hirn.
  http://scienceupdate.decodemarketing.com/system/files/1703_Kontakter_06_2017_Shoppen%20mit%20Hirn_CS.pdf

- **Fluter, das Magazin der Bundeszentrale für politische Bildung**
  Expert statement **Dr. Christian Scheier** (23.12.2016)
  Von der Marke Apple verführt.
  http://www.fluter.de/Warum-die-Marke-Apple-so-stark-ist

- **w&v**
  Interview with **Dr. Christian Scheier** (38/2016)
  Nicht mit Windeln die Welt verbessern. Der Konsument 2.0.
  http://scienceupdate.decodemarketing.com/system/files/1609_w%26v%2038_Konsument%202.0_CS.pdf

- **Lead**
  Expert statement **Dr. Christian Scheier** (08/2016)
  Was die Branche herausfordert.
  http://scienceupdate.decodemarketing.com/system/files/1608_Lead_Herausforderung%20Branche_CS.pdf

decode Press Review – Articles in German (2/2)

- **w&v – Plus Kinder und Jugendliche**
  Expert statement **Dr. Christian Scheier** (27/2016)
  Was Hänschen nicht lernt.
  http://scienceupdate.decodemarketing.com/system/files/1607_w%26v%2027_Was%20H%C3%A4nschen%20nicht%20lernt_CS.pdf

- **absatzwirtschaft**
  Contribution of **Dr. Christian Scheier** (6/2016)
  Warum es Markenliebe nicht gibt.
  http://scienceupdate.decodemarketing.com/system/files/1606_absatzwirtschaft_6_2016_Markenliebe_CS.pdf

- **DirectNews**
  Interview with **Dr. Christian Scheier** (02/2016)
  Ein Kampagnenversprechen muss relevant, anders und glaubwürdig sein.
  http://scienceupdate.decodemarketing.com/system/files/1605_DirectNews_Kampagnenversprechen_CS.pdf

- **IP Magazin „Fourscreen“**
  Interview with **Dr. Christian Scheier** (02/2016)
  Der Tanz der Neuronen.
  http://scienceupdate.decodemarketing.com/system/files/1604_Fourscreen_Tanz%20der%20Neuronen_CS.pdf

decode Publications

- **Florack, A., & Scarabis, M.**
  Implizite Messung der psychologischen Markenstärke.
  In F.-R. Esch (Hrsg.), Handbuch der Markenführung. Springer: Heidelberg
  (in print)

- **Strelow, E., Hauschildt, V., Heitmann, M., & Scheier, C.**
  Coordinating Advertising Positioning and Shelf Placement Employing Multi Method Consumer Insights.
  (in print)

decode Presentations in Germany (1/3)

- **Deutscher Dialog Marketingverband e.V. 2017**
  Marc Heimeier
  Title: *Wie Codes die Markenentscheidungen beeinflussen.*
  Berlin, 18 May 2017

- **Henkel Beauty Care – Marketing College 2017: FMOT**
  Marc Heimeier
  Title: *Leveraging decision science to increase effectiveness at first moment of truth.*
  Düsseldorf, 3 April 2017

- **Marketing Club Hannover**
  Marc Heimeier
  Title: *Wie wissenschaftliche Erkenntnisse den Impact der Marketing-Maßnahmen steigern.*
  Hannover, 21 February 2017

- **Marketing Club Köln/Bonn**
  Marc Heimeier
  Title: *Wie wissenschaftliche Erkenntnisse den Impact der Marketing-Maßnahmen steigern.*
  Cologne, 14 February 2017

decode Presentations in Germany (2/3)

- **Handelsmarken Forum 2017**
  Johannes Schneider
  Title: *Implizite Motive entdecken und in effektive Codes überführen.*
  Frankfurt, 2 February 2017

- **Wrigley's Germany: Annual Meeting Germany**
  Dr. Björn Held
  Title: *Veränderung und Erfolg - Was können wir von der Verhaltenswissenschaft und von erfolgreichen Marken lernen?*
  Prague, 18 January 2017

- **Handels- und Dienstleistungsverband: Tag des Handels**
  Johannes Schneider
  Title: *Das Bauchgefühl im Kopf – Die Macht des Autopiloten und seine Bedeutung für den Handel.*
  Bozen, 10 November 2016

- **Viactiv Customer Event**
  Dr. Björn Held
  Title: *Hirnforschung und Marketing: Kaufen glückliche Kunden mehr?*
  Lübeck, 8 November 2016 / Bochum, 20 March 2017

decode Presentations in Germany (3/3)

- **Münchener Juristische Gesellschaft e. V.**
  Dr. Christian Scheier
  Title: *Richterliche Erfahrungssätze und neuropsychologische Erkenntnisse zur Markenwahrnehmung der Verbraucher.*
  Munich, 11 October 2016

- **MANIFESTA11**
  Johannes Schneider
  Title: *Kauflust – Konsum, Intuition und Marketing.*
  Zurich, 9 September 2016

- **DialogNatives: Multisense Marketing**
  Dr. Björn Held
  Title: *Richtig nerven: Dialog- trifft Neuromarketing.*
  Hamburg, 30 May 2016

decode Presentations in United Kingdom (1/4)

- **Retail Design Expo**
  Kathryn Purchase
  Title: *Shopper of the future*
  London 8/9 May 2017

- **Campaign magazine 'Underground' event**
  Phil Barden
  Title: *Captivating Codes*
  26 April 2017

- **Salesman podcast**
  Phil Barden
  21 March 2017

- **Space Doctors**
  Phil Barden
  Title: *Lunch & Learn*
  23 February 2017

- **Travel Technology Europe**
  Phil Barden
  Keynote speaker: *Effectiveness from decision science*
  23 February 2017

decode Presentations in United Kingdom (2/4)

- **AmazeOne**
  Phil Barden
  Title: *Humanising CRM*
  9 February 2017

- **Wolff Olins**
  Phil Barden
  Title: Lunch & Learn
  8 December 2016

- **Nestle Supply Chain**
  Phil Barden
  Title: *Increasing sales using decision science*
  11 November 2016

- **APG Planning Skills.**
  Phil Barden
  Title: *Lecture on decision science*
  10 November 2016

- **Financial Services Forum**
  Phil Barden
  Title: *Leveraging Decision Science*
  13 October 2016

decode Presentations in United Kingdom (3/4)

- **Popai Shopper Seminar**
  Kathryn Purchase
  Title: *Applying decision science at the point of purchase to increase effectiveness.*
  Manchester 22 September 2016

- **Northwestern University**
  Phil Barden
  Title: *Lecture to Masters students*
  19 September 2016

- **AdWeek webinar**
  Phil Barden
  Title: *Using Decision Science for more effective targeting*
  11 August 2016

- **Unilever 'Brain Sparks' training event**
  Phil Barden
  28 July 2016

- **Carlsberg Export, Licence and Duty Free annual conference**
  Phil Barden
  Title: *Sell more with Decision Science*
  Paris 22 June 2016

decode Presentations in United Kingdom (4/4)

- **The Indie Summit**
  Phil Barden
  Title: *How Decision Science can increase marketing effectiveness*
  16 June 2016

- **London Capital**
  Phil Barden
  Title: *lunch and learn*
  1 April 2016

- **IPA Planning Skills Diploma course**
  Phil Barden
  Title: *Lecture on behavioural economics*
  20 April 2016

Signing up for the Science Update

Often, the decode Science Update is handed on from one colleague to another within the workplace. Is that also what happened in your case?

Signing up will give you **access to all hitherto published and future Science Update issues**.

You can sign up here: http://www.decodemarketing.com/science-update/

Welcome to the dialogue

decode Marketingberatung GmbH

Graumannsweg 19
D – 22087 Hamburg
Telephone: 040 / 227 59 208

info@decodemarketing.com

www.decodemarketing.com

Dr. Christian Scheier
Management

Dr. Dirk Held
Management

Nele Bruns
CRM / PM / PR