Please, Not Another Bias!
The Problem with Behavioral Economics

[Jason Collins](#)

That statement 'Please, Nnot another bias' isn't as creepy as it sounds. I did not calculate the direct reproductive opportunity of this speaking engagement. Rather, our evolutionary past means that we are inclined to pursue proximate objectives that lead to the ultimate goal.

For example, we seek status – and what could be more status-enhancing than speaking here. And we engage in the costly signalling of our traits – such as intelligence – to the opposite sex, allies or rivals.

Another place where I signal is my blog, Evolving Economics. A copy of these slides and the text of what I plan to speak about today – which should approximate what I actually will speak about – will be posted onto Evolving Economics before the end of today's talk. That text includes links to the studies I will refer to.

To explain why I engage in this costly signalling – conference speaking, blogging and the like – I will first take a step back and explain how the evolutionary approach to decision making relates to other approaches, starting with behavioural economics.

And I should say that I am going to refer to "behavioural economics" today, even though what I am going to talk about is more rightfully called "behavioural science".

I once had an online discussion about this point with last year's MSiX headlining speaker Rory Sutherland. I was in the behavioural science camp, but he said that the term behavioural economics was fantastic marketing and is effective in getting the attention of economists. Even though calling it behavioural economics is a slight to the psychological foundations of this work, we should live with it.

Get Evonomics in your inbox

Now that I work in this space and I have used the terms behavioural science and behavioural economics with a range of clients and colleagues, I am convinced that Rory was right. I receive blank looks when I use the term behavioural science. I attract immediate interest when I use the term behavioural economics.

So, to content. And I am going to start with a complaint. In some ways I am following the traditional format of a behavioural economics talk, which sets up the rational *homo economicus* straw man, and beats it to death with a series of examples of how irrational we really are. But for a change, I am going to start by beating up on behavioural economics.

And I should say that, despite this bit of bashing, I have a soft spot for behavioural economics. It's my day job for a start – helping clients in the private and public sectors better understand how their customers, employees and citizens make decisions, and how they can help them to make better ones. It's just that behavioural economics could be so much more.

There are not 165 human biases

So, I want to take you to a Wikipedia page that I first saw when someone tweeted that they had found "the best page on the internet". The "List of cognitive biases" was up to 165 entries on the day I took this snapshot, and it contains most of your behavioural science favourites … the availability heuristic, confirmation bias, the decoy effect – a favourite of marketers, the endowment effect and so on ….

But this page, to me, points to what I see as a fundamental problem with behavioural economics.

Let me draw an analogy with the history of astronomy. In 1500, the dominant model of the universe involved the sun, planets and stars orbiting around the earth.

Since that wasn't what was actually happening, there was a huge list of deviations from this model. We have the Venus effect, where Venus appears in the evening and morning and never crosses the night sky. We have the Jupiter bias, where it moves across the night sky, but then suddenly starts going the other way.
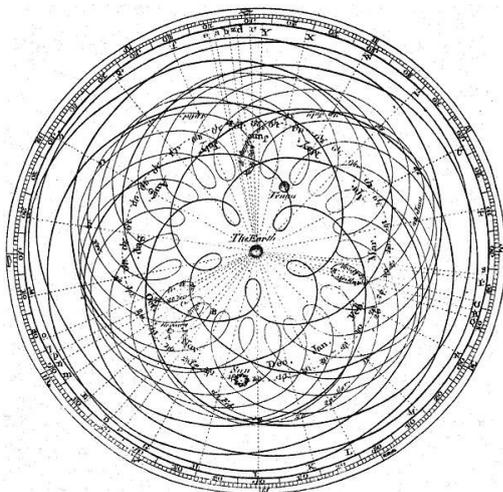
Putting all the biases in the orbits of the planets and sun together, we end up with a picture of the orbits that looks something like this picture – epicycles on epicycles.

But instead of this model of biases, deviations and epicycles, what about an alternative model?

The earth and the planets orbit the sun.
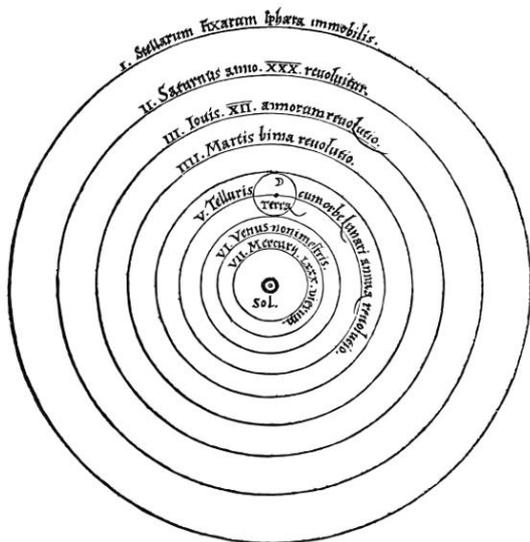
Of course, it's not quite as simple as this picture – the orbits of the planets around the sun are elliptical, not circular. But, essentially, by adopting this new model of how the solar system worked, a large collection of "biases" was able to become a coherent theory.

Behavioural economics has some similarities to the state of astronomy in 1500 – it is still at the collection of deviation stage. There aren't 165 human biases. There are 165 deviations from the wrong model.

So what is this unifying theory? I suggest the first place to look is evolutionary biology. Human minds are the product of evolution, shaped by millions of years of natural selection.

A hierarchy of decision making

To help you understand what an evolutionary lens adds to our understanding of human decision making, I am going to place evolutionary biology in a hierarchy of possible ways to consider the mind.

The first four reflect a hierarchy presented by Gerd Gigerenzer in his book Rationality for Mortals (if you haven't read any Gigerenzer, do).

First, we have the perfectly rational decision maker, *homo economicus*, who exhibits unbounded rationality. If you have been to enough behavioural economics presentations, you have already seen this model beaten to death.

The next is a model provided by economists in response to some of the behavioural critiques – a model of decision making under constraints. If you add costs to information search – there is your role for advertising and marketing – and possibly some limits to computational power, we get different decisions. It is a nice idea, but an even less realistic version of how people actually think. If you have done any late secondary or early tertiary mathematics, you will know it's typically harder to make calculations with constraints than it is to be the unbounded rationaliser.

The third model is the heuristics and biases program of behavioural economics. Gigerenzer calls this work the search for "cognitive illusions." I have already complained about that.

Next comes what Gigerenzer calls ecological rationality. I want to spend a moment or two talking about this as it is very similar to an evolutionary approach, minus one important feature.

Ecological rationality

The ecological rationality approach involves asking what decision making tools the user possesses. You then look at the environment in which those tools are used, and then you can assess how those tools perform in that environment. The decision making tools and environment in which they are used are two blades of the same scissors (Herbert Simon used this description) – and you need to examine both the tool and the environment to understand the nature of the decision that has been made.

Through this approach you might see what are called "biases" emerge, but an ecological rationality approach allows you to understand the basis of the bias. Instead of just noting someone has made a poor decision, you might note why they were wrong and in what alternative environments those decision rules might be more effective.

Let me give you an example – the gaze heuristic (a heuristic is a mental shortcut). The gaze heuristic is a tool that people – and dogs – use to catch balls. The heuristic is simply this – maintain the ball at a constant angle of gaze. If you move to keep this angle constant, you will end up where the ball lands. Obviously, this is easier than calculating where you should be from the velocity of the ball, angle of flight, the effect of wind resistance and so on.

But it results in a strange pattern of movement. Suppose you are close to the point where the ball is first hit into the air. As it rises you will tend to back away from the ball. As it then starts to fall, you will move back in. If it is hit up to the side of you, you will move to the ball in a curve. Now, if you had a behavioural economist look at the path you took to catch the ball, they might call it the curve bias or something like that – but it is actually the result of a very effective decision making tool.

There are also some circumstances where it works better, and some where it fails. It tends to work best when the ball is already high in the air. If you catch sight of a ball hit straight up before it has risen far, using the heuristic for its entire flight could require an impossible feat of first running away from the ball and then toward it. When we see fielders messing up a catch when the ball is hit straight up, it can be the backfire of this heuristic.

Understanding this is a much richer understanding than saying that the fielder is biased because he did not run straight to where the ball was going to land. It also points to the power of heuristics. Try to train someone to run straight to where a ball will land and watch them fail.

Don't see these decision making shortcuts as poor cousins of the "more rational" approaches.

Let me give another more marketing orientated example – the recognition heuristic. The heuristic runs along the line of "If I recognise one of two objects and not the other, then infer that the object I recognise has higher value."

Obviously, people might use the recognition heuristic when shopping for a product. If I recognise one brand but not the other, I might assume the brand I know is superior.

The recognition heuristic will work when recognition is correlated with the quality of the product. I am sure you know plenty of products where brand strength is a good indicator of quality. And of course, one of the jobs of marketers is to make sure the recognition heuristic delivers success for their client – you are trying to achieve brand recognition. Then again, there are other products where brand strength probably leads people to make some poor decisions. My personal view is that the recognition heuristic works particularly poorly when it comes to beer.

Evolutionary rationality

Now, I consider Gigerenzer's approach to be superior to the biases and heuristics or "cognitive illusions" approach. But it still leaves open the question of where these heuristics and other decision making tools come from. And this is where we get to the fifth level – what I will call evolutionary rationality. The toolbox that we use today has been honed by millennia of natural selection.

Anticipating two common responses to this point, I am not going to spend today trying to convince the doubters in the audience that the human mind is a product of evolution – although I am happy to do that over a drink later.

And I will highlight that humans are cultural and well as biological creatures. That we have a range of universal instincts and preferences shaped by natural selection does not say that culture is not important. What we see is a combination of evolved preferences, social norms, technologies and the like, each interacting with and shaping the others. Yes environment matters, but if you ignore the biology, you will do a poor job of understanding why consumers act the way they do.

So what does an evolutionary approach tell us about the human mind?

For a start, it tells us something about our objectives. Those who are in the audience today – all of your ancestors, without fail, have managed to do two things: survive to reproductive age, and reproduce. As little as you might like to think about it, your parents, grandparents and so on all the

way back until the evolution of sex have always successfully attracted a partner to reproduce with.

This does not mean that we literally walk around assessing every action by whether it aids survival or reproduction. Instead, evolution shapes proximate mechanisms that lead to that ultimate goal. And consumer preferences are manifestations of our innate needs and preferences.

For example, on survival – we are obsessed with food – and in particular, crave sweet and fatty foods – which in historical times increased survival. Most of the successful global fast-food restaurants target those evolved tastes (in fact, you could say that the market has evolved to match those propensities).

We have an innate sense of danger – for example, we (and other animals) are quicker at detecting snakes than other stimuli, even when we have never seen them before.

On reproduction, we enjoy sex – which has obvious reproductive benefits, at least before the spread of effective contraception. We accumulate resources far beyond those required for survival. And so on.

Before going on, however, I should say that the shaping of proximate rather than ultimate mechanisms for survival and reproduction has some interesting consequences. Our evolved traits and preferences were shaped in times vastly different to today. Our taste for food was shaped at a time when calories were generally scarce and provided in the form of meat, tubers, nuts, vegetables and Glyptodons. The gorging that would occur after the occasional slaughter of a large prey is very different to the eating that occurs in today's age of grain and calorie abundance. Today, we are effectively calorie unconstrained.

And the joy of sex that once led us to have children clearly isn't working as efficiently as it once did. Fertility across the developed world has plunged – although I'd be happy argue later over a drink that evolutionary forces will tend to drive fertility back up.

This backfiring of our evolved traits and preferences is known as mismatch. Our evolved traits do not always match the new modern environment – and this is something that makes Gigerenzer's model of looking at the interaction of the decision making tools with the environment such a useful tool for analysis. Sometimes the tool works. Sometimes it doesn't.

So what does evolutionary biology tell us about human decision making, behavioural economics and marketing?

Sex

So, let's do a quick quiz. Tell me two things about the driver of this Ferrari (I have stolen this example from University of New South Wales evolutionary biologist Rob Brooks).

First, the driver was male. Yes, men and women are different – we will touch on the reasons for this in a moment – although I expect most marketers already knew this.

Second, the driver is likely young (in this case, 25).

So why is this the case?

Females – and in biology, this is in part how females are defined – produce a large immobile egg. Males produce a smaller gamete – sperm. The egg is the scarce resource. Women are born with a million or so eggs, but they release only one or so a month. Men produce 1,500 sperm a second. Each man in this room will produce enough sperm during this talk to fertilise every egg the women in this room will ever produce.

Then there is what happens when a sperm and an egg are joined. The woman spends nine months carrying the baby – and is unable to reproduce during that time. She then provides the majority of infant care. Men are less constrained by any such barriers.

Then throw in that women are certain of maternity, whereas men may not be certain of paternity, and you have vastly different patterns of reproduction between the sexes.

More men than women have zero children – the worst possible evolutionary outcome. A man who applies no standards to a mate choice may still go without. A woman would never have that problem.

Then, for a few men, the rewards are vast.

As one example, approximately 16 million men in central Asia carry the same Y chromosome – the Y chromosome is passed from down the male lineage from father to son. This chromosome originated in Mongolia around 1000 AD with around 8 per cent of the men in the region carrying it (0.5% of the world's male population) – they all trace their male lineage back to the same man.

One possibility is that this chromosome was so successful as it was carried by Genghis Khan and his close relatives. Genghis had multiple wives and a harem. He may have fathered thousands of children. His grandson Kublai Khan was famous for the size of his harem – I have seen some estimates that it contained 7,000 women (although haven't been able to reliably source those estimates). Whether that number is accurate or not, it is feasible that Kublai Khan could have been having hundreds of children a year.

No woman could ever have that level of success – but for men, the evolutionary rewards to success can be vast.

This brings us back to our Ferrari driver. As a male, the risk-reward calculation in evolutionary terms is quite different from women. Men face a higher probability of evolutionary oblivion, and small chance of an evolutionary extravaganza. It makes sense to take risks that may lead to inordinate evolutionary success – or at least to avoid evolutionary oblivion.

One of my favourite examples of this comes from research by Richard Ronay and Bill von Hippel. They got some young male skateboarders to perform tricks, including a difficult trick that they could complete only half the time. Halfway through filming, a woman rated as highly attractive (corroborated by "many informal comments and phone number requests from the skateboarders") walked onto the scene. Once she appeared, they took more risks and were less likely to bail a trick half-way through, instead riding all the way through to the crash landing (a story on ABC's Catalyst demonstrates this effect).

First, this risk taking should be seen in the context of what they are trying to achieve – attracting the female. So much of economics – and behavioural economics – is looking at the wrong objective.

Second, this change in risk preference in the presence of a women points to one of the most important findings in evolutionary psychology – our decision-making changes with the immediate context. We might be

considered to be different personalities. Evolution has not shaped an all-knowing computer, but rather a modular computer for making different decisions based on different contexts.

As an example of this, show one group of people the movie The Shining, the other half a romantic movie starring Ethan Hawke. Then manipulate the ads they see during the movies to either accentuate the uniqueness of the product, or its popularity.

Those watching The Shining are more likely to prefer popular products – safety in numbers as their danger avoidance personality is triggered. For those watching the romantic movie, they wanted unique products so that they would stand out from the crowd. Their mating motives have been triggered. You effectively get a change in preferences based on which movie they are watching and which self is answering the questions about the products. The effectiveness of social proof varied with context.

Present bias

Let's look at a traditional behavioural economics problem – present bias, which is the strong preference for present rewards over those in the future. The largest discount for the initial delay.

If I ask you the following question, some of you will choose A, and some B.

Choose between:

1. One apple today
2. Two apples tomorrow

But if I ask you the following question, almost no-one will choose A:

Choose between:

1. One apple in one year
2. Two apples in one year and one day

This change in preference shouldn't be seen if we discount the future consistently. And if I asked you to revise your choice in the second question at the one year mark, I am effectively asking you the first question and some of you might change your mind.

On the one hand this seems irrational. But what if the immediate objective isn't maximising lifetime consumption of apples?

In an experiment by Margo Wilson and Martin Daly – two of the pioneers of evolutionary psychology, and I recommend you read their book Homicide if you haven't – they exposed men and women to either pictures of attractive faces or pictures of cars before undergoing tests of their degree of present bias.

The men who had seen the attractive faces became more severe discounters than those who had seen the cars. They became focused on the present – the mating opportunity. The women did not become increasingly severe discounters in this experiment – although there may be a smaller effect that the experiment did not have the power to detect.

So here, what might be called a very strong present bias has a degree of rationality to it in that the objective of the participants is mating. Obviously, they didn't have a chance to mate with these pictures – so there we have the issue of mismatch – but you can see the evolutionary foundation of their decision. If they did manage to capitalise on that moment and manage to mate, their evolutionary future is set.

An extreme example of this is seen in other species. A male black widow or preying mantis would allow themselves to be eaten at the moment of mating – this picture is of a male preying mantis getting lucky but losing his head as a consequence – massive present bias in terms of the typical measures an economist might use, highly rational from an evolutionary perspective.

Costly signalling

Now I want to move to what I believe is the most important idea I will communicate today.

Shortly after publishing The Origin of Species, Charles Darwin wrote "The sight of a feather in a peacock's tail, whenever I gaze at it, makes me

sick!". He wrote this because, to him, the tail simply did not make any sense. It harmed the peacocks chance of survival. Why would a female mate with a long-tailed male and subject her long-tailed son to the same dilemma.

But in the mid-1970's an evolutionary biologist, Amotz Zahavi, proposed that signals such as peacock tails can be a trusted as they handicap the bearer. Only a high quality peacock can bear the cost. If a sickly peacock tried to carry such a large tail, they'd be toast. In evolutionary lingo, the peacock's tail is an excellent fitness indicator.

Biologists argued about whether signals could be honest because they create a handicap for fifteen or so years after Zahavi espoused this theory. But in the early 1990s it was agreed that the maths checked out, and the idea is now broadly accepted by biologists.

This handicap principle also applies to human signalling. When humans are seeking a mate, you want to know as much as you can about them. You want to know their intelligence, their health, the level of conscientiousness, their kindness, the resources at their disposal and so on. You can't just see this straight away – so people seek to signal these traits. And the products they buy are a major part of that signal.

Conspicuous consumption

The most obvious example of this type of signalling is conspicuous consumption. Conspicuous consumption is a signal of resources and the traits required to acquire those resources.

One of the most expensive watches in the world is the Patek Philippe Calibre 89. I first heard of this watch when I read Robert Franks Luxury Fever. Only four were made, with the first selling for $2.5 million and the last auction price I can find was over $5 million. The watch has 1728 components, gives you the date of Easter each year, and unlike most mechanical watches, will not record the years 2100, 2200 and 2300 as leap years, while still recording 2400 as one (as per the order of Pope Gregory XIII in 1582). It has 28 hands and there are 2800 stars on the star chart.

Since it is mechanical, it includes a tourbillon, a mechanism to improve accuracy by accounting for the earth's rotation. But the funny thing is that my cheap quartz watch does not require such a mechanism, as gravity does not affect the vibrations of the crystal. The Calibre 89 also weights over a kilo and is the size of a hockey puck. For several million dollars less, I have scored a more accurate watch that I can wear.

But it is the waste inherent in the Calibre 89 that makes it a reliable signal of resources – and the qualities required to accumulate those resources. All that extra expenditure is effectively waste that a man with low

resources cannot bear. Think of all the most expensive consumer goods – super yachts, high quality sports cars, gold Apple watches. In terms of transport or timekeeping there are much cheaper and in fact much more reliable methods, but the waste inherent in these goods makes them an excellent signal of resources.

So, does this conspicuous consumption actually work as a signal?

There's a decent size literature on this topic, so let's look at two typical experiments – one on the desire of men to conspicuously consume, a second on the effect of that consumption on women.

Take a group of men and show them pictures of attractive women and then ask them what they will do with their money. The mating prime makes men more likely to engage in conspicuous consumption or conspicuous charitable donation, but has no effect on inconspicuous consumption.

Women can also be affected by mating primes, although in that particular experiment their change in behaviour in response to pictures of attractive men was an desired increase in volunteering in a public way (but no increase in private benevolence).

The difference reflects the different traits each are communicating – men are communicating resources and the traits required to accumulate them, women their conscientiousness.

https://bpspsychub.onlinelibrary.wiley.com/doi/abs/10.1348/000712609X417319

On the effect of the signal, in one studymen and women were shown pictures of members of the opposite sex in either a red Ford Fiesta or a silver Bentley. Unfortunately the photos in the paper are provided in black and white – as shown in this slide – but these indicate the types of images the experimental subjects were shown.

The result – the expensive car made the male more attractive to the females, whereas there was no effect on male perception of the female drivers. The increase in male's attractiveness was equivalent to around 1 point on a scale of 1 to 10.

Signalling other traits

Of course, signalling involves far more than conspicuous consumption. We don't only signal resources, but want to signal intelligence, conscientiousness, agreeableness or other features.

We buy a Cassini 1100 mm reflecting telescope to signal our intelligence. We subject ourselves to year's of post-secondary education to signal intelligence and conscientiousness. We buy hybrid cars to signal our

agreeableness. And we don't only signal to potential mates. We also signal to friends, relatives and rivals.

Importantly, good signals are difficult to fake. It is difficult to exploit many products if you don't have the right personality traits – faking education below certain levels of intelligence or conscientious is too difficult, faking wealth will run a poor person dry, faking appreciation of jazz if you have low openness will drive you nuts – the handicap is what makes the signal reliable.

Ultimately, this approach indicates that there is an important question to be asked when marketing a product. How does your product or brand allow the consumer to signal their traits to potential mates, their spouse, allies or rivals?

Unfortunately, it's not as simple as communicating this point directly to a potential consumer in your advertisements. A sports car ad for young males does not directly inform them that it will attract more females.

That is, unless you are Lynx, or Axe as it seems to be called in most countries. Lynx states the strategy overtly – "Lynx gives guys the edge in the mating game".

But is this actually the strategy for most products? It is just a question of how many times removed the product is from mating outcomes. The product will increase your status, giving you an edge in the mating game. This product will intimidate rivals, giving you an edge in the mating game. This product will indicate your wealth, giving you an edge in the mating game. This product will allow you to get a high paying job to buy a sports car to indicate your wealth to give you an edge in the mating game.

So when a man sees a billboard with an attractive woman on a billboard, it gets attention. And from an evolutionary perspective, this is exactly the sort of thing that would draw attention. In our evolutionary past, an attractive woman would have been right there – you might think you are in with a shot.

But there is another more important, subtle message. This product will help you in the mating game. The girl on the car gets attention, but the more important implicit message is that this car can get you the girl. I understand there is the saying "sex sells", and then the rebuttal, "sex sells, but only if you are selling sex". Well, far more of you are selling sex than you realise.

Personally, I'd like to see more research in this area. Survey the buyers of different cars for number of sexual encounters too see if there is a difference. Of course, we have selection bias issues with those who buy the cars – so maybe we need some random allocation of sports cars to get some reliable results.

A reading list

Now, I have only scratched the surface over the last half hour or so, but if you are interested in this area, here are a few books to get you started – and I should say that these books heavily influenced what I have talked about today.

The Red Queen: Sex and the Evolution of Human Nature by Matt Ridley was the first book that made me realise that evolutionary biology was at the core of understanding human behaviour. The first half gives a great synopsis of the origins of sex – that is, why we have sex as opposed to budding off clones – and the second asks what this means for human interactions.

In Spent: Sex, Evolution and Consumer Behavior, Geoffrey Miller asks whether the signalling we engage in in a mass-consumerist society does a good job of signalling the traits of interest. A consumer culture has a degree of self-deception – that above average products can compensate for below average traits. We get to know each other in minutes and are quite good at judging other people's qualities from our interactions – that is, our intelligence, conscientiousness and so on. We can see through the product haze, and most products do a crap job of signalling the traits we think we are.

Next, Gad Saad is the pioneer of examining consumption through an evolutionary lens.The Evolutionary Bases of Consumption is a more technical book, while The Consuming Instinct: What Juicy Burgers, Ferraris, Pornography, and Gift Giving Reveal About Human Nature is an easier read. By the end of those two books the idea that evolutionary theory is important for understanding consumption decisions will have been well and truly hammered into you.

I spoke a lot about signalling, and Amotz Zahavi was the person in the mid-1970's who first saw how important this is in biology. The Handicap Principle: A Missing Piece of Darwin's Puzzle is his popular book on the topic. Robert Frank's Luxury Fever extends the examination of signaling to conspicuous consumption.

Gerd Gigerenzer's Rationality for Mortals: How People Cope with Uncertainty is from where I stole the first four stages of human decision making. If you do start reading Gigerenzer's books, I suggest you don't stop there.

The Rational Animal: How Evolution Made Us Smarter Than We Think by Douglas Kendrick and Vlad Griskevicus in some ways does what I did in the early part of the presentation – they show that many apparently irrational actions are actually quite rational from an evolutionary perspective. They are behind a lot of the studies I have referred to.

And then there are some related articles that I also recommend reading – particularly by Owen Jones who writes a lot about the need to interface behavioural economics and evolutionary biology.

I have a longer reading list on my blog, where I have reviews of many of these books and links to interesting papers.

Three thoughts to chew on

So, having said all this, here are three ideas for you to walk away from this presentation with.

Obviously, to understand humans you need to understand our evolutionary past. An evolutionary lens provides a guide as to what people are looking for in a product. As Gad Saad points out in The Consuming Instinct, try selling Harlequin-type romance novels to men and see where that takes you – some strategies will be doomed to failure because they do not align with our evolved preferences.

Second, a large part of our evolved behaviour involves our desire to signal important traits and qualities to potential mates, allies and rivals. When buying a product, what traits does the consumer believe they will be signalling?

And third, our evolved minds are sometimes out-of-sync with our modern environments. Use Gigerenzer's framework (or Herbert Simon's scissors) – what are the decision making tools we have evolved to use, what is the environment we intend to use them in, and what is the resulting decision? Biases, purchases and a large range of human behaviour will make much more sense when looked at from this lens.